The Bulletin *of the* University *of* Minnesota

General Information for the Year 1926-1927

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

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The Bulletin comprises—

The reports of the president and of the Board of Regents, 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 inforation is desired. Address

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The LIBRARIAN,
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CONTENTS

FRESHMAN WEEK

Every student entering any department of the University for the first time as a freshman in the fall of 1926 is required to be here throughout the week before the opening of classes. Every new freshman must present himself at the registrar's office either Friday, September 17, Saturday, September 18, or Monday, September 20, to begin the process of registration. Those coming later than 5:00 p.m. Monday, September 20, will be subject to the usual penalty for late registration. See Penalty Fees, page 50.

During the week September 21 to 25, in addition to carrying out their registration, freshmen will meet for lectures on such subjects as how to study, the use of the library, important university and college regulations, and will visit the library, the scientific laboratories, and other points of interest to them in connection with their choice of studies and of their future occupations.

During this week there will be the usual physical examinations and psychological tests and such other examinations as will enable the faculty to place the students in classes for which they are best fitted.

The general purpose of the Freshman Week is to help the student to make a good start on his work and to adjust himself to the new and perplexing conditions of university life.

NOTICE THAT ATTENDANCE THROUGHOUT FRESHMAN WEEK IS A REQUIREMENT

It is recommended that as many as possible present themselves for registration on Friday, September 17, in order to avoid the inconvenience and delay incident to the congestion on the last day.

UNIVERSITY CALENDAR

1926-27

1926

Fall Quarter

September	16	Thursday	Payment of fees closes, except for new students
September	16-18		Entrance examinations (for removal of entrance deficiencies)
September	17-20		Registration of all new students entering the freshman class
September	20-24		Examinations for removal of conditions
			Physical examinations
			Registration period,[1] colleges of Science, Literature, and the Arts, and Education
September	21-25		Freshman week
September	23-24		Registration days[1] for all colleges not included above
September	24	Friday	Payment of fees for new students closes
September	27	Monday	Fall quarter classes begin, 8:30[2] a.m.
			Fall semester extension classes[3] begin
October	21	Thursday	Senate meeting, 4:30 p.m.
November	2	Tuesday	Election Day; a holiday
November	11	Thursday	Armistice Day; a holiday
November	20	Saturday	Homecoming Day
November	25	Thursday	Thanksgiving Day; a holiday
December	2	Thursday	State Day Convocation
December	15-18		Final examination period
December	16	Thursday	Commencement Convocation
			Senate meeting, 4:30 p.m.
December	18	Saturday	Fall quarter ends, Christmas vacation begins, 5:20 p.m.
December	22	Wednesday	Payment of fees closes for all students in residence fall quarter[4]

Winter Quarter

December	27-29	Entrance examinations
December	30-31	Registration days for new students in all colleges

[1] Registration subsequent to the date specified will necessitate the approval of the college concerned. See also penalty fees for late registration, page 50.

No student will be allowed to register in the University after one week from the beginning of the quarter excepting in unusual cases wherein special circumstances shall justify the appropriate committee of the college concerned permitting registration at a later date.

[2] First hour classes begin at 8:00 in the Medical School and at 8:15 at University Farm.

[3] This date does not refer to correspondence study courses, which may be started at any time during the year.

[4] New students must pay fees on dates announced for registration.

1927			
January	3	Monday	Christmas vacation ends, winter quarter classes begin, 8:30[2] a.m.
January	29	Saturday	First semester extension classes close
January	31	Monday	Second semester extension classes begin
February	12	Saturday	Lincoln's Birthday; a holiday
February	17	Thursday	Charter Day Convocation Senate meeting, 4:30 p.m.
February	22	Tuesday	Washington's Birthday; a holiday
March	16-19		Final examination period
March	17	Thursday	Payment of fees closes for all students in residence winter quarter[1]
March	19	Saturday	Winter quarter ends, spring vacation begins, 5:20 p.m.

Spring Quarter

March	21-23		Entrance examinations
March	25-26		Registration days for new students in all colleges
March	28	Monday	Spring vacation ends, spring quarter classes begin, 8:30[2] a.m.
April	15	Friday	Good Friday; a holiday
May	12	Thursday	Cap and Gown Day Convocation
May	19	Thursday	Senate meeting, 4:30 p.m.
May	28	Saturday	Second semester extension classes close
May	30	Monday	Memorial Day; a holiday
June	8-11		Final examination period
June	11	Saturday	Spring quarter closes, 5:20 p.m.
June	12	Sunday	Baccalaureate service
June	13	Monday	Fifty-fifth annual commencement

Summer Session

June	17-18		Summer Session first term begins, registration and payment of fees
June	20	Monday	Classes begin, 8:00 a.m.
July	4	Monday	Independence Day; a holiday
July	30	Saturday	Registration and payment of fees for second term closes
August	1	Monday	Second term classes begin
September	3	Saturday	Second term Summer Session closes

[1] Registration subsequent to the date specified will necessitate the approval of the college concerned. See also penalty fees for late registration, page 50.

No student will be allowed to register in the University after one week from the beginning of the quarter excepting in unusual cases wherein special circumstances shall justify the appropriate committee of the college concerned permitting registration at a later date.

[2] First hour classes begin at 8:00 in the Medical School and at 8:15 at University Farm.

Program of Entrance Examinations 1925-26

Entrance examinations for admission to the various colleges of the University will be conducted for students whose credentials do not meet the requirements, according to the following schedule, in Room 12, Library Building, unless otherwise specified.

Candidates wishing to take any of these examinations should notify the examiner in writing not later than September 1, December 1, or March 1.

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

Fall Quarter

Thursday,	Sept. 16	9 a.m.	Business subjects, Elementary Algebra, Plane Geometry, Trigonometry
		2 p.m.	Manual subjects, Domestic Art and Science, Agriculture, Higher Algebra, Solid Geometry
Friday,	Sept. 17	9 a.m.	Astronomy, Botany, Geology, Chemistry, Physiography, Zoology, Physics, Physiology, General Science, Biology
		2 p.m.	American Government, History, Economics, Commercial Geography, History of Commerce, Economic History of England, Economic History of the United States, Sociology
Saturday,	Sept. 18	9 a.m.	English
		2 p.m.	German, Greek, French, Latin, Scandinavian, Spanish

Winter Quarter

Monday,	Dec. 27	9 a.m.	Business subjects, Elementary Algebra, Plane Geometry, Trigonometry
		2 p.m.	Manual subjects, Domestic Art and Science, Agriculture, Higher Algebra, Solid Geometry
Tuesday,	Dec. 28	9 a.m.	Astronomy, Botany, Geology, Chemistry, Physiography, Zoology, Physics, Physiology, General Science, Biology
		2 p.m.	American Government, History, Economics, Commercial Geography, History of Commerce, Economic History of England, Economic History of the United States, Sociology
Wednesday,	Dec. 29	9 a.m.	English
		2 p.m.	German, Greek, French, Latin, Scandinavian, Spanish

Spring Quarter

Monday,	Mar. 21	9 a.m.	Business subjects, Elementary Algebra, Plane Geometry, Trigonometry
		2 p.m.	Manual subjects, Domestic Art and Science, Agriculture, Higher Algebra, Solid Geometry
Tuesday,	Mar. 22	9 a.m.	Astronomy, Botany, Geology, Chemistry, Physiography, Zoology, Physics, Physiology, General Science, Biology
		2 p.m.	American Government, History, Economics, Commercial Geography, History of Commerce, Economic History of England, Economic History of the United States, Sociology
Wednesday,	Mar. 23	9 a.m.	English
		2 p.m.	German, Greek, French, Latin, Scandinavian, Spanish

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, including—
- THE ENGINEERING EXPERIMENT STATION

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 NORTH CENTRAL SCHOOL, GRAND RAPIDS
- 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 TREE STATION, OWATONNA
  - 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 NURSING

THE COLLEGE OF DENTISTRY, including—
- THE SCHOOL FOR DENTAL NURSES

THE SCHOOL OF MINES, including—
- MINNESOTA SCHOOL OF MINES EXPERIMENT STATION

THE COLLEGE OF PHARMACY

THE SCHOOL OF CHEMISTRY

THE COLLEGE OF EDUCATION, including—
- THE UNIVERSITY HIGH SCHOOL

THE GRADUATE SCHOOL

THE SCHOOL OF BUSINESS

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 - 1928
Lotus Delta Coffman, Minneapolis - - - - - - Ex Officio
The President of the University
The Hon. Theodore Christianson, Dawson - - - - - Ex Officio
The Governor of the State
The Hon. J. M. McConnell, St. Paul - - - - - - Ex Officio
The Commissioner of Education
The Hon. W. J. Mayo, Rochester - - - - - - - - 1931
The Hon. Bess M. Wilson, Redwood Falls - - - - - - 1931
The Hon. George H. Partridge, Minneapolis - - - - - - 1926
The Hon. John G. Williams, Duluth - - - - - - - 1927
The Hon. Alice Warren, Minneapolis - - - - - - - 1927
The Hon. Egil Boeckmann, St. Paul - - - - - - - 1927
The Hon. Julius A. Coller, Shakopee - - - - - - - 1928
The Hon. Archie D. Wilson, Guthrie - - - - - - - 1928
The Hon. J. E. G. Sundberg, Kennedy - - - - - - - 1929

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COURSES AND DEGREES

Brief summarized statements of the courses of study offered by the University of Minnesota together with the degrees to which each leads are listed below.

The University does not issue a complete catalog of courses in one volume but a full outline of each of these courses of study together with descriptions of the subject-matter, courses which they include, will be found in the announcement of the college or school in which the course of study is offered.

These announcements may be obtained by addressing The Registrar, University of Minnesota, Minneapolis, Minnesota.

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

General 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.

Course in Training for State and Federal Administration.—A five-year course leading to the degree of bachelor of arts at the end of the first four years. Students whose programs satisfy the requirements of the Graduate School may receive the degree of master of arts at the end of the fifth year.

Course in Training for Diplomatic and Consular Service.—A five-year course leading to the degree of bachelor of science at the end of the first four years. At the end of the fifth year students whose programs satisfy the requirements of the Graduate School may receive the degree of master of arts.

Course in Training for Hospital Library Service.—A five-year course including three years in this college, one year in an approved library school, and one year in special training in hospital library service.

Course in Training for Medical Technicians.—A four-year course including the two-year pre-medical course in this college and two years of work in the Medical School.

Course in Preventive Medicine and Public Health.—Students in this college may major in this field.

Course in Training for Social and Civic Work.—A five-year course, during the first four years of which 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 degree of bachelor of science is given at the end of four years, and either a special certificate or the degree of master of arts upon the completion of the fifth year.

Course in Military Science and Tactics.—The instruction offered in the Reserve Officers' Training Corps is open to students of this college.

Courses in Arts and Music.—A four-year course leading to the degree of bachelor of arts, in which the theoretical and practical work in music is combined with the study of 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.

A four-year course leading to the degree of bachelor of 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 seven-year course leading to the degrees of bachelor of arts and doctor of dental surgery.

Combined course in Arts and Nursing.—A five-year course leading to the degree of bachelor of science and a certificate in nursing. The first two years and a summer quarter are spent in the College of Science, Literature, and the Arts. The third and fourth years are spent in hospital work, and the fifth year in both hospital and class work.

Combined course in Arts and Architecture.—A six-year course in Arts and Architecture leading to the degree of bachelor of science at the end of four years, bachelor of science in architecture at the end of the fifth year, and master of science in architecture at the end of six years.

Combined course in Arts and Interior Decoration.—A four-year course leading to the degree of bachelor of science in interior decoration. The third and fourth years are spent in the College of Engineering and Architecture.

Preprofessional training.—In this college are given also the academic work required for admission to the Medical School, the Law School, the College of Dentistry, the School of Business, and the College of Education, and various non-professional subjects required in other schools and colleges of the University.

COLLEGE OF ENGINEERING AND ARCHITECTURE

The College of Engineering and Architecture offers four-year courses of study in Civil, Mechanical, Electrical, Architectural, and Agricultural Engineering, and Architecture. These courses lead to the degree of bachelor of science in civil, mechanical, electrical, architectural, or agricultural engineering, or in architecture. In some of the courses, optional groups of electives are arranged for the guidance of students who desire to devote special attention to certain fields of engineering.

The *Engineering Pre-business Course* requires the first two years of work in this college. This is followed by two years in the School of Business upon the completion of which the degree of bachelor of science in business is conferred.

The *four-year course in Interior Decoration,* of which the first two years are taken in the College of Science, Literature, and the Arts and

the last two years in the College of Engineering and Architecture, leads to the degree of bachelor of science in interior decoration.

This college also offers work in the Graduate School leading to the degree of master of science in the appropriate branch of engineering or in architecture or to the Doctor's degree.

The professional degree of civil, mechanical, electrical, or agricultural engineering will be conferred upon those who have received the degree of bachelor of science in civil, mechanical, electrical, or agricultural engineering, when they have completed the equivalent of one additional year's college work, four years of engineering experience in positions of responsibility, and have presented a satisfactory professional thesis.

Graduates of this college may be granted permission to pursue the year of graduate study in absentia under the direction of the faculty. It is recommended, however, that this year be spent in residence at this University and that the Master's degree be obtained in this manner. There are many advantages in taking this year immediately following graduation from the four-year course, thus making a five-year course leading to the Master's degree in the corresponding branch of engineering or in architecture. Then after four years of approved experience and the preparation of the professional thesis, the Engineer degree may be obtained. This procedure is especially recommended to those students whose undergraduate work is of high grade and who desire additional preparation for the higher positions which require strong character and leadership.

Candidates for the professional Engineer degrees register in the Graduate School.

COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

The College of Agriculture, Forestry, and Home Economics offers four-year courses in Agriculture, Forestry, and Home Economics, leading to the degree of bachelor of science.

The work in *Agriculture* includes general courses in agricultural education, agronomy, farm management, dairy husbandry, animal husbandry, and horticulture; also a course in extension work, and special courses in such sciences as agricultural biochemistry, agricultural economics, entomology, plant pathology, and soils. An Engineering course leading to the degree of bachelor of science in agricultural engineering is now offered in co-operation with the College of Engineering and Architecture.

In *Forestry* are included courses in technical forestry, commercial lumbering, and wood pulp and distillation products. A part of the work is given at the Cloquet Forest Experiment Station and at Itasca State Park, where well-equipped demonstration forests are available for use as laboratories.

The work in *Home Economics* includes a general course, a teachers' course in the general field of home economics; special teachers' courses in textiles and clothing, in foods and home management, and in related arts; a course for dietitians, a course for extension workers, and a course for institutional managers.

Graduate work is offered in special lines of agriculture, forestry, and home economics. For the most part the special problems are correlated with the investigational work of the agricultural experiment station and its branches.

Schools of Agriculture offer three-year courses, giving special training in farm life and home economics, adapted especially to the needs and opportunities of farm boys and farm girls. The Central School is at University Farm, St. Paul; the Northwest School, at Crookston; the West Central School, at Morris; and the North Central School, at Grand Rapids.

Short courses offer opportunity for the study of a great variety of subjects related to agriculture, to industries based on agriculture, to home economics, and to rural life.

Farmers and Home Makers' Week, in January, offers instruction in regular classes in agriculture and home economics and gives opportunity for conferences of many important agricultural organizations of the state, which hold their annual meetings at University Farm in the course of the week.

Other short courses of the year are an Advanced Creamery Operators' Course of two weeks and an Ice Cream Makers' Course of one week, in November and December; a Creamery Operators' Course of six weeks in January and February; a Boys' and Girls' Short Course of one week in April; a Horticultural Short Course of three weeks in February; a Beekeepers' Course of four days in May; an Editors' Short Course of two days in May; a Short Course in Veterinary Medicine in July; and a Short Course in Home Nursing in the fall and early winter.

The Experiment Station provides facilities for investigation of the numerous and varied problems involved in the agricultural industry. The results of these investigations contribute largely to the subject-matter included in the courses of instruction given in the College of Agriculture, Forestry, and Home Economics, in the School of Agriculture, and to that used by the extension specialists in their work among farmers. The experiment station organization also offers some research advantages to students taking advanced work in the Graduate School. The main or Central Station is located at the University Farm, St. Paul, with branch stations at Crookston, Morris, Grand Rapids, Waseca, and Duluth, and forestry experiment stations at Cloquet and Itasca.

The Agricultural Extension Service of the University Department of Agriculture carries to the farmers and homemakers of the state the information made available by the research divisions of the University and the United States Department of Agriculture, and the experience of successful farm practice. This is done through county extension workers, and organized local rural leadership, demonstrations, lectures, institutes, contests, bulletins, farm papers, correspondence, and personal visits.

LAW SCHOOL

The Law School offers a three-year course leading to the degree of bachelor of laws. The so-called "case system" method of teaching law, approved by the leading law schools of the country, is employed. The

school unites with the College of Science, Literature, and the Arts in offering a combined six-year course in Arts and Law, leading to the degrees of bachelor of arts and bachelor of laws, in which the first year work in law is counted as the equivalent of a year's work toward the academic degree.

MEDICAL SCHOOL

The Medical School offers a five-year course, leading to the degree of doctor of medicine. This course comprises two years in the scientific or pre-clinical department of the school, two years in its practical or clinical departments, and one year in a hospital interneship or in advanced laboratory study or research. All students are required to secure the degree of bachelor of science or of bachelor of arts at least four quarters before receiving the degree of doctor of medicine. To this end 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, consisting of (a) two years of work in the College of Science, Literature, and the Arts, including certain required subjects (see pages 31-32), (b) four years in the Medical School, and (c) one year of interneship or advanced scientific work.

2. A combined course, leading to the degrees of bachelor of arts and doctor of medicine, consisting of (a) three years of properly selected work in the College of Science, Literature, and the Arts, including the required subjects noted, and (b) four years in the Medical School and interneship.

In both cases the degree of bachelor of medicine is granted at the end of four years' acceptable work in the Medical School and before the one year of required interneship.

The degree of bachelor of arts or bachelor of science from other recognized universities or colleges will be accepted toward the degree of doctor of medicine.

Graduate and research work is offered to qualified students. (See page 21.)

The School of Nursing is conducted in connection with the Medical School. It makes use of the facilities of the University Hospital, the Minneapolis General Hospital, the Miller Hospital, St. Paul, and the Northern Pacific Hospital, St. Paul. It offers a three-year course leading to the degree of graduate in nursing. A combined five-year course in Arts and Nursing is offered by the College of Science, Literature, and the Arts and the School of Nursing, leading to the degrees of bachelor of science and graduate in nursing. The first two years and a summer quarter are spent in the Arts College; the third and fourth years in hospital work, and the fifth year in both hospital and class work.

A course in Public Health Nursing, covering two quarters, is conducted in the Medical School under the Department of Preventive Medicine and Public Health with the assistance of the departments of Education and Psychology, and a number of social service organizations. These, together

with the Hennepin County Model Practice Field, provide ample opportunities for field work.

Courses for medical technicians are offered by the Medical School with the co-operation of the College of Science, Literature, and the Arts.

The Short Course in Embalming, offered by the General Extension Division with the co-operation of the Medical School, the School of Chemistry, and the State Board of Health, is a three-month course of study, given annually in the winter quarter. On the successful completion of the work a certificate is granted which is accepted by the State Board of Health in lieu of examination for an embalmer's license.

Short courses for physicians are offered from time to time by the Extension Division with the co-operation of the Medical School.

COLLEGE OF DENTISTRY

The College of Dentistry offers a four-year course of study leading to the degree of doctor of dental surgery. This course requires as a prerequisite the completion of one full year of pre-dental work in the College of Science, Literature, and the Arts. It unites with the College of Science, Literature, and the Arts in offering a seven-year course consisting of three years in Arts and four years in Dentistry leading to the degrees of bachelor of arts and doctor of dental surgery, which are conferred at the close of the final year in the College of Dentistry. Professional work in the College of Dentistry is regarded as the counterpart of the major sequence which is required of those who complete the course for the bachelor of arts degree in the College of Science, Literature, and the Arts. The work of the third year is to be elected from courses offered in the Arts College subject to the approval of the dean of the College of Dentistry and the dean of the College of Science, Literature, and the Arts.

The School for Dental Nurses.—This course consists of two years' work in the College of Dentistry and other University departments, leading to the degree of graduate dental nurse.

Graduate work is open in certain fields of dentistry to students having a baccalaureate or dental degree. (See page 21.)

Extension courses.—Courses in Crown and Bridge Work, Oral Surgery, Orthodontia, and Prosthetic Dentistry will be conducted by the General Extension Division, for the benefit of dental practitioners. A detailed description of these courses with the dates of opening and closing may be obtained by addressing the General Extension Division.

SCHOOL OF MINES

The School of Mines offers three regular four-year courses, namely, Mining Engineering, Mining Engineering (specializing in geology), and Metallurgy, leading to the degrees of engineer of mines, engineer of mines (in geology), and metallurgical engineer, respectively. They are designed to prepare 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 is a regular part of the curriculum and is required of all students who are candidates for degrees.

COLLEGE OF PHARMACY

The College of Pharmacy offers the following courses: A regular three-year course, leading to the degree of pharmaceutical chemist; a four-year course, leading to the degree of bachelor of science in pharmacy, which includes in addition to the regular three-year course the equivalent of one year including certain subjects in the College of Science, Literature, and the Arts; and two graduate courses, leading respectively to the degrees of master of science in pharmacy and doctor of science in pharmacy, which are open to those who have the degree of bachelor of science in pharmacy, and who have shown exceptional scholarship and ability.

SCHOOL OF CHEMISTRY

The School of Chemistry offers two courses. The four-year course in Chemistry, leading to the degree of bachelor of science in chemistry is designed for those who wish to become professional chemists or teachers of chemistry.

The course in Chemical Engineering leads to the degree of bachelor of science in chemical engineering at the end of four years and to the degree of master of science in chemical engineering at the end of the fifth year, which is taken in the Graduate School. It aims to give the student a broad foundation in chemistry, and allied sciences and professional preparation in chemical engineering.

The professional degree of chemical engineer will be conferred upon those who have received the degree of bachelor of science in chemical engineering, or its equivalent, when they have completed an additional year's work in the Graduate School, have had four years of practical experience in positions of responsibility in chemical engineering after receiving their Bachelor's degree, and have presented a satisfactory thesis based upon their professional work. The Master's degree in chemical engineering at this University will be accepted in lieu of the additional year of college work required for the professional degree. Graduates of this school may be permitted to do the graduate study in absentia under the direction of the faculty. It is recommended, however, that this work be done in residence and that the Master's degree be obtained for the year's study. Then, at such time as the required four years of experience and the final thesis have been completed, the Chemical Engineer's degree may be obtained.

COLLEGE OF EDUCATION

The College of Education offers the professional courses for the training of superintendents, principals, supervisors, teachers of academic high school subjects, and teachers of special subjects in the elementary and high schools. Special two-, four-, and five-year curricula leading to the University teacher's certificate are offered in the following subjects: academic high school subjects, administration and supervision, agricultural education, art education, high school normal training, home economics education, natural science, physical education for men, physical education for women, public school music, social studies, teaching of subnormal children, trade and industrial education, and training for school psychologist.

The University teacher's 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 commissioner of education and the president of the University.

GRADUATE SCHOOL

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, namely, master of arts, master of science, electrical engineer, mechanical engineer, civil engineer, chemical engineer, agricultural engineer, and doctor of philosophy. The privileges of this school are in general open to all who have received Bachelor's 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 (see special bulletin). The degree of bachelor of science (or equivalent) and doctor of medicine and one year of interne service in an acceptable hospital are prerequisites for admission to the clinical departments. Properly qualified college graduates may be admitted to the medical laboratory departments (Anatomy, Physiology, Bacteriology, Pharmacology, and Pathology) without the medical degree and interneship. A number of fellowships and scholarships are provided for selected students undertaking graduate courses in chosen specialties in medicine (see page 57). These courses cover a period of three years and lead to the degree of master of science or of doctor of philosophy in the various fields.

Graduate work in certain problems related to dentistry is offered to qualified students in the fundamental or laboratory departments mentioned above. Clinical material and opportunities to supplement this research are available from the Dental Clinic, the Medical Dispensary, and the University hospitals.

SCHOOL OF BUSINESS

The School of Business aims to give thoro and adequate training to prospective business executives, and to prepare students to analyze business data accurately and to make practical application of the principles involved. The school offers two full years of study, beginning with the junior year, leading to the degree of bachelor of science in business. The fields include a general course in business, and special courses in accounting, agricultural business, banking, merchandising, foreign trade, employment management, industrial administration, and secretarial work.

UNIVERSITY SUMMER SESSION

The University Summer Session is organized for two six weeks' terms from June to September under the authority of the Board of Regents as a regular part of the University. Courses in the colleges of Science, Literature, and the Arts, Agriculture, Forestry, and Home Economics, Education,

Engineering and Architecture, Chemistry, Medicine, Dentistry, Law, and Business, with special attention given to graduate work, are offered. These courses are in the main, regular courses, the same as are offered during the academic year, but wherever necessary, are adapted to meet the needs of students in the Summer Session.

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 is organized in two divisions, each under its own director, the General Extension Division and the Agricultural Extension Division.

The work of the Agricultural Extension Division is indicated on page 17. The General Extension Division conducts extension classes and correspondence courses in collegiate, business, and engineering subjects; provides communities with faculty lectures and lyceum courses of popular lectures, concerts, and entertainments; lends lantern slides and films for visual instruction; maintains a Municipal Reference Bureau; holds annual short courses in merchandising, medicine, dentistry, embalming, banking, citizenship, and social service; offers guidance for the development of community organizations; and gives advice to schools and to other organizations on the selection and production of plays. Bulletins of extension classes and of correspondence and lecture courses may be had upon request. Address the General Extension Division.

DEGREES

The Board of Regents will confer the degree appropriate to the course pursued under the following conditions:

1. *Curriculum requirements.*—Certification by the registrar of the completion of all requirements of the course of study as outlined in the college announcement, or its equivalent as determined by the faculty of the college offering the course.

2. *Recommendation of the faculty.*

3. *Residence requirement.*—Advanced standing will be allowed on certification from other recognized institutions and may be obtained also by examination held before a committee of the faculty appointed for that purpose provided that the following minimum requirement for residence at the University of Minnesota has been met.

The student must earn at least one year's credit in residence in this University. If the term of residence is only one year, that year must be the senior year; and in any case he must spend two quarters of the senior year in residence. In addition, special residence requirements must be met in several of the schools and colleges. See individual announcements.

4. *Attendance at commencement.*—All candidates for degrees are required to be present at commencement exercises provided that the candi-

date's work is completed at the end of a quarter when such exercises are held.

A student who fails to attend shall not receive his diploma until the expiration of one year, unless in the meantime he attends commencement exercises or unless excused from such attendance by the dean of the college and the president of the University.

The University of Minnesota does not confer honorary degrees.

THE UNIVERSITY LIBRARY

The University Library comprises all the collections of books belonging to the institution and contains about 465,000 volumes.

The library is now occupying its new building. This is one of the best university library buildings in the country and makes it possible to give much better facilities for reading and study than have been possible in the past. It includes not only the present general collection but several of the important departmental collections formerly housed outside of the General Library.

In addition to the General Library, branches are maintained in several of the colleges and departments.

A catalog of almost the entire collection is maintained in the General Library. There are, as well, special catalogs of the libraries of the colleges of Agriculture, Forestry, and Home Economics, Education, Engineering and Architecture, Chemistry, Law, Medicine, and Mines.

The purpose of the University Library is twofold: (1) to supply the books and references used in connection with the courses of instruction, for graduate and faculty research, and for outside cultural reading; and (2) to help students to use them with a minimum of time and effort and a maximum of profit. A course in the use of books and libraries, open to freshmen and sophomores, and a bibliographical seminar for seniors and graduates are conducted for this purpose.

The *Library Handbook,* copies of which may be had gratis upon application at the library, contains information essential to the proper use of the library. It should be read carefully by every student.

Registration automatically entitles students to the privileges of the library.

The reference librarian and assistants are at all times ready to aid students in familiarizing themselves with the library and in directing them in the use of the various catalogs and indexes.

THE STUDENTS' HEALTH SERVICE

Through the Students' Health Service the University makes available to any student such medical attention or physical examination as he may need. Ordinary service is provided free of charge but for services which are specialized and individual in character, such as operations, board and laundry, drugs, X-rays, out-patient calls, dentistry, etc., special fees, calculated on a cost basis, are charged. No student, however, will be denied because of inability to pay these fees.

On the main campus the offices of the Health Service and the Students' Hospital and Dispensary are located in Pillsbury Hall first floor. On the University Farm campus the hospital and dispensary are located in the Health Service Building. The services of the hospital and dispensary are available at all hours of the day and night. Physicians of the Health Service are in attendance daily. The telephone call for the Health Service on the main campus is University of Minnesota (Dinsmore 2760), Station 71; for the one on the University Farm campus, Nestor 2881.

The facilities of the dispensary, medical and dental, are such that two hundred fifty students can be given attention in a day. The normal capacity of the two hospitals is sixty beds. In emergencies, this capacity can be increased. Ample provisions are made for the isolation of communicable diseases.

The Health Service has been established for the purpose of safeguarding the health of students. Its aims are (1) to help each student entering the University of Minnesota to possess a healthy, vigorous, active, and harmoniously developed body, thereby contributing much to his success while in college and in later life; (2) to reduce to the very minimum the prodigious academic and economic loss due to indisposition and illness of students. Positive health is its goal.

There are four main lines to the activities of the University Health Service: (1) personal attention, (2) dental hygiene, (3) sanitation, and (4) education.

1. *Personal division.*—This division is concerned with the physical examinations of students. A complete record of the physical condition of each student is made and filed. From this record can be determined, in a large measure, what procedure is essential to keep the student in the best physical condition during his academic life. The following are some of the phases of the work in the personal division:

a. Provisions for maintaining the health of normal, physically sound students; co-operation with the Department of Physical Education regarding physical exercise; education along lines of right living; safeguarding of environment.

b. Protection of the physically sound students from communicable diseases that are continually creeping into the University; early detection and isolation of all cases of communicable diseases—tuberculosis, diphtheria, scarlet fever, measles, typhoid fever, smallpox, mumps, etc.

c. Provision for the care and treatment of such cases of communicable diseases; isolation hospital.

d. Treatment and professional care of all students who are ill or in need of medical advice or treatment. For extended care by the Health Service it is necessary that the student enter the students' hospital. To this hospital any student may be admitted upon the recommendation of a staff physician. To all patients in the hospital the staff will furnish medical and nursing services.

e. Reconstruction and reclamation; corrections of defects, advice, and treatment of all subnormals.

2. *Dental hygiene.*—As a part of his entrance physical examination each student is given a complete dental examination by a member of the

dental staff, and advised regarding the condition of his teeth. During the year, students at any time may receive dental consultation and, if they so desire, they may obtain expert dental treatment and care on a cost basis.

3. *Division of sanitation.*—The student's environment should be made as hygienic as possible. Hence, this division concerns itself with the sanitary conditions both on and off the campus. Rooming and boarding houses are both inspected and regulated.

4. *Education.*—Every student in the University is made familiar with the fundamentals of both personal and public hygiene. Through personal conferences on this subject, daily bulletins, exhibits, public lectures, etc., education in hygiene and right living is conducted.

MILITARY SCIENCE AND TACTICS

REQUIRED WORK

All physically fit male students are required to take instruction in military science for three hours each week during the first two undergraduate years of their course. Previous instruction in this subject at other institutions under an officer of the regular army detailed as professor of military science and tactics exempts the student from so much of this work as the length of his prior training justifies in each case. All students taking this course are given the instruction prescribed for the Basic Course, Senior Division, Reserve Officers' Training Corps. No credits are allowed for this work.

ELECTIVE WORK

Any student legally eligible for enrolment who has completed the Basic Course, Senior Division, R.O.T.C., or other military work announced as equivalent thereto, may register for and be enrolled in the Advanced Course, Senior Division, R.O.T.C., provided the professor of military science and tactics and the president of the University, respectively, recommend and approve such enrolment in each case.

Students enrolled in the Advanced Course receive from the government a fixed sum a day as commutation of rations while pursuing this course; they are required to sign an agreement to continue in the course during their time at the University (not to exceed two years), and to attend such summer training camps as are prescribed by the secretary of war, all expense incident to training camp attendance being borne by the government.

Students who pass successfully the Advanced Course are, upon the recommendation of the president of the University and the professor of military science and tactics, eligible for appointment as reserve officers of the army in the lowest grade of the branch of the service of which they are members.

The Advanced Course embraces five departments: infantry, coast (heavy) artillery, signal corps, medical and dental corps, in any one of which the student may be enrolled.

Three credits per quarter will be allowed for work in the advanced R.O.T.C. courses with a maximum of 18 quarter credits for the two-year course. The application of these credits toward any degree offered by the University is subject to determination by the college concerned.

ADMISSION

GENERAL REQUIREMENTS

Admission to the colleges or schools of the University which accept students directly from the high school is either by examination or certificate. The candidate who enters on the latter plan must present a certificate of graduation from an accredited high school or preparatory school and 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 owing to the fact that they were not offered by the high school the examiner may 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.

Candidates who do not hold a diploma from an approved preparatory school must enter by examination in all the fifteen units required, regardless of the fact that some of these may have been completed in such a school.

All colleges will admit freshman students at the opening of the fall quarter. In addition, freshman students will be admitted at the opening of the winter and spring quarters in the colleges of Science, Literature, and the Arts; Agriculture, Forestry, and Home Economics; and Engineering and Architecture, and the School of Chemistry with certain restrictions (see pages 29 and 36); in the School of Nursing they will be admitted at the opening of the spring quarter. All other students admitted at this time must present credentials of advanced standing from other colleges showing their qualification to continue the work of the winter or spring quarter.

Under List of Entrance Subjects (pages 27-28) 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 28 to 37.

ADMISSION BY EXAMINATION

Entrance examinations are offered at the University during the week preceding the opening of classes in the fall, winter, and spring quarters. 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 the Individual Colleges, pages 28 to 37.) Certificates from the College Entrance Examination Board, from the Minnesota State 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 examiner in writing not later than September 1, December 1, or March 1, respectively. See Schedule of Examinations, pages 10-11.

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 below.)

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 teachers colleges and normal schools or teachers colleges 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 on page 26.

For a list of accredited schools in Minnesota, see pages 39-41.

REGISTRATION

The applicant for admission should request the principal or superintendent to forward to the examiner at 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 received. 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 examiner will notify the applicant with regard to his admission and the registrar will send directions for registration.

LIST OF ENTRANCE SUBJECTS

The term *unit* means not less than five recitations of forty minutes each 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, one, two, three, or four units

Greek—

Grammar, one unit

Anabasis, four books, one unit

Spanish—

Grammar, one unit

Literature, one, two, or three units

German—

Grammar, one unit

Literature, one, two, or three units

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—
- European, one or two units
- English, one-half or one unit
- Senior American, one-half or one 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
- Sociology, one-half unit

Group D: Mathematics
- Elementary algebra, one unit
- Plane geometry, one unit
- Unified mathematics, two units
- Higher algebra, one-half unit
- Solid geometry, one-half unit
- Trigonometry, one-half unit

Group E: Natural Sciences
- Physics, one unit
- Botany, one-half or one unit
- Chemistry, one unit
- Zoology, one-half or one unit
- Physiology, one-half unit
- Astronomy, one-half unit
- Geology, one-half unit
- Physiography, one-half unit
- General science, one unit
- Biology, one 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 toward graduation.

REQUIREMENTS OF THE INDIVIDUAL COLLEGES

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

1. *Regular Bachelor of Arts Course*[1]

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

b. Mathematics; elementary algebra, one unit; plane geometry, one unit.

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

2. *Unclassed Students*

Unclassed students are (1) persons of mature years engaged in teaching or other occupations, and registered 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 Student's Work Committee and upon the presentation of satisfactory reasons for not taking the regular course will an applicant be admitted

[1] All courses described on pages 14 to 15.

as an unclassed 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 quarter.

COLLEGE OF ENGINEERING AND ARCHITECTURE

Courses in Civil, Electrical, Mechanical, Architectural, and Agricultural Engineering, Architecture, and Engineering Pre-business.[1]

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

2. Mathematics, elementary algebra, one unit; plane geometry, one unit; higher algebra, one-half unit, and solid geometry, one-half unit (see note).

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

NOTE.—Students desiring to enter this college who have not the specified credits in *higher algebra* and *solid geometry*, but who present the full fifteen acceptable units, will be admitted subject to their taking the necessary course or courses for the satisfaction of these requirements during their first quarter, without credit. They must expect, however, to attend the University Summer Session in the following summer in order to obtain the regular third quarter's work in mathematics and drawing.

Owing to the fact that many high school students coming to this college have had no algebra since their first year in high school, such students are strongly advised to attend the University Summer Session for six weeks beginning about June 15 in order to study higher algebra (as well as solid geometry, if they have not had this subject). In addition to completing the requirements for admission to this college, they thus obtain a valuable introduction to the University and its methods which saves time and trouble for them when they enter in the fall. Whenever possible, students who intend to enter this college should take solid geometry and higher algebra in their last year in the high school. Students who have not had these subjects when they graduate from high school and who cannot attend the Summer Session are advised to study higher algebra by correspondence through the University Extension Division during the summer preceding their admission to the University. This course also affords a good review for students who have had higher algebra more than one year before coming to the University.

All freshmen are given about fifteen lessons in higher algebra at the beginning of the year, followed by an examination. Those who pass proceed with college algebra; those who fail take higher algebra for the remainder of the quarter and without credit. They should continue in the Summer Session to complete the year's work.

For all students who intend to enter the College of Engineering and Architecture, it is very desirable that physics and chemistry be included in the high school course. Students entering the course in Architecture without chemistry must take this subject in the University.

Students who desire to enter the freshman year at the beginning of the winter quarter should have had chemistry in high school. By attending the following Summer Session it is possible for them to complete most of the work of the freshman year. Admission at the opening of the spring quarter is not recommended unless the student has advanced credits.

[1] Students in Interior Decoration spend the first two years in the College of Science, Literature, and the Arts and must meet the admission requirements for that college.

COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

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

1. English, four units; or three units of English accompanied by four units of one foreign language, or three units of English accompanied by 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.

Prospective students are urged to include sciences and especially physics as a part of their high school course.

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.

Schools of Agriculture

The 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 ninety quarter [sixty semester] credits) of collegiate work in Science, Literature, and the Arts with an average of one honor point for each credit at this or some other university or college of equal rank. In explanation of this requirement it may be noted that on the basis of A, B, C, and D as passing grades, A gives three honor points for each credit; B, two points; C, one point; and D, no point. It is impossible, therefore, for applicants with grades of only C and D to secure admission. (See Admission to the College of Science, Literature, and the Arts, page 28.) Such candidates may be admitted upon presenting their credentials to the examiner. The faculty of the Law School urges candidates to secure a degree, or to take at least three years of college work before entering the Law School. (See page 17.)

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 faculty of the Law School recommends that prospective law students devote the major portion of their time while in high school to the study of the following subjects: English, Latin, history, science, political science, and economics.

Special Students

Applicants who are twenty-three 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, at the discretion of the faculty, be admitted to the Law School as special students. Such special students are not candidates for a degree.

MEDICAL SCHOOL

On account of the limited capacity of the school, not more than one hundred freshman medical students will be accepted. Applicants will be selected on the basis of scholarship, character, and general fitness. The entire number will be chosen early in July. All accepted applicants will receive a bill for a ten-dollar preliminary fee. This must be paid within ten days, in order to hold a place in the limited registration. The above fee is not returnable should the student fail to enter. Other qualifications being equal, residents of Minnesota will be given preference when the selection of candidates is made.

Applicants for admission must present records covering two years of academic collegiate work[1] which years are defined as including not less than ninety quarter (sixty semester) credits carrying at least an equal number of honor points. In explanation of this requirement it may be noted that on the basis of A, B, C, and D as passing grades, A gives three honor points for each credit; B, two points; C, one point; and D, no point. Therefore, a student's marks must average C or higher in order to admit to the Medical School. Those having a high ratio of honor points to total credits will be given preference.

An applicant must also average C or better, as determined by the honor point method, on his combined records in the required subjects, i.e., biology, chemistry, physics, and rhetoric.

The pre-medical academic college credits must include the following:

1. Rhetoric, nine quarter (six semester) credits. At Minnesota this requirement is met by English 4-5-6 or by Rhetoric A-B-C (15 credits).

2. Chemistry, twenty quarter (thirteen semester) credits, including general chemistry, qualitative analysis, quantitative analysis, and organic chemistry with laboratory work. At Minnesota, Chemistry 4-5 (or 1-2-3), 11, 27, and 31-32 are necessary. Students are advised also to take chemistry in high school.[2]

3. Physics: twelve quarter (eight semester) credits, covering mechanics, sound, heat, light, electricity and magnetism, with the proper laboratory work. At Minnesota, Courses 1 and 2, 21 and 22, 31 and 32, 41 and 42 (a total of sixteen credits) meet the requirement. Students are advised to complete them all but, if desired, Course 35 may be substituted for 31 and 32. See bulletin of the College of Science, Literature, and the Arts for description of these courses and statement of prerequisites.

[1] For admission to the pre-medical college course see admission requirements of the College of Science, Literature, and the Arts.

[2] While the minimum requirement in chemistry is defined as 18 credits, the arrangement of courses in many institutions is such that students are obliged to take more. An excellent preparation in chemistry is essential in modern medicine.

4. Zoology, twelve quarter (eight semester) credits, including proper laboratory work. At Minnesota, Animal Biology 5-6-7 meets this requirement.

5. Foreign language, sufficient high school or college training to insure a reading knowledge of French or German medical literature. For French this requirement is fulfilled (a) by passing any two of Courses 8, 9, 10 (Scientific French) at Minnesota or by presenting acceptable credits covering similar work done elsewhere; (b) by passing an examination; the usual minimum preparation demanded for admission to this examination is fifteen credits of French. For German the language requirement is fulfilled (a) by passing Course 31-32 (Medical German) at Minnesota or by presenting acceptable credits covering similar work done elsewhere; (b) by passing an examination in Scientific German; the usual minimum preparation for admission to this examination is two years of German.

6. Pre-medical students are advised to secure preparation in some or all of the following subjects: Latin (high school or college), mathematics, including calculus, psychology, sociology, drawing, and comparative anatomy.

Applicants whose pre-medical academic work has been taken elsewhere than at the University of Minnesota must present to the examiner certified credentials of both high school and college work, showing subjects, credits, and grades.

The degree of bachelor or doctor of medicine is conferred only upon those who have received the degree of bachelor of arts or bachelor of science from this or some other recognized university or college or who have done work equivalent to that required for such degree in this University. Combined courses offered by the College of Science, Literature, and the Arts and the Medical School lead to these degrees (see page 15).

Special Students

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

Unclassed Students

By unclassed students is meant (a) those undergraduate medical students who may be candidates for the bachelor of medicine or doctor of medicine degrees but who on account of deficiencies cannot receive legal time credit for attendance, and (b) those undergraduates who are not candidates for a degree of bachelor of medicine or doctor of medicine but who are permitted to register for courses in the Medical School.

Physical Condition

Physical examinations at specified intervals are required of all medical students, together with such tests and vaccinations as will protect them from avoidable communicable diseases.

School of Nursing

Graduation from an approved high school or other preparatory school on the accredited list is a prerequisite for admission. Preference will be given to women of superior preliminary training. Applicants must be not less than eighteen, 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 pass a satisfactory general physical examination by the school physician.

Women over twenty-one years old may be admitted as unclassed students. Regular classification will be accorded such students at the end of the preliminary period of six months provided their work has been satisfactory.

Upon receipt of credentials at the examiner'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 continue the hospital service at the close of that time.

Students in the School of Nursing receive maintenance for services rendered in connection with their training. Students who voluntarily withdraw at the end of the preliminary quarter are expected to refund the cost of board, lodging, and laundry for that quarter.

A course in Public Health Nursing is offered to graduate nurses or to members of senior classes of recognized schools of nursing who are recommended by their teaching staffs.

COLLEGE OF DENTISTRY

On account of the limited capacity of the college not more than ninety freshmen can be admitted. Application for admission should be in the examiner's office not later than July 1. Residents of Minnesota will be given prior consideration for vacancies existing at the date of their application. All accepted applicants will receive a bill for a ten-dollar preliminary fee. This must be paid within ten days in order to hold a place in the limited registration. The above fee is not returnable should the student fail to enter.

Applicants for admission must present one year of collegiate work (forty-five quarter, or thirty semester, credits) in science, literature, and the arts, completed at this or some other recognized college or university. High school physics or its equivalent must be completed by candidates before admission to the dental course proper.

The minimum requirements for admission include nine quarter (six semester) credits each in English (rhetoric), biology, and chemistry (including general and qualitative); six quarter (four semester) credits in either shop practice or technical drawing; and enough additional credits to

make a total of at least forty-five quarter (thirty semester) credits. Electives may be selected from any of the above subjects or in the following: modern language, mathematics, history, or physics.

At Minnesota the pre-dental requirements are met by the following one-year course of study provided high school physics is presented for admission.

1. English A-B-C, fifteen quarter credits.
2. Animal Biology 5-6-7, twelve quarter credits.
3. Chemistry 4-5, 11, twelve quarter credits.
4. Mechanical Engineering 11-12-13, or Drawing and Descriptive Geometry 41-42-43, six quarter credits.

Total, forty-five quarter credits.

In case students enter the pre-dental year without high school physics this additional requirement may be met by pursuing a course in physics in college, during the Summer Session, or through work offered by the Extension Division.

Students who can spend two years in the pre-dental work are advised to take the two-year pre-medical course.

Those whose pre-dental work has been taken elsewhere than at the University of Minnesota must present to the examiner certified credentials of both preparatory and college work showing the subjects completed, credits, and grades.

Students preparing for admission to the College of Dentistry are advised to follow this arrangement as closely as possible.

School for Dental Nurses

The requirement for admission to the School for Dental Nurses is graduation from an accredited high school. Applicants must not be less than 18 nor more than 35 years of age. They must be able to pass a satisfactory general physical examination by the school physician.

All accepted applicants must pay a preliminary fee within ten days of notification of acceptance, in order to hold a place in the class. This fee is not returnable in case the student fails to enter. The classes are limited to twenty-five students each.

SCHOOL OF MINES

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.

It is recommended that students who desire to enter this school take higher algebra and solid geometry in high school.

Freshmen will be divided into two classes, as follows:

A. Those entering with credits in higher algebra and solid geometry.

B. Those entering without credits in higher algebra and solid geometry. Students in Class B will carry a special course in mathematics during their freshman year.

COLLEGE OF PHARMACY

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

2. Mathematics: elementary algebra, one unit; plane geometry, one unit.

3. Latin, one unit.

4. Physics; elementary, one unit.

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

Prospective students in Pharmacy are urged to secure high school preparation in each of chemistry, botany, and physiology.

Owing to the limited capacity of this college not more than sixty freshmen can be admitted. Applications for admission should be in the examiner's office not later than July 1; by June 1, if possible.

SCHOOL OF CHEMISTRY

Courses in Chemistry and Chemical Engineering

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

2. Mathematics: elementary algebra, one unit; plane geometry, one unit; higher algebra, one-half unit, and solid geometry, one-half unit. (See Note 1.)

3. Chemistry, one unit. (See Note 2.)

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

NOTE 1.—Students desiring to enter the School of Chemistry who have not the specified credits in *higher algebra* and *solid geometry,* but who present the full fifteen acceptable units, will be admitted subject to their taking the necessary course or courses for the satisfaction of these requirements during the first quarter and without credit. They must expect, however, to attend the University Summer Session in the following summer in order to obtain the regular third quarter's work in mathematics.

Owing to the fact that many high school students coming to this college have had no algebra since their first year in high school, such students are strongly advised to attend the University Summer Session for six weeks beginning about June 15 in order to study higher algebra (as well as solid geometry if they have not had this subject). In addition to completing the requirements for admission to this college, they thus obtain a valuable introduction to the University and its methods which saves time and inconvenience for them when they enter in the fall. Whenever possible, students who intend to enter this college should take solid geometry and higher algebra in their last year in the high school. Students who have not had these subjects when they graduate from high school and who cannot attend the Summer Session are advised to study higher algebra by correspondence through the University Extension Division during the summer preceding their admission to the University. This course also affords a good review for students whose higher algebra was taken more than one year before coming to the University.

All freshmen are given about fifteen lessons in higher algebra at the beginning of the year, followed by an examination. Those who pass proceed with college algebra; those who fail take higher algebra for the remainder of the quarter and without credit. They should continue in the Summer Session to complete the year's work.

NOTE 2.—Students will be admitted without high school chemistry if they present the full fifteen acceptable units, but it will be necessary that they take a quarter of freshman chemistry, five credits, in addition to the regular course. This will usually require attendance at the following Summer Session.

It is very desirable that physics and German be included in the high school course.

Students may enter this school at the opening of the winter quarter if they have had chemistry in the high school. By attending the following Summer Session it is possible for them to complete the work of the freshman year. Admission at the opening of the spring quarter is not recommended unless the student has advanced credits.

COLLEGE OF EDUCATION

Applicants for admission to this college must present credentials showing:

1. Completion of a regular four-year high school course.

2. For all courses of study excepting the special curricula to which freshmen are admitted (see page 20) the completion of two full years of college work (not less than ninety quarter credits carrying not less than ninety quarter honor points) in science, literature, and the arts at this or some other college or university of equal rank is required.

3. For all special curricula to which freshmen are admitted (see page 20) the certificate of high school graduation must show the completion of the following:

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

b. Mathematics: elementary algebra, one unit; plane geometry, one unit.

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

In explanation of the honor point requirement in (2) above it may be noted that on the basis of A, B, C, and D as passing grades, A gives three honor points for each credit; B, two points; C, one point; and D, no point. It is impossible, therefore, for applicants with grades of only C and D to secure admission.

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 sixty-three quarter credits and are admitted as unclassed students pending the completion of twenty-seven additional credits.

Graduates of the three-year course in the state teachers colleges of Minnesota may receive not more than one hundred thirteen quarter credits; credits earned in such three-year normal course shall be applied, in case they are deemed of equivalent merit, in the College of Education, to courses leading to certificates for supervisors in elementary grades, as principals in state graded schools, as teachers in junior high schools, or in normal school departments in high schools; students coming from such three-year course shall not receive certificates in high school subjects from the University without completing the prescribed courses of the University for such certificates.

SCHOOL OF BUSINESS

Candidates for admission to the degree courses offered by this school must have completed the equivalent of the two-year pre-business course given in the College of Science, Literature, and the Arts, the College of Agriculture, or the College of Engineering of this University. (See Admission to the College of Science, Literature, and the Arts, page 28; the College of Agriculture, page 30; the College of Engineering, page 29.)

Permission to enter as special students may be obtained from the dean in case of mature business men and women, provided they are graduates of accredited high schools, with tested executive experience. If later, they decide to become candidates for a degree, such students must satisfy all the requirements for admission to the degree course.

ADMISSION AS UNCLASSED STUDENTS

Only by permission of the faculty of the school or college which he desires to enter, may an applicant be admitted as an unclassed student. A new application must be made each quarter to the committee in charge. No unclassed 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 those offered in this institution. The certified record of courses taken in other institutions must be upon the official blank of the institution granting the certificate and should show:

(a) The subject studied, the catalog course number, and the descriptive title.

(b) The number of weeks and hours a week spent upon each subject.

(c) The value of the course expressed in credits.

(d) The result. The exact grades should be stated, accompanied by an explanation of the marking system employed.

(e) A letter or statement of honorable dismissal.

Applications for advanced standing should be made, if possible, at least one month before the time when the student expects to enter the University.

Upon receipt of the student's credentials the examiner will notify the applicant concerning his classification and the registrar 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 teachers colleges*

Graduates of the Advanced Graduate Course of a Minnesota state teachers college are admitted to the College of Science, Literature, and the Arts with one year (forty-five quarter credits) of advanced standing. Graduates of such advanced courses are admitted to the College of Education with an allowance of ninety quarter credits toward graduation.

Individual graduates of the Advanced Latin Course (five-year) or of the Advanced English Course (five-year) of a Minnesota state teachers college who, on the basis of maturity and ability, present certificates of special fitness from the president of such college, will be admitted to the College of Science, Literature, and the Arts with forty-five quarter credits of advanced standing. Graduates of such courses are admitted to the College of Education with an allowance of sixty-three quarter credits towards graduation.

Graduates of the three-year course in the state teachers colleges of Minnesota may receive not more than one hundred thirteen credits in the College of Education; credits earned in such three-year normal course shall be applied, in case they are deemed of equivalent merit, in the College of Education, to courses leading to certificates for supervisors in elementary grades, as principals in state graded schools, as teachers in junior high schools or in normal school departments in high schools; students coming from such three-year course shall not receive certificates in high school subjects from the University without completing the prescribed courses of the University for such certificates. No credit is allowed for this course in the College of Science, Literature, and the Arts.

Graduates of state teachers colleges will not be permitted to take the following courses at the University for credit: Psychology 1-2, Education 1.

State teachers colleges at the following places are recognized: Bemidji, 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 the standards may be had upon inquiry at the registrar's office. The following schools in Minnesota have complied with the requirements:

Augsburg Seminary, Minneapolis
Concordia College, St. Paul
Ely Junior College
Eveleth Junior College
Hibbing Junior College
Itasca Junior College, Coleraine
Park Region Luther College, Fergus Falls
Rochester Junior College
St. Benedict's College, St. Joseph
St. John's University, Collegeville
St. Mary's College, Winona
Villa Sancta Scholastica, Duluth
Virginia Junior College
Winona State Teachers College

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
Adams
Adrian
Aitkin
Akeley
Albert Lea
Alden
Alexandria
Amboy
Annandale
Anoka
Appleton
Argyle
Arlington
Atwater
Aurora
Austin
Bagley
Barnesville
Barnum
Baudette
Belle Plaine
Bemidji
Benson
Bird Island
Biwabik
Blackduck
Blooming Prairie
Blue Earth
Brainerd
Breckenridge
Browns Valley
Buffalo
Buhl
Caledonia
Cambridge
Campbell
Canby
Cannon Falls
Carlton
Cass Lake
Chaska
Chatfield
Chisholm
Clarkfield
Cleveland
Cloquet
Cokato
Coleraine
  Greenway
  Olcott
Comfrey
Cottonwood
Crookston
Crosby-Ironton
Cyrus
Dassel
Dawson
Deer River
Delano
Delavan
Detroit
Dodge Center
Duluth
  Central
  Denfeld
  Morgan Park
Eagle Bend
East Grand Forks
Elbow Lake
Elk River
Elmore
Ely
Eveleth
Excelsior
Fairfax
Fairmont
Faribault
Farmington
Fergus Falls
Fertile
Forest Lake
Fosston
Frazee
Fulda
Gaylord
Gilbert
Glencoe
Glenwood
Glyndon
Graceville
Grand Meadow
Grand Rapids
Granite Falls
Hallock
Halstad
Hancock
Harmony
Hastings
Hawley
Hayfield
Hector
Henderson
Hendricks
Herman
Heron Lake
Hibbing
Hill City
Hinckley
Hopkins
Houston
Howard Lake
Hutchinson
International Falls
Ivanhoe
Jackson
Janesville
Jordan
Kasota
Kasson
Keewatin
Kenyon
Kerkhoven

Lake Benton
Lake City
Lake Crystal
Lakefield
Lake Park
Lamberton
Lanesboro
Le Roy
Le Sueur
Le Sueur Center
Lewiston
Lindstrom-Center City
Litchfield
Little Falls
Long Prairie
Luverne
Lyle
McIntosh
Mabel
Madelia
Madison
Mahnomen
Mankato
Mantorville
Maple Lake
Mapleton
Marshall
Melrose
Milaca
Milroy
Minneapolis
  Central
  Edison
  John Marshall
  North
  South
  West
Minneota
Montevideo
Montgomery
Monticello
Moorhead
Moose Lake
Mora
Morris
Morristown
Morton
Motley
Mound
Mountain Iron
Mountain Lake
Murdock
Nashwauk
New Prague
New Richland
New Ulm
Nicollet
Northfield
North St. Paul
Norwood-Young America
Olivia
Ortonville
Osakis
Owatonna
Park Rapids
Paynesville
Pelican Rapids
Perham
Pine City
Pine Island
Pine River
Pipestone
Plainview
Preston
Princeton
Proctor
Red Lake Falls
Red Wing
Redwood Falls
Renville
Rochester
Roseau
Royalton
Rush City
Rushford
St. Charles
St. Cloud
St. Francis
St. James
St. Louis Park
St. Paul
  Central
  Humboldt
  John A. Johnson
  Mechanic Arts
St. Peter
Sandstone
Sauk Center
Sauk Rapids
Shakopee
Sherburn
Slayton
Sleepy Eye
South St. Paul
Springfield
Spring Grove
Spring Valley
Staples
Stephen
Stewartville
Stillwater
Thief River Falls
Tower
Tracy
Two Harbors
Tyler
Villard
Virginia
Wabasha
Wadena
Walker
Warren
Warroad
Waseca
Waterville
Wayzata
Welcome
Wells
West Concord
Wheaton
White Bear
Willmar
Windom
Winnebago
Winona
Winthrop
Worthington
Zumbrota

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

Albert Lea
- Luther Academy

Austin
- Columbus High School

Collegeville
- St. John's College

Duluth
- Cathedral High School for Boys
- Cathedral High School for Girls
- Villa Sancta Scholastica

Faribault
- Bethlehem Academy
- St. Mary's Hall
- Shattuck Military Academy

Fergus Falls
- Park Region Luther College

Graceville
- St. Mary's Academy

Hutchinson
- Hutchinson Theological Seminary

Maple Plain
- Maplewood Academy

Minneapolis
- Academy of the Augsburg Seminary
- Blake School for Boys
- Minnehaha Academy
- Minnesota College
- Northrop Collegiate Institute
- St. Anthony High School
- St. Margaret's Academy

Moorhead
- Concordia College

Owatonna
- Pillsbury Academy

Phalen Park
- Luther Seminary

Red Wing
- Academy of the Red Wing Seminary

Rochester
- St. John High School

Rolling Stone
- Holy Trinity School

St. Cloud
- Cathedral High School

St. Joseph
- Convent of St. Benedict

St. Paul
- Bethel Academy
- Breck School
- College of St. Catherine (Durham Hall)
- Cretin High School
- Oak Hall
- St. Joseph Academy
- St. Paul Academy
- St. Thomas College
- Summit School
- Visitation Convent

St. Peter
- Academy, Gustavus Adolphus College

Winona
- Cathedral High School
- Cotter High School
- Academy, St. Mary's College

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 28 to 37 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 summarized briefly below. *The Syllabus of High School English in the State of Minnesota* (Syndicate Printing Co., Minneapolis) gives further details and should be consulted. To satisfy the preparatory requirement a course of not less than five hours a week must be pursued during the time specified above. The headings under which instruction will naturally fall are:

I. Composition
II. Literature

I

The work in composition should include the fundamentals of grammar, punctuation, and spelling as outlined in the minimum requirement list of the State Course in High School English. In the use of these fundamentals the student should acquire an almost perfect degree of skill. In addition he should become familiar with the ordinary principles and technical terms of rhetoric as presented in good recent textbooks intended for high school use. These should not be taught abstractly or as ends in themselves but should be closely correlated with composition practice to enable the student to express his own ideas effectively.

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 constructively by both teacher and pupils. In written composition, especial attention should be paid in the first two years to mechanical accuracy, so that right habits may be formed before it is too late. In the last two years, while standards of accuracy are no less important and should even be raised, more stress may be put upon organization of material and effectiveness of style. In oral composition, ease, directness, correct pronunciation, clear enunciation, and a pleasing voice should be desired ends in addition to the matters mentioned above. Choice of subjects for both written and oral compositions should be carefully directed by the teacher to make the work an expression of the lives and interests of the students, who should be taught to observe accurately and think logically as well as to speak and write correctly and forcefully.

II

The preparation in literature should consist in the study of a limited number of English classics (both British and American) and in the reading of a larger number. Both study and reading lists are to be found in the State Course in High School English. Since the reading lists in that course are intended to satisfy the interests and needs of students who are not going to college, as well as those who are, the student preparing for college should govern his choices from the reading list by the selections appearing in the report of the National Conference on Uniform Entrance Requirements. This may be obtained by writing to the College Entrance Board, 431 West 117th St., New York City, or it may be found in the catalogs of most of the publishers of English classics in textbook form.

First in importance for the work in literature is an appreciation and understanding of the piece studied or read. In addition, the student should acquaint himself with the most significant facts in the lives of authors whose works he reads and with their place in literary history. He should commit to memory some of the more notable passages both in verse and prose, and he should acquire skill in

1. Reading aloud in an intelligent and pleasing manner
2. Reading silently, with an understanding of the proper uses of careful, cursory, and consultation reading.
3. Making use of library apparatus—card catalogs, magazines and other indexes, and reference books.

GROUP B. LANGUAGES

Latin

1. Work of the first year should comprise: drill in the fundamentals of grammar as contained in any good first year Latin book; forms to be thoroly mastered; constant practice in pronunciation and training for the ear; attention called to English words derived from the Latin words studied.

2. Work of the second year should consist at first of easy passages of continuous prose such as the extracts from Eutropius and the *Viri Romae* in the Beeson and Scott or any good second year Latin book. This may be followed by extracts from Caesar judiciously selected by the teacher. The text from Caesar may be varied by selections from Nepos or Ovid. The use of a good second year book is recommended rather than a straight text of Caesar. Elementary composition should be given during the year and the relation between Latin and English emphasized. The total amount of text for the year might approximate the amount contained in the first three books of Caesar.

3. The third year may be well spent on Cicero's *Orations* with perhaps some of his selected letters. The amount usually covered may be indicated by saying that any six from the following list seem satisfactory: *Against Catiline, Poet Archias, Ligarius, Marcellus, Manillian Law* (to count as two), *The Fourteenth Philippic.*

4. Virgil is usually read the fourth year. If a teacher prefers to read five rather than six books the fifth may be omitted. A pupil's feelings for adequate renderings of the poetic expression of the Latin should be cultivated. Constant metrical reading of the text is advocated as soon as the mechanics of the meter have been mastered.

In place of the above, the University will accept the work recommended in the report of the Cleveland Commission on College Entrance Requirements in Latin.

Greek

Greek Grammar (one unit).—The work of the first year should include the study of forms, inflections, word formation, principles of syntax, elementary composition, and reading. The contents of White's *First Greek Book* represent approximately the ground which the student is expected to cover.

Xenophon's *Anabasis* (one unit).—The work of the second year should comprise a careful reading of three or four books of the *Anabasis,* or an equivalent amount of Greek prose, together with the study of syntax, etymology, and the irregular verb. Emphasis should also be laid upon a correct pronunciation.

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 reading vocabulary of a thousand words; facility in expressing his thoughts in simple sentences. As a means to this, from 75 to 100 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 to 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 should be supported by frequent written exercises based 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. Often 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.

Students presenting three or four years of high school German may enter university courses suited to their degree of advancement. The work of the third and fourth years should secure grammatical accuracy, enlarge the reading and speaking vocabulary, and provide an introduction to the literature. To this end the use of much good narrative prose and selected poetry in the third year is recommended, and the reading and discussion of several dramas including classics, in the fourth year. Selection of too difficult texts is a serious error and should be avoided.

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.
6. Practice in spoken French. A large part of the instruction should be given in French.

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.
6. Drill in spoken French, in the form of questions and answers and summaries in French material read.

Work of the third and fourth years: If a third and fourth year are offered, they should consist of (1) continued study of grammar, (2) advanced connected prose composition, (3) reading of more difficult French with emphasis on the literary side, and (4) 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 as well as to translate from English, and a fair acquaintance with the history of Scandinavian countries. Two additional years' work in literature will be accepted.

GROUP C. HISTORY AND SOCIAL SCIENCES

History

European History (one or two units).—(a) Ancient and medieval to 1648 A.D. and modern 1648 A.D. to the present

or

(b) Ancient up to 800 A.D. and medieval and modern 800 A.D. to the present.

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 operating today. The instruction should aim to impart information essential to intelligent, active citizenship.

Elementary Economics (one-half unit).—In so far as is consistent with the lack of maturity of high school students, they should master the principles which underlie the economic system. Such historical and descriptive matter should be employed as will enable the student to apply his principles to actual business situations.

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 textbook, 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 references to resources, industries, transportation facilities, and commerce. It should be based on a textbook supplemented by map work and assigned readings.

Sociology (one-half unit).—This course should consist largely of a study of community social problems, the development of the family, and the growth of social institutions, community organizations, etc., but should not neglect the larger and more general social problems of the state and nation, such as immigration, poverty and crime and their treatment, defective classes, family adjustment, conservation, and social measures for health protection. Social theory should be studied in this course in so far as it assists in an understanding of the social problems, but not as an end in itself. Good results should be obtained by a well-trained teacher using the community in which the school is located as laboratory material for study, if such work is planned with tact. A good elementary text and supplementary readings are essential.

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.

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.

Unified Mathematics, First Year (one unit).—A general course in mathematics consisting of the fundamental elements of elementary algebra, informal, experimental, and constructive work in geometry, numerical trigonometry, and a simple introduction to demonstrative geometry. The course should emphasize especially the notion of the dependence of one quantity upon another (the function idea), the formula, the equation, and the graph. Understanding of the laws of the fundamental operations as applied in the solution of simple equations in one and two unknowns; fractions; positive and negative numbers; three simplest cases of factoring; simple work in statistics; graphs; solution of quadratic equations by graph and by factoring, at least; simple work on roots and powers; logarithms and the slide rule, optional. Simple geometric

constructions; theorems proved informally to introduce the notion of similar triangles; numerical trigonometry, simple applications using the sine, cosine, and tangent notions. Enough work on simple demonstrative geometry to give an idea of a logical proof.

Unified Mathematics, Second Year (one unit).—This course is intended to follow the one above. It is built up around the fundamental parts of a modern progressive demonstrative geometry course. In this course the student should learn the various methods of formal proof and how to apply them to the most fundamental propositions of plane geometry. Some work on the fundamental ideas of lines and planes in space (solid geometry) should also be given. A study of the fundamental theorems on congruence of triangles and their application; parallelograms; polygons; loci; inequalities; proportional line-segments; circles; areas; similar triangles; trigonometry; ratio and proportion; inscribed and circumscribed polygon; area of a circle. The algebra of this course consists of a continuation of the algebra of the first course. Solution of quadratic equations by completing the square and by formula; graphs of the parabola, circle, ellipse, and hyperbola; solution of simple simultaneous quadratic equations; formal treatment of fractions and formulas; radicals and radical equations of a simple type; factoring and proving trigonometric identities.

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.

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.

Trigonometry (one-half unit).—Definitions and relations of the six trigonometric functions as ratios; circular measurement of angles.

The principal formulas, in particular for the sine, cosine, and tangent of the sum and the difference of two angles, of the double angle, and the half angle, the product expressions for the sum of the difference of two sines or of two cosines, etc.; the transformation of trigonometric expressions by means of these formulas.

Solution of trigonometric equations of a simple character.

Theory and use of logarithms (without the introduction of work involving infinite series).

The solution of right and oblique triangles and practical applications.

GROUP E. NATURAL SCIENCES

Physics (one unit).—It is suggested that the year's work be confined to five 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).

Biology (one unit).—A course using a modern standard text for secondary schools, such as Gruenberg, Hunter, Traften, Peabody and Hunt, or Smallwood and Reveley will satisfy the requirement.

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 reactions. Special attention should be given to the writing of formulas and equations.

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.

Physiology (one-half unit).—A good recent text should be used. Illustrative material, such as skeleton, manikin, and charts, should be available. Simple experiments should be carried out, particularly on the students themselves. Practical applications and hygiene should be emphasized.

Astronomy (one-half unit).—An elementary course in general astronomy as presented in any good modern textbook 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, terrestial 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, including the origin, development, and degradation of land forms; and the influences of these processes on the physical environment of man.

General Science (one unit).—The course should consist of an elementary study of the applications of science to the affairs of the everyday life. Such topics as atmosphere and the weather, house-heating and ventilation, foods, water supply, simple machinery, common home appliances, fundamentals of biology, botany, and heredity, hygiene, and disease preventions are types of the topics which should make up the course. It is not intended that the course should be organized like the special sciences and it should not be organized with the idea of preparing students for work in the special sciences. The justification of the course must be in terms of its own intrinsic value as a training for life. This point of view is expressed in most of the late textbooks on general science.

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.

EXPENSES

FEES

The university year, extending from October to June, is divided into three terms called quarters. On the specified dates (see Calendar pp. 8-9) prior to the opening of each quarter, the following fees are due from each student: (a) tuition, (b) incidental, and (c) such special fees and deposits as may be required.

Payment of fees cannot be deferred. Special attention is called to the paragraph on Penalty Fees (page 50) for further instruction on late registration and late payment of fees.

TUITION FEE

School or College	Quarter Fee		Credit Hour Fee*	
	Resident	Non-resident	Resident	Non-resident
College of Science, Literature, and the Arts..	$20.00	$30.00	$1.75	$2.50
College of Engineering and Architecture.....	30.00	40.00	2.50	3.25
College of Agriculture, Forestry, and Home Economics	20.00	30.00	1.50	2.25
Law School	30.00	40.00	2.75	3.75
Medical School	60.00	70.00	†2.50	†3.00
School of Nursing (preliminary course)..	25.00	25.00	†1.00	†1.00
Public Health Nursing.....	20.00	20.00		
Medical Technicians	30.00	40.00	1.25	1.75
College of Dentistry	60.00	70.00	†2.50	†3.00
Dental Nurses	25.00	25.00	2.00	2.00
School of Mines.....	30.00	40.00	2.50	3.25
College of Pharmacy.....	35.00	45.00	1.50	2.00
School of Chemistry.....	30.00	40.00	2.50	3.25
College of Education.....	20.00	30.00	1.75	2.50
Graduate School	‡10.00	‡10.00	‡1.00	‡1.00
Clinical Medicine	60.00	70.00	†2.50	†3.75
School of Business.....	30.00	40.00	2.75	3.75

* Students carrying less than the complete schedule of work may pay fees on a credit hour basis.

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

‡ 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 tuition fees.

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.[1]

[1] 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.

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 above.

This is not to be interpreted as applying to students in such combination courses as Arts and Mechanics, Arts and Dentistry, Arts and Business, etc., provided such students pay regular quarter fees for the full period of residence in the higher fee college.

Incidental fee.—An incidental fee of $4 a quarter is charged each student for which the student receives the privileges of the Minnesota Union or Shevlin Hall, the Health Service, the *Minnesota Daily* including the Official Daily Bulletin, the university post-office service, and the *University Address Book.*

Special students registered for six credit hours or less are charged this fee and are entitled to the above privileges only on request.

DEPOSIT FEES

General deposit.—At the student's first registration each year a deposit fee of five dollars ($5) (Medicine, Dentistry, and Pharmacy, ten dollars) is required of every student to cover the following charges: locker rental, locker key deposit, case book deposit (Law School), laboratory breakages, drawing board rental (Architecture), library fines, or damage to university property.

The unused balance of the deposit fee will be returned *by mail* as soon as possible *after* the close of the school year in June. If, at any time during the college year, the charges against a student shall warrant a renewal of the deposit, an additional fee of five dollars ($5) will be required.

Military deposit.—A military deposit of ten dollars ($10) is required of all students taking military drill.

Laboratory deposit.—A laboratory deposit of five dollars ($5) is also required of students registered for courses in chemistry to cover the cost of materials. The unused balance will be returned at the end of the course.

SPECIAL FEES

Music fee (in addition to tuition for those electing music)

Class fees.—

Class lessons (three students in each class) two lessons per week ..... $45.00 per quarter
One class and one individual lesson per week..... 55.00 per quarter
Two individual lessons per week..... 65.00 per quarter
One individual lesson per week..... 35.00 per quarter

Practice fees.—

Organ..... $0.20 to $0.40 per hour
Piano (six hours per week)..... $5.00 per quarter
($0.50 per quarter for each additional hour per week)

Gymnasium fee (required of all men taking exercise courses in Physical Education)..... $1.50 a quarter

Gymnasium fee (required of women taking three-hour gymnasium courses)..... $2.50 a quarter

Gymnasium fee (required of women taking two-hour gymnasium courses) ..... $2.00 a quarter
(Maximum charge for one quarter is $3.50)

The following special items may be included:

Condition examination $1.00

Special examination for removal of condition, at other than the set time[1] $5.00

Examination on subjects taken out of class[1] $5.00
(No fee for such examination on first entering the University, if taken within the first six weeks.)

Large diploma fee: any graduate may receive the large diploma on payment of the special fee of $5.00

Duplicate certified copy of record: one certified copy of record will be issued to each student free of charge. Each additional transcript will be issued only on payment of $1.00

Graduation fee $10.00

PENALTY FEES

Registration penalties.—A penalty fee for late registration, late change of registration, or late payment of fees shall be two dollars ($2) and one dollar ($1) additional for each day of delay after classes begin, provided that no student shall pay more than twelve dollars ($12) of penalty in any given quarter.

Library fines.—All overnight books taken from the "Reserves" must be returned at 8:30 the following morning. If not returned at that hour a fine of twenty-five cents will be imposed, and an additional ten cents will be charged for every hour or fraction of an hour thereafter that the book is retained.

Books issued during the day for reading room use must be returned within two hours. If not returned promptly a fine of twenty-five cents for the first hour and ten cents additional for every hour or fraction of an hour thereafter that the book is overdue, will be charged. The two-hour limit will not be enforced between 6 p.m. and 10 p.m.

REFUNDS

Tuition.—Students who cancel their registration before the close of any quarter are entitled to refunds of the tuition fee on the following basis:

After Quarter Opens	Percentage of Refund
No attendance	100
Two days to one week	90
One week to two weeks	80
Two weeks to three weeks	70
Three weeks to four weeks	60
Four weeks to five weeks	50
Five weeks to six weeks	40

[1] Such an examination may be taken only upon approval of the appropriate committee.

No student who has been in attendance more than one half of the quarter shall receive any refund of tuition.

Locker rental.—Full rental fee for lockers may be refunded during the first two weeks of a quarter. After that time no deduction is made.

Incidental fee.—Students canceling their registration before the end of a quarter are entitled to a refund of the incidental fee on the same basis as the refund for tuition except that in no case will more than $3 of the incidental fee be refunded.

LIVING EXPENSES

BOARD AND ROOM

General Regulations

1. It is understood that a room is engaged for a complete quarter, unless otherwise arranged with the householder. If, however, a student withdraws from the University, such student is released from financial obligations.

2. It is understood that a room is automatically released at the conclusion of each quarter, but 10 days' notice must be given.

3. A deposit of $5 is to be made to a householder when a room is engaged.

4. It is advisable to make separate arrangements for board and room.

5. Students are advised—when possible—to board where they room.

6. No rebate in room rent is allowed for absence.

7. Rebate in charges for board is made only if absence exceeds a week, or if arrangements have been made in advance with the householder. This rule applies to absence during vacations as well as to all other absences.

8. A special charge is made for meals served to guests, or for extra service to guests.

Women

Sanford Hall.—Sanford Hall, the one dormitory for women, accommodates two hundred fourteen students, about one third of whom may be freshmen. There are chaperons and a house nurse to look after the welfare, comfort, and health of the students who live at the hall. The charge for room and board for occupants of double rooms is $125 per quarter year, and for occupants of single rooms, $135 per quarter year payable in advance. Many more students apply for admittance into Sanford than can be accommodated and there is always a large waiting list. Usually, all the rooms are taken by June 1 of each year.

Communications requesting further information and applications for admittance should be addressed to Miss Lila Hainer, house director, Sanford Hall.

Co-operative cottages.—Three co-operative cottages, each in charge of a chaperon, offer comfortable homes for about sixty women. By assisting with the work of the houses, the students are able to keep expenses under thirty dollars per month. In assigning students to these cottages, preference is given to women earning a part of their expenses. These rooms

are all engaged at the present time. Occasionally a vacancy occurs. Application may be made to the dean of women and to the director of housing.

Rooming houses.—About seventy-five houses are approved by the University as residences for women. Attention is called to the ruling of the Board of Regents that women students are not allowed to reside in any house which is not on the approved list except by special arrangement with the dean of women. Women students do not reside in any house where men are taken as roomers. All women students should bring at least three sheets, two pillow cases, and towels, all to be marked with the full name of owner. No electric light stronger than fifty watt is required in a student's room. No electric appliances are to be used except by permission of the householder. Room rent varies from ten ($10) to fifteen dollars ($15) a month for each student; board at the present time is from five ($5) to eight dollars ($8) a week.

Luncheon on the cafeteria plan is served at Shevlin Hall daily, with the exception of Sunday.

For further information and lists of addresses, application may be made to Mrs. M. E. Staples, head of Housing Bureau, Shevlin Hall.

Men

A list of approved boarding and rooming houses may be had upon request at the manager's office of the Minnesota Union and at the Housing Bureau. Good double rooms for two men can be obtained within easy walking distance of the campus for from eighteen ($18) to thirty dollars ($30) per month. Good single rooms rent for from twelve ($12) to eighteen dollars ($18) per month. Board at the present time varies from five ($5) to eight dollars ($8) per week.

Minnesota Union.—At the Minnesota Union, the men's clubhouse on the campus, three meals a day are served on the cafeteria plan, at practically cost prices. Last year (1925-26) the average price paid for breakfast was sixteen cents ($.16); for luncheon and dinner, twenty-eight ($.28) each.

Men's cottages.—The University operates four houses where about forty men students can be accommodated. The charge for room and board is three hundred sixty dollars ($360) for the university year, payable in nine installments. Men entering the cottages sign up for the year and will not be released unless their places can be filled.

Beginning with the year 1925-26, no application fees will be refunded to students leaving university houses before the end of the college year. Also, an additional charge of thirty dollars ($30) for the year will be made for single rooms.

A fifth house, accommodating twenty men, is operated as a dormitory only but board may be had, if desired, at the cottage dining hall. Room rentals run from ninety dollars ($90) to one hundred thirty-five dollars ($135) for the college year.

For each cottage there is provided a house mother who looks after the comfort and welfare of the men. The students live under a few self-made regulations. For further information, communicate with Mrs. Mary E. Staples, director of housing.

SELF-SUPPORT

The Employment Bureau is maintained for the purpose of assisting both men and women students who seek employment, and of developing in all proper ways opportunities for self-help. 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 many students, with the aid of the money saved during the summer, are making all of their college expenses. Some are able to make their expenses during the college year, but this can be done only by students of unusual force and adaptability, or with exceptional opportunities. The majority of students must meet stern competition; must live economically; must guard their 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. Prospective students should have at least $150 or the equivalent in addition to tuition fees; and then it will be necessary for them to live very economically. Before they can place themselves in a self-supporting position they may have to try again and again, and meanwhile their 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, stenographers, bookkeepers, cashiers, salesmen, solicitors, telegraph and telephone operators, teachers, tutors, mechanics, musicians, waitresses and waiters, domestic workers, laborers, janitors, and in many other capacities. Considerable work can be secured within walking distance of the campus. However, it must be remembered that there are usually more applicants than positions. For this reason a student, especially one who is new and unacquainted, should be ready to accept any kind of work offered.

Applicants for employment should bear in mind that, while every effort is made to secure work for all who need it, positions cannot 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 person for his particular position. This means that fitness must be the first consideration. Whenever possible, however, the order of applications is followed.

Applicants should also bear in mind that during the opening week of school there are several hundred students who apply at the Employment

Bureau for work. It is manifestly impossible to place all of these students as soon as they apply and many students have to wait for a few days or even weeks before they can secure work. Those students who are not fortunate enough to be placed at once should not be discouraged but should keep in touch with the bureau so that they will be available when there is work.

It usually is not advisable for a student to make a sacrifice to come to the city before the opening of the school year in hopes that he can get a position before the other students arrive because as a rule most of the work for self-supporting students is created by the presence of the other students on the campus. Therefore, until the other students are here there are very few part time jobs available.

Those who find themselves without funds at the beginning of the college year can register in some of the evening extension classes and seek employment during the day rather than 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.

GENERAL EXPENSES—ESTIMATED

The following table gives an estimate of the expenses of the average student during his first year in college. The different columns give estimates for the different colleges. This estimate does not include expenses for clothing, railroad fare, and vacations.

ESTIMATED EXPENSES OF THE ORDINARY STUDENT DURING HIS FIRST YEAR IN COLLEGE

	Academic Agriculture, Forestry, Home Econ. Education	Mines Business Chemistry Pharmacy	Law	Eng. and Arch.	Dentistry	Medicine
Incidental fee	$ 12.00	$ 12.00	$ 12.00	$ 12.00	$ 12.00	$ 12.00
*Deposit fee	5.00	5.00	5.00	5.00	10.00	10.00
Gym. suit (approx.)	8.00	8.00	8.00	8.00	8.00	8.00
Laundry	36.00	36.00	36.00	36.00	36.00	36.00
Room rent	90.00	90.00	90.00	90.00	90.00	90.00
Board	260.00	260.00	260.00	260.00	260.00	260.00
†Tuition	60.00	90.00	90.00	90.00	180.00	180.00
Incidentals	200.00	200.00	200.00	200.00	200.00	200.00
Books and Instr'ts..	35.00	35.00	45.00	35.00	160.00	40.00
Total	$706.00	$736.00	$746.00	$736.00	$956.00	$836.00

* For students taking military drill, an additional deposit fee of ten dollars is required.

† An additional tuition fee of ten dollars per quarter is charged all students who are not residents of the state of Minnesota.

By reducing the amount spent for incidentals and by obtaining cheaper board and room many students will be able to live for less than the amount estimated in the above table. Likewise, other students will pay more for board, room, and incidentals, and will not be able to live for the amounts estimated in the above table. Below we give an estimate of the minimum, average, and liberal expenses of the freshman student during the college year. To live within the minimum amount a student must forego all luxuries and economize in every way possible. This estimate does not include expenses for clothing, railroad fare, and vacations.

	Minimum	Average	Liberal
Academic, Agriculture, Forestry, and Home Economics, and Education	$499.00	$706.00	$ 920.00
Mines, Business, Chemistry, and Pharmacy	528.00	736.00	950.00
Law	539.00	746.00	965.00
Engineering and Architecture	559.00	736.00	995.00
Dentistry	753.00	956.00	1190.00
Medicine	628.00	836.00	1065.00

SCHOLARSHIPS, LOANS, AND PRIZES

GRADUATE FELLOWSHIPS AND SCHOLARSHIPS

The Shevlin Fellowships

Four annual Shevlin fellowships of $500 each are open to graduates of any acceptable college or university, one each in the colleges of Agriculture, Chemistry, Medicine, and Science, Literature, and the Arts, respectively. Applications for these fellowships must be made on or before March 1. Blank applications can be obtained from the dean of the Graduate School.

The Class of 1890 Fellowship

As a gift of the class of 1890 the sum of $200 a year is open to a graduate of the College of Science, Literature, and the Arts, or the College of Engineering and Architecture of the University of Minnesota who has shown distinguished ability and initiative as a student and who desires to make further preparation for public service.

The Albert Howard Scholarship

This scholarship, the annual income from $4,000 (Riverside District, Colorado, bonds) is awarded to graduates of the College of Science, Literature, and the Arts of the University of Minnesota.

Caleb Dorr Research Fellowships

The Caleb Dorr fellowships were founded by the bequest of the late Caleb Dorr. Their purpose is the encouragement of research in any field of agriculture. No services are required. Whole time during the academic year (9 months) must be given to graduate work. Fellowship amounts to $500. Holder is exempt from all tuition fees. Awarded on basis of scholarship and prospect and promise of productive research.

The DuPont Fellowship in Chemistry

This fellowship, established by E. I. DuPont de Nemours and Company, yields $750 annually. The holder devotes his entire time to graduate study and is not required to render any service to the University.

The Miller Hospital Clinic Fellowship

The Miller Hospital Clinic has established four clinical fellowships available to students in the Graduate School. These fellowships are offered, one each in the following fields: medicine, surgery, gynecology and obstetrics, and ophthalmology and oto-laryngology. In addition to residence in the hospital these fellowships carry stipends of $420, $570, and $820 for the first, second, and third years, respectively.

Fellowships, Assistantships, and Scholarships

The following fellowships, assistantships, and scholarships are open to graduates of any acceptable college or university. They carry stipends

ranging from $225 to $1200 with remission of tuition in the Graduate School. Applications may be made through the dean of the Graduate School on or before March 11.

Agriculture and Home Economics	30 assistants
Animal Biology	1 teaching assistant 8 assistants
Anthropology	2 assistants
Astronomy	1 assistant
Botany	6 teaching assistants 6 assistants
Chemistry	24 assistants
Economics	7 assistants
Education	7 assistants
Engineering, Electrical	4 teaching fellows
Engineering Experiment Station	4 research fellows 1 assistant
English	2 teaching assistants 5 assistants
Geology and Mineralogy	2 assistants
German	2 teaching assistants 2 assistants
History	6 teaching assistants 2 assistants
Mathematics	1 teaching assistant 3 assistants
*Medicine and Surgery	
(1) Medical School	16 fellows 17 assistants
(2) Mayo Foundation	107 fellows
Philosophy	1 assistant
Physics	10 teaching assistants 11 assistants
Political Science	5 teaching assistants 2 assistants
Psychology	6 teaching assistants 1 assistant
Romance Languages	4 teaching assistants 1 assistant
Scandinavian	1 assistant
Sociology	2 teaching assistants 4 assistants

* Special requirements. Address inquiries to the dean of the Graduate School.

UNDERGRADUATE SCHOLARSHIPS

The Moses Marston Scholarship in English

This scholarship of $75 is to be used to further English study, and is awarded by the English Department as a recognition of special capacity for literary and linguistic studies.

Minnesota State Pharmaceutical Association Scholarship

A scholarship amounting to $105 in cash is awarded annually by the Minnesota State Pharmaceutical Association to the student, a citizen of the United States and a resident of Minnesota for at least five years, who has earned the highest general rating in the work of the first two years of the three- or four-year course in the College of Pharmacy. 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

The Fairchild Scholarship, amounting to $300, is 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 St. Paul College Club Scholarships

The St. Paul College Club offers annually several scholarships of $150 each to women students. Applications may be made to the dean of women before May 1.

The Minneapolis College Women's Club Scholarships

The Minneapolis College Women's Club offers annually one scholarship of $200, preference being given to women in the junior or senior class. Application may be made to the dean of women before May 1.

The W. S. G. A. Scholarships

The Women's Self-Government Association of the University offers annually several scholarships of $100 each, preference being given to women of the junior or senior class. In 1924-25 eight such scholarships were awarded and in 1925-26 twelve were awarded. Applications may be made to the dean of women before May 1.

The Johnson Foundation Scholarship

The trustees of the Edward M. and Effie R. Johnson Foundation have donated a fund of $12,000, the income of which is available annually for undergraduate scholarships. The scholarships are open to either men or women in any college of the University. Holders of the scholarships must be in the third or fourth year of work beyond the high school and must

have been in residence in the University of Minnesota at least one year. The student's record in his studies, his success in other activities, his interests, and his personal qualities will be taken into account in making awards. The purpose is to encourage scholarship and thoroness of training in students who appear capable of unusual service or leadership.

Whether one or more scholarships shall be awarded each year will depend upon the qualifications of available candidates.

The awards will be made by the Board of Regents upon recommendation of a committee of the faculty appointed by the president. Nominations should be sent to the dean of the college in which the student is enrolled.

The Faculty Women's Club Scholarship

The Student Section of the Faculty Women's Club offers annually a scholarship of $150, to be awarded to some woman student. Applications may be made to the dean of women before May 1.

The Woman's Club Scholarship

The Woman's Club of Minneapolis gives annually a scholarship of $300, to be awarded to some woman student. One hundred fifty dollars is given by the Arts and Letters Section, and $150 by the Home and Education Section. Applications may be made to the dean of women before May 1.

The Nina Morais Cohen Scholarship

The Nina Morais Cohen Scholarship of $125, given by the Council of Jewish Women, is awarded annually to a woman student of Jewish descent. Applications may be made to the dean of women before May 1.

The P. E. O. Scholarship

The P.E.O. organization gives annually a scholarship of $100 to some woman student of high scholarship and fine character. Applications may be made to the dean of women before May 1.

The George H. Partridge Scholarships

Through the generosity of Mr. George H. Partridge five scholarships of $100 each are available annually for young women of high scholarship and fine character. These scholarships are awarded by selection without special application. Fuller particulars may be had from the dean of women.

The Mrs. Elbert L. Carpenter Scholarship

Through the generosity of Mrs. Elbert L. Carpenter, a scholarship of $100 annually is available for a young woman of high scholarship and fine character. This scholarship is awarded by selection without special application. Fuller particulars may be had from the dean of women.

The Mrs. George C. Christian Scholarship

Through the generosity of Mrs. George C. Christian, a scholarship amounting to $100 annually is available for young women of high scholarship and fine character. This scholarship is awarded by selection without special application. Fuller particulars may be had from the dean of women.

The Mrs. George P. Douglas Scholarship

Through the generosity of Mrs. George P. Douglas, a scholarship amounting to $100 annually is available for young women of high scholarship and fine character. This scholarship is awarded by selection without special application. Fuller particulars may be had from the dean of women.

University Concert Band Scholarships

Thirty-five scholarships of $35 each and eight scholarships of $15 each are available for members of the university concert band.

The Agricultural Faculty Women's Club Scholarships

The Agricultural Faculty Women's Club offers two scholarships of $100 each, which are available to students of the Division of Home Economics. In awarding them, the character, the scholarship, and the need of the applicant will be considered. Preference will be given to students in the junior and senior classes. Applications for these scholarships may be made to the chief of the Division of Home Economics.

The Phi Upsilon Omicron Scholarship in Home Economics

The Twin City chapter of Phi Upsilon Omicron offers a scholarship of $50 which is available to students of the Division of Home Economics. Any student in the division will be eligible but preference will be given to freshmen and sophomores. The award will be in the hands of a faculty committee; applications may be made to the chief of the Division of Home Economics.

Home Economics Association Scholarship

The Home Economics Association of the College of Agriculture, Forestry, and Home Economics offers a scholarship of $50 to students in the Division of Home Economics. Any student in the division is eligible. The scholarship is awarded on the following basis: spirit of service, financial need, professional attitude, character, and an honor point ratio of 1.5 or above, and ideals and standards consistent with those set up by the Division of Home Economics. The award is in the hands of a faculty committee from the Division of Home Economics. Applications may be made to the chief of the Division of Home Economics.

The Alpha Zeta Scholarship

The active chapter of Alpha Zeta offers a scholarship of $50. Award is made, without application, to that male student of good moral character, who shall have attained the highest average scholastic record while a student in the freshman class in the College of Agriculture, Forestry, and Home Economics. Scholarship is granted with the understanding that the recipient will continue to pursue his work in agriculture or forestry in this college. Awards made through regular channels provided by faculty.

Caleb Dorr Freshman College Scholarships

Open to entering freshmen in the College of Agriculture, Forestry, and Home Economics. Donated by the late Caleb Dorr, of Minneapolis, Minnesota. Awarded to graduates of (a) high schools of Minnesota and (b) schools of agriculture of the University of Minnesota, on the basis

of scholarship and achievement in self-support during high school course and on need for financial assistance, objectives and aims in college course, and qualifications for public service and leadership.

(a) 10 scholarships for high school graduates..... $100 each
(b) 2 scholarships for School of Agriculture graduates..... $100 each

Caleb Dorr College Scholarships and Medals

Donated by the late Caleb Dorr of Minneapolis, Minnesota. Awarded to students in the College of Agriculture, Forestry, and Home Economics on the basis of scholastic record in college. Sophomore scholarships: two of $100 each, one for men and one for women. Junior scholarships: two of $100 each, one for men and one for women. Senior scholarships: two of $100 each, with gold medals, one for men and one for women.

Special grants: Awarded to students of the college who have maintained a creditable scholastic record in college and who have made a significant achievement in necessary self-support. Amounts and distribution determined by special faculty committee.

Pullman Company Scholarships

These are awarded to the University of Minnesota on the basis of prizes taken by stock at the International Show held annually in Chicago. They become the permanent property of the University. The scholarships are awarded in the form of loans to students. When the loans are paid back, the money becomes again available for award to other students of agricultural courses. For information consult the head of the Division of Animal Husbandry.

The Argosy Club Loan Scholarship

The Argosy Club of Minneapolis offers a loan scholarship of $100 annually to a woman student of high scholarship and fine character, who is preparing for special service. Applications may be made to the dean of women before May 1.

LeRoy Cady Memorial Fund

The sum of $1,500 has been donated by the Minnesota Garden Flower Society in memory of LeRoy Cady, the income of which is to be used to provide free scholarship to students, making loans to students, and setting up prizes to be competed for by students taking courses in horticulture.

Samuel B. Green Scholarship

Through the generosity of Mrs. Samuel B. Green the income from $1,000 will be available annually for a scholarship to be awarded at the lose of the fall quarter to the senior in Forestry having the highest scholastic record. The first award will be made in 1926.

LOAN FUNDS

Unless otherwise stated, all applications for loans should be made to the dean of student affairs.

The Gilfillan Trust Fund

The annual income from this fund of $50,000, established by Judge John B. Gilfillan, of Minneapolis, is available as a loan to worthy students of the University who are residents of Minnesota.

The Elliot Trust Fund

The annual income from this fund of $5000 established by the will of the late Mrs. Mary H. Elliot, is loaned without interest to 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 the profession will be taken into consideration.

The Ludden Estate Loan fund

The annual income from this fund of approximately $10,000, established by the will of the late John D. Ludden, of St. Paul, is available for loans to any student of the University of Minnesota.

The Ludden Real Estate Loan Fund

An annual income of $3000, derived from real estate willed to the University by the late John D. Ludden, of St. Paul, is available for loans to any student of the University of Minnesota.

The Loan Fund for Women Students of the University

This fund was established by Mrs. George Edgar Vincent and the Faculty Women's Club, and is periodically increased by contributions from the Faculty Women's Club. Small loans from this fund are available for women students of high scholarship and fine character. Applications may be made to the dean of women at any time.

The Minneapolis Colony of New England Women Loan Scholarship

A loan scholarship of $100 is available annually for a woman student of New England birth or ancestry who is a member of the junior or senior class. Applications, accompanied by testimonials, may be made to the dean of women before May 1.

The Minneapolis Alumnae Club Loan Fund

The Alumnae Club has established a small loan fund known as the Jessie S. Ladd Loan Fund to be used for assisting women students. This loan fund is used as an emergency loan fund for short time loans to students. Applications may be made to the dean of women at any time.

Law Alumni Loan Fund

The sum of $1700.54 has been provided by the alumni of the Law School for loans to law students. Loans are made in sums not exceeding $200. Preference is given to students on the Editorial Board of the *Minnesota Law Review.*

The Minneapolis College Women's Club Loan Fund

The College Women's Club of Minneapolis has established a small loan fund to be used for assisting women students. This loan fund is used as an emergency loan fund for short time loans to students. Applications may be made to the dean of women at any time.

St. Paul Alumnae Loan Fund

The alumnae of St. Paul have established a small loan fund to be used for assisting women students. This loan fund is used as an emergency

loan fund for short time loans to students. Applications may be made to the dean of women at any time.

The Minneapolis Pathfinders' Loan Club

The Pathfinders' Club of Minneapolis has established a small loan fund to be used for assisting women students. This loan fund is used as an emergency loan fund for short time loans to students. Application may be made to the dean of women at any time.

The Daughters of the American Revolution Loan Scholarship

The Daughters of the American Revolution, St. Anthony Chapter, offers a loan scholarship of $100 to a woman of high scholarship and fine character. Applications may be made to the dean of women before May 1.

The Cosmopolitan Club Loan Scholarship

The Cosmopolitan Club of Merriam Park, St. Paul, offers a loan scholarship of $100 to a woman of high scholarship and fine character. Applications may be made to the dean of women before May 1.

The Minnesota Federation of Women's Clubs Loan Scholarships

The Minnesota Federation of Women's Clubs has charge of the three loan scholarships which provide money to be loaned to young women who are residents of Minnesota, the sum borrowed not to exceed $250. These loan scholarships are as follows:

(a) The Lydia Phillips Williams Memorial Scholarship, to be loaned to a woman student in any department of any college of the state.

(b) The Professor Maria Sanford Scholarship, to be loaned to a woman student in some college of the University of Minnesota.

(c) The Annabelle Collins Coe Scholarship, to be loaned to a woman student at the University of Minnesota or in any college of the state.

Professional Sorority Council Loan Fund

Income from sum of $200 to be used as loans to needy women students, preference given to senior girls.

Alpha Zeta Loan Fund

Established by the local chapter (LaGrange) of the fraternity of Alpha Zeta. Open to students in agriculture and forestry in the College of Agriculture, Forestry, and Home Economics. Loans may be for purposes of financing participation in intercollegiate contests of members of students judging teams. Applicant must have completed not less than three quarters of regular college work or its equivalent.

The Ludden Trust Fund

The late Honorable John D. Ludden, of St. Paul, gave the University of Minnesota $10,000 to be held, invested, and reinvested by the University through its Board of Regents, and the income thereof to be collected, received, and applied by said Board of Regents to the financial assistance of students of either sex in the School of Agriculture.

Mr. Ludden imposed the following conditions: "The beneficiaries must be youths who are residents of the State of Minnesota; they must be and

continue of unblemished moral character, and of temperate and industrious habits; and they must be such as by examination and trial shall evince and maintain a taste, habit, and aptitude for study and improvement; and any student who shall fail to come, or shall cease to be, within the above conditions shall forfeit all claims to the benefits of such fund. Subject to these conditions the administration of such income is entrusted to the said Board of Regents, which may make such rules therefor as they may deem judicious."

This fund produces $400 a year. Those wishing to avail themselves of its benefits should apply to the Executive Committee of the Board of Regents of the University of Minnesota. Application blanks may be obtained from the office of the dean of the Department of Agriculture.

Caleb Dorr Loan Fund

A loan fund open to students in the College of Agriculture, Forestry, and Home Economics, contributed by the late Caleb Dorr, of Minneapolis. The amount is variable and the conditions of the loan are similar to other loan funds.

Students' Trust Funds

The class of 1902 and the class of 1916 each has established a fund of $100 which is available for temporary loans to deserving students who are not below the junior class in the School of Agriculture. Applications may be made to the principal of the school.

The Home Economics Self-Government Association 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 at any time.

The Cosmopolitan Club Loan Fund

The Cosmopolitan Club of the University has established a small loan fund to be used for short time emergency loans to foreign students at the University. Application may be made to the dean of student affairs.

Minnesota State Organization for Public Health Nursing Loan Fund

The sum of $500 has been donated from the Minnesota Organization for Public Health Nursing to be available for loan fund purposes for deserving and needy students in Public Health Nursing.

Ariel Macnaughton Play Production Fund

A fund of $100 known as the Ariel Macnaughton Play Production Class Fund, available, all or in part, as a loan for any dramatic purpose, to an organization or individual, with condition that it must be returned to the University at the close of the school year following the loan. Decisions upon the loan are to be made upon recommendation by instructor in dramatics.

Horton Art Scholarship and Loan Fund

Annual income from $1,000, donated by Edith Lee Horton as a memorial to her father, Dr. William Dixon Horton, is available for loans or scholarships to junior and senior students in art classes.

F. D. Lindquist Loan Fund

The sum of $500 is available as a loan to students in the School of Business in need of financial assistance.

Juniata Shepperd Loan Fund

Gift of $208.74 to be known as Juniata Shepperd Loan Fund. The principal and income to be used for loans. Women students needing financial aid in the School and College of Agriculture and graduates in the Division of Home Economics are eligible.

Before making requests for these loans applicants should obtain consent of parents or guardians. Applications, accompanied by testimonials, may be made to the dean of women before May 1.

PRIZES

The John S. Pillsbury Prize

Three prizes of $100, $50, and $25, respectively, are awarded annually to the winners of the first three places in the Pillsbury Oratorical Contest. The winner of the first prize becomes the representative of the University in the annual contest of the Northern Oratorical League.

The Frank H. Peavey Prize

This prize of $100 is divided equally among the members of the team winning the annual freshman-sophomore debate.

The Freshman-Sophomore Oratorical Contest

Three prizes of $50, $30, $20 are awarded annually to the winners of the first three places in the freshman-sophomore oratorical contest.

The Frank O. Lowden Prize

The annual income from $3000 is given as two prizes of $100 and $50 to the winners of first and second places in the contest of the Northern Oratorical League. The members of this league are the University of Michigan, Northwestern University, the University of Wisconsin, the University of Iowa, the University of Illinois, and the University of Minnesota.

The Alumni Weekly Gold Medal

This medal is awarded annually on the recommendation of the faculty members of the Senate Committee on Debate and Oratory to that member of the graduating class who has made the best record in public speaking during his college course. In the absence of a suitable candidate, the committee may withhold the award.

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 10,000 words, must be handed to one of the instructors in political science by May 1. The next award will be made in 1930.

Harris Political Science Prizes

Two prizes of $150 and $100 are given annually by Professor N. D. Harris, of Evanston, Illinois, to the writers of the two best essays upon certain specified subjects in the field of state and local government, foreign politics, or foreign relations. The contest is open to undergraduate men in Indiana, Illinois, Minnesota, Iowa, Michigan, and Wisconsin.

Lambda Alpha Psi Prize

Lambda Alpha Psi, the honorary language society, in order to encourage independent work in languages and literature among the undergraduates of the University, offers an annual prize of $25 for the best essay in this field.

The American Institute of Architects' Medal

This medal is awarded annually by the American Institute of Architects to the senior in each of the leading architectural colleges of the United States who has the highest scholastic standing throughout his course.

Prizes of the Minnesota Chapter, American Institute of Architects

The Minnesota Chapter of the American Institute of Architects contributes annually two prizes of books to the value of $50 and $25 to the students attaining the two highest general averages in the work of the junior year of the course in architecture.

Faculty Prizes in Architecture

The faculty of the Department of Architecture awards annual prizes of books to the value of $35 and $15, respectively, to the students attaining the first and second highest general averages in the sophomore year of the course in architecture.

The Moorman Prize in Architecture

Mr. A. Moorman, of St. Paul, contributes an annual prize for excellence in senior architectural design as determined by a competition and the award of a committee of judges. The prize consists of a sum of money sufficient to cover the traveling expenses of the recipient on a trip to study notable examples of architecture in this country.

The William A. French Prizes in Interior Decoration

Mr. William A. French, of Minneapolis, has established two annual prizes of $15 and $10, respectively, for a design competition open to seniors in the course in interior decoration.

Northwestern Section American Society of Civil Engineers Prizes

The Northwestern Section of the American Society of Civil Engineers has established two cash prizes of $25 and $15, respectively, to be awarded annually for the two best papers written by students in the Department of Civil Engineering. Subjects must be submitted to the head of that department before December 1. Papers are due before April 1. No award will be made unless at least five papers are presented.

Minneapolis Section, American Society of Mechanical Engineers Prize

The Minneapolis Section of the American Society of Mechanical Engineers offers an annual cash prize of $50 for a technical paper relating to mechanical engineering, written by a member of the University of Minnesota student branch of the society. Papers are to be submitted in duplicate to the chairman or secretary of the section before May 1. The award may be withheld if no paper of sufficient merit is submitted.

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 and Architecture 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 3000 words, and must be submitted to the instructor in rhetoric on or before May 1.

A. D. Wilson Prize

This is the income from a fund contributed by friends of A. D. Wilson, awarded financially to the student in the College of Agriculture, Forestry, and Home Economics who submits the best essay on co-operation in agriculture.

Gideon Memorial Prize

The Gideon Memorial Fund of $500 was raised by members of the State Horticultural Society and presented to the University of Minnesota in 1908 in honor of Peter M. Gideon, Excelsior, the originator of the Wealthy apple, with the stipulation that the income from this fund be used for a prize in some annual competition open to students in horticulture. The annual income from the investment of this capital amounts to $25, payable $12.50 semiannually in May and November. This competition has taken the form of papers prepared on some horticultural subject and delivered at the annual meeting of the State Horticultural Society. In odd numbered years the competition is open to college students and in even numbered years to the students of the School of Agriculture. Arrangements for contests are in charge of the Division of Horticulture.

The Tomhave Medal

Provided by W. H. Tomhave, alumnus of College of Agriculture (Class of 1907). Awarded to the student who proves himself the most proficient in judging all classes of livestock. For conditions of competition see the head of the Division of Animal Husbandry.

Charles Lathrop Pack Foundation Forestry Prize

Gift of $2000 from Charles Lathrop Pack of which the income is to be used for two prizes for the best essays or other evidence of accomplished work in the interests of public co-operation and public appreciation of forestry. Open to all undergraduates specializing in forestry.

Evans Prize

A prize of $40 provided by Judge Evan A. Evans is awarded by the faculty of the Law School to that student in the third year class who shall have maintained the highest grade of scholarship throughout the three-year course leading to the degree of bachelor of laws.

The Rollins 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.

Alpha Gamma Gamma Prize in Dental Nursing

The active chapter of Alpha Gamma Gamma Sorority offers an annual prize of ten dollars ($10) in gold to the girl graduating from the School for Dental Nurses, who presents the highest scholastic average, having completed her entire course at the University of Minnesota.

Lehn and Fink Gold Medal

Beginning with the current year, Messrs. Lehn and Fink, of New York City, will award annually a gold medal to that student in the College of Pharmacy who graduates with the highest general average rating from the four-year course leading to the degree of bachelor of science in pharmacy.

Jacobson Graduate Prize

David L. Jacobson will offer a fifty-dollar gold medal to that student who graduates with the highest general average rating from the post graduate course in pharmacy leading to the degree of master of science in pharmacy.

Phi Delta Kappa Prize

The Phi Delta Kappa prize of $50 is offered annually by Eta (Minnesota) Chapter of the Phi Delta Kappa, national educational fraternity, to that undergraduate student in the College of Education who submits the best paper upon some educational problem, based upon original study and research.

Class of 1911 Memorial Trust Fund

A prize of $40 has been provided by the alumni of the class of 1911 for an annual contest to encourage original dramatic writing. Plays must be submitted by March 1.

The Conference Medal

The Conference medal is awarded each year by the Intercollegiate Conference Athletic Association to the man, graduating in the senior class of each conference university, who, through a course of four scholastic years' residence in the same university, has the highest degree of achievement in his athletic, as well as in his scholastic work.

ORGANIZATIONS AND PUBLICATIONS

SELF-GOVERNMENT ORGANIZATIONS

The Minnesota Union was organized in the spring of 1908 "to promote the best interest and welfare of the University of Minnesota, and comradeship among its members, and to erect and maintain a suitable clubhouse for such purposes." All men students of the University are active members of the Union. The membership fee is included in the incidental fee paid each quarter. 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 Minnesota Union maintains for the convenience of its members, a pool and billard room, smoking rooms, writing and study rooms, barber shop, game rooms, private dining rooms for students and faculty luncheons, and ballrooms.

The Union gives periodical social activities in the nature of an open house. Reservations for rooms are made through the manager or through the Information Bureau.

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 *All-University Council* is composed of the presidents of the college councils who shall be members of the senior class. In colleges having a total of 400 students of which 30 per cent or more are women there shall be two representatives, one man and one woman. 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.—Most 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.

PUBLICATIONS

The *Bulletin* of the University of Minnesota includes the reports of the president and of the Board of Regents, the bulletin of general information, the annual announcement 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 contain reports of original investigations made by members of the University. The several series offer the opportunity for the publication of comprehensive monographs and of papers of special importance to the people of the state. The following series are issued: Bibliographical Series, Education Series, Studies in the Social Sciences, Studies in the Physical Sciences and Mathematics, Studies in Engineering, Studies in Biological Sciences, Studies in Language and Literature.

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

The University Press

Hereafter the preceding two series and those of the publications mentioned below which are sold with similar books, syllabi, and monographs, will be united under the control of the University of Minnesota Press established by action of the Board of Regents in July, 1925.

Minnesota Botanical Studies.—A series of technical papers, appearing at irregular intervals, giving the reports of the Botanical Survey of Minnesota, and the results of botanical investigations by students and members of the staff of the Department of Botany.

Minnesota Plant Studies.—A series of semipopular booklets, designed primarily for the use of students and of the people of the state who are interested in knowing the plants of their neighborhood.

Lists with prices of preceding publications will be furnished by the university librarian.

The Minnesota Daily, the university newspaper, is published five times each week during the university year by the Minnesota Daily Association. The Official Daily Bulletin is published in the *Daily.* Its staff is composed entirely of students.

The Official Daily Bulletin, published in *The Minnesota Daily,* is the official organ of the administration. It contains announcements of meetings of regents, of faculties, of committees, and notices of importance to every department of the University.

The Gopher, the junior annual, is a book published annually by the junior class of the University.

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

Minnesota Chats is a monthly publication of general university character designed to carry to the Minnesota public the more interesting problems and achievements of the state's principal educational institution. It is sent without charge to those who ask to be placed on its lists.

The Bulletin of the Engineering Experiment Station is devoted to reports and announcements regarding the activities of the station and the various investigations carried on under its auspices.

The Techno-Log is issued monthly during the academic year by students in the College of Engineering and Architecture, the School of Chemistry, and the School of Mines. It is devoted to articles on engineering subjects and to alumni news.

Agricultural Experiment Station Bulletins give the results of experiments carried on at University Farm and at the branch stations at Crookston, Morris, Grand Rapids, Duluth, Waseca, Cloquet, and Zumbra Heights, as rapidly as such work is completed or as soon as conclusions of economic value are reached. At least four bulletins are published annually; usually the number is much larger. An *Annual Report* of the station and branch stations summarizes the work accomplished from year to year.

The Minnesota Farmers' Library, Special Bulletins, and *Circulars,* are a series of popular pamphlets issued by the Agricultural Extension Division, to inform farmers and others interested as to methods tried out at the Experiment Station and its branches, or elsewhere under the direction of the station staff, and approved as good practice in Minnesota.

The News Letter is a weekly clip sheet containing items of news and agricultural information designed for reprinting in the newspapers of the state.

The Extension Service News is a monthly publication intended as a medium for the exchange of news among those connected with the agricultural extension activities in the state.

Among Ourselves is a monthly "service sheet" the object of which is to promote the interests of the rural press.

The Minnesota Potato Letter is a monthly printed statement, issued through the potato-marketing season, to keep potato growers and others informed of the trend of the market.

The Visitor is a news letter issued monthly by the Division of Agricultural Education of the College of Agriculture, Forestry, and Home Economics, for teachers of agriculture, superintendents of schools, and students of education under the division named.

The Gopher Countryman is a monthly magazine published by the students of the College of Agriculture, Forestry, and Home Economics, for the publication of matters of interest to students and alumni and faculty.

The News of the School of Agriculture is a monthly newspaper issued by the Central School of Agriculture as a means of keeping students and alumni informed of the activities of the school and its students.

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

The *Northwest Monthly* is a small paper published to report activities at the Northwest School and Station at Crookston.

The West Central School News is a quarterly, four-page newspaper, giving reports of the activities of the West Central School of Agriculture and the Experiment Station, Morris.

Gopher Peavey is a book published annually by the students of the Division of Forestry.

Minnesota Law Review.—A legal magazine published monthly, December to June, inclusive, by the faculty and students of the Law School. It is the official journal of the Minnesota State Bar Association.

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

Bulletins of the Minnesota Geological Survey include reports of work done in Minnesota by the Minnesota Survey in co-operation 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, of Northeastern, and of Southern Minnesota; Preliminary Reports on the Clays and Shales of Minnesota, Geology and Ore Deposits of the Cuyuna Iron Range, and Peat Deposits in Minnesota; Report on the Magnetite Deposits of the Eastern Mesabi Range; Foundry Sands of Minnesota; A Contribution to the Geology of the Mesabi Range; A Guidebook to Minnesota Trunk Highway No. 1; The Geology and Magnetite Deposits of Northern St. Louis County.*

The Bulletin *of the* University *of* Minnesota

The College of Science, Literature, and the Arts

Part I

Announcement of Courses for the Years 1925-1927

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Act of October 3, 1917, authorized July 12, 1918

THE COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

FACULTY

ADMINISTRATION

Lotus Delta Coffman, Ph.D., LL.D., President
William Watts Folwell, LL.D., President Emeritus
John B. Johnston, Ph.D., Dean, Professor of Neurology
John F. Downey, M.A., C.E., LL.D., Dean Emeritus
Edward E. Nicholson, M.A., Dean of Student Affairs
Joseph M. Thomas, Ph.D., Assistant Dean for the Senior College, Professor of English, and Chairman of the Department of English
William H. Bussey, Ph.D., Assistant Dean for the Junior College, Professor of Mathematics, and Chairman of the Department of Mathematics
Royal R. Shumway, B.A., Assistant Dean for Students' Work and Associate Professor of Mathematics

ANIMAL BIOLOGY

Professors William A. Riley, Ph.D., Head; Hal Downey, Ph.D., Thomas S. Roberts, M.D., Charles P. Sigerfoos, Ph.D.; Professor Emeritus Henry F. Nachtrieb, B.S.; Associate Professors Royal N. Chapman, Ph.D., Elmer J. Lund, Ph.D., Oscar W. Oestlund, Ph.D.; Assistant Professor Dwight E. Minnich, Ph.D.; Instructors John A. Cederstrom, Ph.B., Marshall Hertig,[1] Ph.D., Emily Payne, Ph.D., Adolph Ringoen, Ph.D.; Teaching Assistants Lennart G. Bryngelsson, B.S., Ralph Dawson, M.A., Marion Irwin, B.A., Claude Leist, M.A., Dietrich Smith, B.A., Hugh E. Wallace, B.S.; Assistants Carol Young Alwin, Edward C. Hanson, B.S., Clarence E. Olson, B.S.

ANTHROPOLOGY

Professor Albert Ernest Jenks, Ph.D., Chairman; Associate Professor Wilson D. Wallis, Ph.D.

ARCHITECTURE

See the Bulletin of the College of Engineering and Architecture.

ASTRONOMY

Professor Francis P. Leavenworth, M.A., Head; Instructor William O. Beal, M.A., M.S.; Assistant Franz H. Rathmann, B.A.

BACTERIOLOGY

See the Bulletin of the Medical School.

[1] Absent on leave, fall quarter.

BOTANY

Professors J. Arthur Harris, Ph.D., Head; Carl O. Rosendahl, Ph.D., Josephine E. Tilden, M.S.; Associate Professors Frederic K. Butters, Ph.D.; Rodney B. Harvey, Ph.D.; Assistant Professors William S. Cooper, Ph.D., Ned L. Huff, M.A.; Instructors Ernest Dopp, M.A., Ethel M. Mygrant, B.A., M.S.; Teaching Assistants Harriet George, M.A., Ethel Sue Horton, M.A., Jessie P. Rose, M.A., Jerry A. Vacha, M.S., Raymond Wallace, B.A.; Assistants Esther M. Goering, B.S., Johanna Kildahl, Ph.D., Edna K. Lockwood, Abraham B. Stoesz, B.A.

CHEMISTRY

See the Bulletin of the School of Chemistry.

AGRICULTURAL BIOCHEMISTRY

See the Bulletin of the College of Agriculture, Forestry, and Home Economics.

COMPARATIVE LITERATURE

Professor Oscar W. Firkins, M.A.

COMPARATIVE PHILOLOGY

Professor Frederick Klaeber, Ph.D., Head.

DRAWING AND DESCRIPTIVE GEOMETRY

See the Bulletin of the College of Engineering and Architecture.

ECONOMICS

See the Bulletin of the School of Business.

ENTOMOLOGY AND ECONOMIC ZOOLOGY

See the Bulletin of the College of Agriculture, Forestry, and Home Economics.

ENGLISH, RHETORIC, AND PUBLIC SPEAKING

Professors Joseph M. Thomas, Ph.D., Chairman; Joseph W. Beach, Ph.D., Richard Burton, Ph.D., Elmer E. Stoll, Ph.D.; Professorial Lecturer Smiley Blanton, M.D.; Associate Professors Cecil A. Moore, Ph.D., Frank M. Rarig, M.A.; Assistant Professors Mary Ellen Chase, Ph.D., William P. Dunn, Ph.D., Lewis B. Hessler, Ph.D., James T. Hillhouse, Ph.D., Elizabeth Jackson, Ph.D., Kemp Malone, Ph.D., Charles W. Nichols, Ph.D., Anna H. Phelan, Ph.D., Lester Raines, M.A., Martin B. Ruud, Ph.D., Emerson G. Sutcliffe,[1] Ph.D., Cortlandt van Winkle, Ph.D.; Instructors Amy E. Armstrong, M.A., Elizabeth Atkins, Ph.D., Clifford Bender, M.A., C. Ralph Bennett, B.A., Arthur P. Bouvier, B.A., Arthur R. Braunlich, M.A., Lawrence M. Brings, B.A., Muriel B. Carr, Ph.D., Gage Ellis Clarke, M.A., John J. Creamer, B.A., LL.B., Frances Kelley del Plaine, M.A., Ariel M. Dingwall, M.A., Majl Ewing, B.A., Ray W. Frantz, M.A., Margaret Gable, M.A., Adah Grandy, B.L., J. Stanley Gray, M.A., Lennox B. Grey, Ph.B., Earl L. Griggs, M.A., Winslow J. Loveland, M.A., Margaret E. Macgregor, M.A., Wayne L. Morse, M.A., Lucian A. Osgood, M.A.,

[1] Absent on leave, 1925-26.

Harlow C. Richardson, B.A., Alethea E. Smith, B.A., Harold C. Sproul, M.A., R. Rhodes Stabley, M.A.; Teaching Assistant Medora E. D. Kinne, B.A.; Assistants Ruth Christie, B.A., Elizabeth Craddick, B.A., Elizabeth Gile, B.A., Linnette I. Nelson, B.A.

GEOGRAPHY

Associate Professor Darrell H. Davis, Ph.D., Head; Instructor Richard Hartshorne, Ph.D.

GEOLOGY AND MINERALOGY

Professors William H. Emmons, Ph.D., Head; Frank F. Grout, Ph.D., Clinton R. Stauffer, Ph.D.; Assistant Professors John W. Gruner, Ph.D., George M. Schwartz, Ph.D.; Instructors Ira S. Allison, B.A., Charles E. Erdmann, E.M., M.S., William Graham, M.S., George A. Thiel, Ph.D.; Assistants Eunice Peterson, M.A., Frances J. Pettijohn, B.A., Philip J. Shenon, M.S., Walter S. Yarwood, M.S.

GERMAN

Professors Carl Schlenker, B.A., Chairman, Oscar C. Burkhard, Ph.D., Samuel Kroesch, Ph.D.; Assistant Professors James Davies, Ph.D., George F. Lussky, Ph.D.; Instructors Paul Oczipka, Ph.D., Alvin E. Prottengeier, B.A., Karl Reuning, Ph.D.; Teaching Assistants William Dehorn, Ph.D., Esther Hendrickson, M.A., Gina Wangsness, B.A.; Assistant Bertha M. Bertsch, B.A.

GREEK

Professor Charles A. Savage, Ph.D., Chairman; Professor Emeritus John Corrin Hutchinson, B.A.; Assistant Dorothy B. Strong, B.A.

HISTORY

Professors Guy Stanton Ford, Ph.D., Chairman; Solon J. Buck, Ph.D., William S. Davis,[1] Ph.D., Norman Scott Brien Gras, Ph.D., Samuel B. Harding, Ph.D., Charles K. Webster, M.A., Albert B. White, Ph.D.; Associate Professors August Charles Krey, Ph.D., Lester B. Shippee, Ph.D.; Assistant Professor George M. Stephenson, Ph.D.; Instructors Mildred Hartsough, Ph.D., John P. Pritchett, M.A., Lawrence D. Steefel, Ph.D., Faith Thompson, Ph.D., David H. Willson, Ph.D.; Teaching Assistants Genevieve R. Fallon, B.A., Theodore Hanunian, M.A., B.D., Florence A. Hartwig, B.S., Jean Lamb, B.A., George F. T. Mayer, B.A., Stanley Perry, B.A., Alice E. Smith, B.S., John B. Schmoker, B.A., Alice F. Tyler, M.A.; Assistant Loretta O'Malley, B.A.

HOME ECONOMICS

See the Bulletin of the College of Agriculture, Forestry, and Home Economics.

HUMAN ANATOMY

See the Bulletin of the Medical School.

[1] Absent on leave, 1925-26.

HUMAN PHYSIOLOGY

See the Bulletin of the Medical School.

JOURNALISM

Instructors Reuel R. Barlow, B.A., Thomas E. Steward, B.A.; Assistant Genevieve Boughner, B.A.

LATIN

Professor Joseph B. Pike, M.A., Head; Assistant Professor Robert V. Cram, Ph.D.; Teaching Assistants Emily A. Babcock, M.A., Rosa Seeleman, B.S.

LIBRARY METHODS

Professor Frank K. Walter, M.A., M.L.S.; Associate Professor Ina T. Firkins, B.L.; Instructor Harold Russell, B.A., B.L.S.

MATHEMATICS

Professors William H. Bussey, Ph.D., Chairman; Dunham Jackson, Ph.D.; Associate Professors Raymond W. Brink, Ph.D., William L. Hart, Ph.D., Anthony L. Underhill, Ph.D.; Instructors Elizabeth Carlson, Ph.D., Gladys E. C. Gibbens, Ph.D., Ella A. M. Thorp, B.A.; Teaching Assistants Russell L. Grossnickle, M.A., William H. McEwen, M.A., M.S., William C. Risselman, B.A., Gilbert N. Trytten, B.A.

MECHANICAL ENGINEERING

See the Bulletin of the College of Engineering and Architecture.

MILITARY SCIENCE AND TACTICS

Professor Bernard Lentz, Major, Infantry, U.S.A.; Assistant Professors Nyal L. Adams, Captain, Coast Artillery Corps, U.S.A.; Myron J. Conway, First Lieutenant, Infantry, U.S.A.; Julian H. Gist, Captain, Infantry, U.S.A.; Edward Montgomery, Major, Coast Artillery Corps, U.S.A.; Wilton B. Persons, B.S. (E.E.), Captain, Signal Corps, U.S.A.; Don F. Pratt, Captain, Infantry, U.S.A.; William F. Rehm, Captain, Infantry, U.S.A.; Henry H. Rutherford, B.A., M.D., Lieutenant Colonel, Medical Corps, U.S.A.; Arthur R. Walk, Captain, Infantry, U.S.A.; Instructors Alfred Brandt, Technical Sergeant; John Coop, Sergeant, U.S.A.; Aubrey R. Dunkum, Staff Sergeant; Joseph Havlicek, Regimental Commissary Sergeant; Ernest Mylk, Private, 1st class, Spec. 4th class; Harry E. Strider, Technical Sergeant.

MUSIC

Professors Carlyle M. Scott, Chairman; Earle G. Killeen; Associate Professors Donald N. Ferguson, M.A., William Lindsay; Assistant Professors Gertrude Hull, Gertrude Reeves; Instructors Henry Cunnington, Christian Erck, George H. Fairclough, F.A.G.O., M.Mus., Blanche Kendall, Frank Kuchinka, Helen Lawrence, Abe Pepinsky, Inez C. Richter, Karl Scheurer, Clyde W. Stephens, Kate M. Twitchell, Henry J. Williams; Assistant Mary Malcolm, B.S.

ORIENTATION

Associate Professor John M. Gaus, Ph.D., Director; Professors F. Stuart Chapin, Ph.D., Richard M. Elliott, Ph.D.; Associate Professor Frederic K. Butters, Ph.D.; Assistant Professors Edwin L. Clarke, Ph.D., George P. Conger, Ph.D.; Instructor Ralph T. Huntley, B.A.

PHILOSOPHY

Professors Norman Wilde,[1] Ph.D., Head; David F. Swenson, B.S.; Assistant Professor George P. Conger, Ph.D.; Instructor Harold C. Blote, B.A.; Assistant Marie Shattuck, B.A.

PHYSICAL EDUCATION FOR MEN

Professor Fred W. Luehring, Ph.M., Director; Associate Professors Louis J. Cooke, M.D., Assistant Director; Louis S. Keller, M.A.; Instructors Emil W. Iverson, Blaine McKusick, LL.B., Walter R. Smith, B.A., Director of Intramural Athletics, Harold T. Taylor, M.A., Niels Thorpe; Assistant Lloyd S. Boyce.

PHYSICAL EDUCATION FOR WOMEN

Professor J. Anna Norris, M.D., Director; Assistant Professors Gertrude M. Baker, B.A., May S. Kissock, B.A., Alice J. H. Tolg, M.D.; Instructors Irene Clayton, B.S.. Rhea Coxe, Grace E. Denny, B.S., Helen Hazelton, B.A., Marion McGimsey, Katharine Sias, B.A.

PHYSICS

Professors Henry A. Erikson, Ph.D., Chairman; John T. Tate, Ph.D., Anthony Zeleny, Ph.D.; Associate Professor Louallen F. Miller, Ph.D.; Assistant Professors Joseph Valasek, Ph.D., John H. Van Vleck, Ph.D.; Instructor J. William Buchta, M.A.; Teaching Assistants Arthur J. Ahern, B.A., Earl N. Clarke, B.S., David L. Cook, B.A., Louis P. Granath, B.A., Sigmund Hammer, B.A., Elmer Hutchinson, M.S., Ernest J. Jones, B.S., John Kralovec, B.A., Louis Maxwell, B.A., Walter M. Nielsen, B.S., Carl E. Nurnberger, B.A., Gerald W. Willard, B.A.; Assistants Iwao Fukushima, M.A., William B. Halliday.

PLANT PATHOLOGY

See the Bulletin of the College of Agriculture, Forestry, and Home Economics.

POLITICAL SCIENCE

Professors Cephas D. Allin, LL.B., M.A., Chairman; Jeremiah S. Young, Ph.D.; Associate Professors William Anderson, Ph.D., John M. Gaus, Ph.D., Harold S. Quigley, Ph.D.; Assistant Professors, Harold F. Kumm, M.A., S.J.D., Morris. B. Lambie, M.A.; Lecturers John P. Dalzell, B.A., LL.B., Benjamin W. Palmer, M.A., LL.B.; Instructors Arnold V. Johnston, M.A., Carl W. Young, M.A.; Teaching Assistant Sherman Anderson, B.A.; Assistants Asher N. Christensen, B.A., Naham Shocket, B.A.

[1] Absent on leave, 1925-26.

PREVENTIVE MEDICINE AND PUBLIC HEALTH

See the Bulletin of the Medical School.

PSYCHOLOGY

Professors Richard M. Elliott, Ph.D., Chairman; William S. Foster, Ph.D., Karl S. Lashley, Ph.D., Donald G. Paterson, M.A.; Associate Professor Herbert Woodrow, Ph.D.; Assistant Professor Charles Bird, Ph.D.; Instructors Edna F. Heidbreder, M.A.; Heinrich Kleuver, Ph.D., Katherine E. Ludgate, Ph.D.; Teaching Assistants Josephine M. Ball, B.A., Ruth Hubbard, B.A., Carlyle Jacobsen, B.A., Theos A. Langlie, B.A., Marion Myer, B.A., Mary M. Shirley, B.A., Agnes Thorson, M.A.

ROMANCE LANGUAGES

Professor Everett W. Olmsted, Ph.D., Litt.D., Head; Irville C. Le Compte, Ph.D., Colbert Searles, Ph.D.; Associate Professors Francis B. Barton, Docteur l'Université de Paris, Ruth S. Phelps, Ph.D., Edward H. Sirich, Ph.D.; Assistant Professors Carlos V. Arjona, M.A., Herbert E. Clefton, M.A., Jay K. Ditchy, Ph.D., William L. Fichter, Ph.D., Jules T. Frelin, B.A., Alexander H. Krappe, Ph.D.; Instructors Paul Bosanko, LL.B., M.A., Robert A. Guinn, B.A., Marguerite Guinotte, Brevet Supérieur, Certificat d'Aptitude Pédagogique, M.A., Paul C. King, B.A., Olav K. Lundeberg, M.A., Elizabeth Nissen, M.A., Arturo Torres-Rioseco, M.A., Certificado de Pedagogia, George B. Watts, M.A.; Teaching Assistants Isabel G. Green, B.A.; J. Henry Owens, B.A., Rosa Seeleman, B.S., Marian H. Wilson, B.S.

SCANDINAVIAN

Professors Gisle C. Bothne, M.A., Head; Andrew A. Stomberg, M.S.

SOCIOLOGY AND SOCIAL WORK

Professors F. Stuart Chapin, Ph.D., Chairman and Director of the Training Course for Social and Civic Work; Luther L. Bernard, Ph.D., Pitirim Sorokin, Dr. of Soc.; Professorial Lecturer Frank J. Bruno, B.A., B.D.; Associate Professor Manuel C. Elmer, Ph.D.; Assistant Professors Edwin L. Clarke, Ph.D., Ross L. Finney, Ph.D., Gustav A. Lundquist, M.A., Mildred D. Mudgett,[1] Ph.D.; Lecturers Monica C. Keating, B.A., Belle Mead, M.A., Gladys B. Rempel, B.A., Helen A. Young, B.A.; Instructors Anna Earl, M.A., C. Russell Hoffer, M.S., John F. Markey, B.A., Harold A. Phelps, M.A., Carle C. Zimmerman, M.A.; Teaching Assistants Dorothy Page Gary, M.A., Oscar M. Mehus, M.A., Henry C. Mohler, B.A., Ruth R. Pearson, Ph.B.; Assistants Ruth Isker, B.A., Mildred Parten, B.A., Marjorie White, B.A.

[1] Absent on leave, 1925-26.

GENERAL INFORMATION

1. *Admission to the freshman year.*—Admission is either by certificate (for graduates of accredited secondary schools) or by examination. Candidates must have completed the equivalent of a four-year high school course and must present:

a. Four units of English; or three units of English and four units of a foreign language; or three units of English and two units of each of two foreign languages.

b. One unit of algebra and one unit of plane geometry.

c. Enough additional work to make in all fifteen units, of which not more than four may be in Group F (vocational and miscellaneous subjects).

A detailed statement of admission requirements may be found in the bulletin of general information.

2. *Examination in English.*—All students registering for English A-B-C or Rhetoric 4-5-6 are required to take a series of tests in English. Any student in either course who fails to pass this examination will be required to register with the Extension Division for subfreshman rhetoric for as many quarters as may be necessary. During this time he can be registered in this college for not more than fourteen credits.

Students who are registered for English A-B-C will be further divided on the basis of these tests into two groups: (1) those who will be allowed to continue in English A-B-C; (2) those who will be restricted to a three-credit course in composition during their freshman year.

3. For students who wish to be excused from freshman English there are optional examinations in literature and in composition. A student who passes both these examinations will be excused from freshman English and may take any courses in English, Composition, and Public Speaking for which English A-B-C is the only prerequisite. A student who passes only the test in literature is excused from the work in literature. He must complete his junior college requirement in English by taking Composition 4-5-6, and may register for any courses in English for which English A-B-C is the only prerequisite. A student who passes only the test in composition is excused from the work in composition. He must complete his junior college requirement in English by taking English 1-2-3, and may register for Composition 11-12 or 18-19 or Public Speaking 41-42-43 or 45-46.

Permission to take either one of these examinations will be given only if the student presents a statement from the principal of his preparatory school that his general average of scholarship ranks him in the upper half of his class and that he has shown unusual aptitude in English.

4. *Persons of maturity* who (a) cannot meet the entrance requirements or (b) desire to carry less than 10 credit hours of work, may be admitted by the Students' Work Committee as unclassed students.

5. *Admission to advanced standing.*—Attention is called to the following rules governing students entering this college with advanced standing from some other institution.

a. Credits of advanced standing are provisional and are finally adjusted upon the following basis: Any student who, after one year's residence, has failures in nine credits or more 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 recovered only by special examination.

b. A student entering with advanced standing must earn an average of one honor point per credit for all work in this college counted for graduation or for admission to the Senior College.

c. A student admitted to the Senior College and failing to meet this requirement may be excluded from the Senior College at any time after the first quarter.

6. *Examinations for advanced standing.*—Any student upon first registration at the University may, with the approval of the Students' Work Committee, be allowed without charge to take examinations for advanced standing in subjects in which the student declares himself to be prepared. Such examinations must be taken within the first six weeks of residence.

7. *Examinations for credit.*—Credit for work done outside of class may be obtained by taking special examinations. Application should be made to the assistant dean for students' work.

8. No student may receive by means of such an examination, more than 12 credits in one department, or more than a total of 18 credits, toward graduation.

9. No credit in beginning language courses may be gained by special examination.

10. *Registration.*—Students are required to register on the days announced in the University calendar. Only in very exceptional circumstances will a student be allowed to register thereafter, and no student will be enrolled after the first week of the quarter. (See also section 13, Penalty Fees.)

11. No student will receive credit for work for which he is not properly registered.

12. *Fees.*—Tuition fee (per quarter)

Residents of Minnesota	$20.00
Nonresidents	30.00
Credit hour tuition fee (unclassed students, auditors, and others carrying less than full work.)	
Residents of Minnesota	1.75
Nonresidents	2.50
Incidental fee (per quarter)	4.00
Deposit* (first quarter only)	5.00

* Such charges as may be incurred for lockers, library penalties, laboratory breakage, etc., will be deducted from the amount of this deposit and the balance will be refunded by mail some time after the close of the college year.

Military deposit (required of all students taking military drill) 10.00
Special fees
Examination for removal of condition..... 1.00
Examination for credit (after the first quarter in residence) 5.00
Special examination 5.00
Laboratory deposit (required of students registered for courses in chemistry) 5.00
Graduation fee: Beginning with the calendar year of 1926, each candidate for a degree will be charged a graduation fee of 10.00
Music fees (in addition to tuition) for those electing music
Class fee (per quarter)
Class lessons (three students in each class) two hours per week 45.00
One class and one individual lesson per week 55.00
Two individual lessons per week (one-half hour)..... 65.00
One individual lesson per week 35.00
Practice fees
Organ (per hour) ..... 0.20 to 0.40
Piano[1] (per quarter) 5.00
($0.50 per quarter for each additional hour per week)

13. *Penalty fees.*—The penalty fee for late registration, late change of registration, or late payment of fees is two dollars ($2), with one dollar ($1) additional for each day of delay after classes begin, provided that no student shall pay more than twelve dollars ($12) of penalty in any given quarter.

14. *Auditors.*—Under certain conditions stated below students may be enrolled as auditors and may hear lectures and class discussions regularly without being required to do the work of the course. No regular student may be admitted to classes as an auditor until his senior year.

15. Any mature person not a regular student may be admitted as an auditor to any course under the following regulations:

a. He shall secure the written aproval of the dean and of the instructor in charge of the course.

b. He shall present such approval to the registrar and pay the usual fee charged for regular membership in such a course. See section 12.

16. Attendance as an auditor does not entitle one to credit or to admission to regular examinations in the course.

17. Any senior whose high scholastic standing enables him to carry a small program may register as an auditor under the same regulations.

18. Four grades, A, B, C, and D, are given for work of varying degrees of merit. The grade D permits a student to register for continuation or

[1] Six hours per week.

dependent courses; and work completed with this grade is counted toward graduation when combined with work of A or B grade in other courses. The grade C indicates work of a quality acceptable for graduation; the grades B and A are given for work of higher degrees of excellence.

Work of inferior grade is marked E (condition) or F (failure). Work which is of at least D grade but, because of circumstances beyond the student's control, not complete, may be marked I (incomplete).

19. *Credits and honor points* are used for convenience in indicating amount and quality of work.

Amount of work is expressed in *credits*. Each credit demands on the average three hours a week of a student's time; that is, one recitation with two hours of preparation, or three hours of laboratory work.

Quality of work is indicated by *honor points*. Honor points are assigned to the various grades on the assumption that work of a quality acceptable for graduation is graded at least C. (See section 18.) Each credit with the grade of C carries one honor point; each credit with the grade of B, two honor points; each credit with the grade of A, three honor points. The grade of D carries no honor points. The grade of F carries minus one honor point per credit, the penalty being removed if the course is repeated with the grade of D or higher.

A student who maintains an average of one honor point per credit is proceeding normally to fulfill the requirements for graduation or for admission to the professional schools. A student whose record falls below this average is required to complete additional work with a grade of C or better. On the other hand, by maintaining an average better than C, a student is able to reduce the amount of work which he is required to complete. (See sections 34 to 36.)

20. *The grade I (incomplete)* cannot be given when the work not completed represents more than one fourth of the quarter's work.

21. An *incomplete* not removed before the end of the first month of the student's next quarter in college becomes a *condition*. The Students' Work Committee may, in special cases, extend this time limit.

22. *The grade E (condition)* is a temporary grade, representing a deficiency which may be removed without repeating the course. A student who has received a condition in a course may register for the continuation or dependent course the following quarter.

23. *Removal of conditions.*—Conditions may be removed by additional work and an examination or, in certain cases, by satisfactory work in the next quarter of the course.

24. In Animal Biology, Botany, Geography, German, Greek, History, Journalism, Latin, Mathematics, Music, Physical Education for Women, Physics, Political Science, Public Speaking, Rhetoric, and Scandinavian, conditions may sometimes be removed by passing a continuation course with a grade of C or better, in which case the grade for the first quarter will be recorded as D. A student who desires to remove a condition in this way must obtain the approval of the department, and must notify the registrar's office of his intention within the first week of the quarter. No student who

has already failed in the condition examination is permitted to remove the condition by this second method.

25. In the following departments, conditions may be removed only by examination: Anthropology, Architecture, Astronomy, Chemistry, Comparative Literature, Comparative Philology, Drawing, Economics, English, Geology, Philosophy, Physical Education for Men, Psychology, Romance Languages, and Sociology.

26. The permanent grade resulting from the removal of a condition may in no case be higher than C.

27. Examinations for the removal of conditions incurred during the fall and winter quarters are given during the first thirty days of the succeeding quarter. Examinations for the removal of conditions incurred during the spring quarter are given the week before the opening of the fall quarter.

28. A student who desires to take a condition examination must notify the registrar in writing at least three days before the date scheduled for the examination. Any student failing to give such notice will not be allowed to take the examination.

29. A condition not made up within one quarter of residence becomes a failure subject to the rules governing failures.

30. *The grade F (failure)* represents a deficiency so serious that the student must repeat the course in order to obtain credit therein.

31. A student receiving a failure in any course shall not be allowed to pursue the continuation of that course the following quarter.

32. Any student receiving a failure in a course which is required in his curriculum must repeat the course the next time it is offered.

33. Any student who wishes to repeat a course to raise his grade must do so the next time the course is offered.

34. *Quality credit.*—For each five honor points in excess of one honor point per credit, the required number of credits will be diminished by one.

35. This regulation applies only to the total number of credits required. It does not apply to other specific requirements of the student's curriculum. It is in force as regards (a) admission to the Senior College, the College of Education, and the School of Business, (b) graduation from the general course and from the special courses leading to the degrees of bachelor of arts and bachelor of science, and (c) the work done *in this college* in the following combined Arts and professional courses: Arts and Dental Surgery, Arts and Law, Arts and Medicine, and Arts and Nursing.

36. This regulation is based on the well-known fact that students of high scholarship have accomplished more than those who have poorer records. Students of higher attainment are thus given the opportunity of completing the work for the B.A. degree in less than four years and entering earlier on their graduate work. Seniors with high scholastic standing are allowed the privilege of visiting classes* and of reading under direction; and students who are handicapped by outside work or poor health can thus carry less than full work and still make a normal advance toward graduation.

* See sections 15 and 17.

37. *Junior and Senior colleges.*—The Junior College, consisting of the first two years, offers instruction in the fundamental branches which are required in preparation for the courses leading to the degrees B.A. and B.S., and for the professional schools. It is expected also that its courses of study will offer preparation for various vocations or will provide a general education for those who do not complete a longer course.

The Senior College, consisting of the third and fourth years, is concerned primarily with the advanced instruction leading to the Bachelor's degrees.

Each college is under the general direction of an assistant dean. See Directory of Administrative and Departmental Offices in Part II of this bulletin.

38. Any student who does not wish to be a candidate for a degree may be enrolled in the Junior College. He must register for English A-B-C during his first year, and for additional work approved by his faculty adviser in consideration of his special needs. A student registered for a program of studies not leading to a degree is expected to maintain an average standing of C.

39. Students who are candidates for a degree are listed as freshmen when they have less than 39 credits; as sophomores when they have 39 or more. Students in the Senior College are registered as juniors until they have earned 130 credits, and as seniors thereafter.

40. Any student who fails to complete the requirements for admission to the Senior College or for graduation within the normal period will, in order to complete the work, be required to continue in the Junior or Senior College for one or more university sessions. During this period, he will be required to secure an average of one honor point for every credit of work for which he is registered.

41. The college distinguishes between junior college courses, intended primarily for freshmen and sophomores, and senior college courses, intended primarily for juniors and seniors.

42. Senior college courses appear in the announcement as open to "juniors and seniors" or to "juniors, seniors, and graduates." The prerequisites for these courses are governed by the following rule: If the prerequisite courses are open to freshmen in their first and second quarters, they must amount to at least fifteen credits; if not, they must amount to at least ten credits. (Certain courses restricted to juniors and seniors are not senior college courses in this sense. Every such course is specially marked in the program.)

43. Senior college courses may be taken by sophomores who have had one honor point per credit in their previous work, and have completed with a grade of C the prerequisites for the courses desired; but courses which carry graduate credit may not be taken earlier than the third quarter of the student's sophomore year.

44. *Election of subjects in other colleges or schools.*—In the senior year, any student registered in the College of Science, Literature, and the Arts may elect not to exceed 6 credits per quarter in any other college or school of this University, provided that (1) the courses are indicated by the dean

of the college or school in question and approved by the Advisory Committee of this college as suitable for such election; and (2) no duplicate of subject occurs. Courses so taken are counted toward the bachelor of arts degree on the same terms as those taken in the College of Science, Literature, and the Arts. A list of such courses will be found at the end of the program.

By resolution of the Board of Regents students in any college electing work in any other college must complete the work so elected before they are allowed to come up for the degree for which they are candidates.

Seniors desiring further information regarding courses open should consult the assistant dean for the Senior College.

45. *Faculty advisers for students in the Junior College.*—The junior college office (106 Folwell Hall) is open daily throughout the year to students who wish information or advice. Any student is invited to call at this office and make an appointment to meet an adviser. The dean of the college, the assistant deans, and several faculty advisers are ready to consult with students about any matter that pertains to their college work.

The selection of studies, methods of study, the selection of a vocation and how to prepare for it, living conditions, outside activities, difficulties in adjusting themselves to the conditions and requirements of college life and work, arrangement of courses of study to meet special needs, special opportunities and facilities for those students whose superior native gifts enable them to accomplish more or to go more rapidly than the average, are some of the problems upon which students are constantly seeking advice. In general the desire of the advisers is to help the individual student to make the most of his opportunities while in college.

The faculty advisers of the whole University are organized into a body of advisers which will make the information and experience gained in all colleges available for the benefit of the students of each college.

46. *In the Senior College.*—When the student has chosen his major subject, he is assigned by the department in charge of that subject to a major adviser who has oversight of all his scholastic work in the Senior College.

GENERAL REGULATIONS

Note.—Students are held individually responsible for the information contained in these pages. Failure to read and understand these regulations will not exempt a student from whatever penalties he may incur.

1. *Number of credit hours.*—Students must elect at least 13 credits of work a quarter. To take less than that number, a student must secure permission from the Students' Work Committee.

2. Students ordinarily may not elect more than 17 credits. After two quarters of residence a student may register for 18 credits provided he has an average of 1½ honor points per credit for the two quarters *previous to the time of registration,* and no condition or failure for the quarter immediately preceding registration. A student carrying 18 credits may be required to revise his program if his work shows a serious decline.

3. *Extension and correspondence courses.*—No student enrolled in the college will be allowed to carry work in the Extension Division without permission of the Students' Work Committee. No student may enroll for an extension course if this would increase his credits beyond the maximum allowed.

4. Credits received in University Extension courses are counted as credits in this college only after the student has completed one year of work in the college.

5. *Courses in practical music.*—Courses in practical music are ordinarily not open to freshmen and sophomores except those working for a major in music.

After one quarter's residence with satisfactory work, any student carrying a regular schedule in this college may, with the permission of the assistant dean for students' work, take courses in practical music in the Extension Division without credit. This privilege may be withdrawn whenever the student falls below grade in any of his work.

6. *Physical education.*—All men are required to complete Physical Education 1-2-3 and 4 or their equivalent. This work should be done in the freshman year. Course 3 in Preventive Medicine may be substituted for Course 4 in Physical Education. All women are required to complete Physical Education 1-2-3 and 4, and three quarters of work in courses open to sophomores. This work should be finished before the beginning of the junior year.

7. *Military drill.*—All men are required to register for military drill during their first two years, and to complete satisfactorily six quarters of drill.

Students entering with two full years of advanced standing are not required to drill. Students with one full year, or with more than one year but less than two years, of advanced standing must complete three quarters of drill.

8. *Afternoon work.*—All freshmen and sophomores are required to elect approximately one third of their work in the afternoon.

9. *Residence.*—To secure a degree from this college a student must earn at least 45 credits in residence at this college. If the term of residence is only one year, the year must be the senior year; and in any case, a student must spend two "quarters" of his senior year in residence.

10. *Habitual bad English.*—Any student who, either in speaking or in writing, habitually uses bad English shall be reported by his instructor to the dean with all available evidence. If the dean considers this evidence sufficient, he will require the student to take without credit such further work in rhetoric as the chairman of the Department of English may specify.

11. *Changes in registration.*—After classes have begun, no changes in registration other than necessary changes, may be made without permission of the Students' Work Committee.

12. No student may drop out of class without permission of the Students' Work Committee. Students are warned that failure to obey the regulation in this paragraph is likely to result in their exclusion from college.

13. When a student's registration in any subject is cancelled at his own request within the first two weeks of any quarter, no standing is recorded. After that time a record of his work is obtained from his instructor. Work of the grade of D or higher will be cancelled without grade; work below the grade of D will be recorded as "dropped with the grade of F."

14. If a student is in any doubt regarding his registration or desires to make any changes in it, he should consult his major adviser, the assistant dean for his college, or the chairman of the Students' Work Committee.

15. *Absences.*—No unexcused absences are to be regarded as legitimate. Both tardiness and absence are dealt with by the individual instructor on the assumption that each student is expected to be present at every meeting of the class.

16. *Penalties for excessive absence.*—Any junior college student who has unexcused absences (in no case less than two) equal to the number of credits in the course, will be dropped from the class with a record of failure in the course.

Any senior college student whose absences in any course exceed one sixth of the scheduled recitations of the course, will not be admitted to the final examination in that course without the permission of the Students' Work Committee. Any student thus excluded will receive a failure for the course.

17. A student absent for any reason whatsoever is expected to do the full work of the course. He must make up work lost through delay in registration as in the case of any other absences.

18. *Excuses.*—Absences can be excused only by the assistant dean for students' work. A student absent because of illness should secure a statement from the Health Service, if he has been under its care, or from some responsible person who had knowledge of his illness. A student absent for any other reason should secure from some person in a position to know the facts a statement as to the need of absence. (Women may secure such statements from the dean of women.)

These statements need not be presented to the assistant dean for students' work, until the instructor notifies the student that he has accumulated sufficient absences to bring the case under the regulation.

19. *Delinquent students.*—Continued residence in the college is conditioned upon reasonable success in the student's work. Any student who does not make satisfactory progress in the course in which he is registered may be placed on probation by the Students' Work Committee.

20. No student is 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 for which he is registered.

21. The progress of a student in the Junior College is considered unsatisfactory if at the close of any quarter or at the time of any midquarter report he is below passing grade in fifty per cent of his work. The progress of a student in the Senior College is considered unsatisfactory if he is below passing grade in forty per cent of his work.

22. *Probation.*—A student on probation is in serious danger of being excluded from college if his work does not show immediate and rapid improvement. Subject to the regulations hereafter stated, the condition and length of the probation are determined by the Students' Work Committee.

23. With the exception of students who refuse to take a serious interest in their work, no student will be excluded from college until he has been on probation at least six weeks.

24. The period of probation continues not more than two quarters. It may be extended if the committee is convinced that failure to show marked improvement is due to causes (other than incapacity) over which the student has no control, and that these causes may reasonably be expected to disappear.

25. Students excluded from this college shall be recorded as (a) transferred, (b) discontinued, or (c) dropped.

a. *Transferred.*—Students whose attitude toward their work is satisfactory, but who evidently are pursuing the wrong course, may be transferred to another college at the close of any quarter with the approval of the two colleges concerned and the dean of student affairs.

b. *Discontinued.*—Students who are apparently pursuing the right course, but have been handicapped by conditions over which they have no control (ill health, necessary outside work, etc.) may be required to discontinue their registration until the committee is satisfied that the conditions under which they work are bettered. When such discontinuance takes place, at any time other than the end of the quarter, the courses for which the student is registered are recorded as cancelled without grade.

c. *Dropped.*—Students who have clearly shown by their records that they are irresponsible, and who have failed to meet the terms of their probation, shall be dropped.

26. *Readmission.*—Students excluded from college shall be allowed to return only with the permission of the Students' Work Committee.

a. Students classified as discontinued must present evidence that the conditions which hindered their work have been remedied.

b. Students who have been dropped may be required to remain out of college until the term of the next year corresponding to that in which the delinquency occurred. Such students must present satisfactory evidence that they have been employed in an occupation demanding intelligence and responsibility, or have successfully pursued subjects of an approved character. At the time when the student is dropped the Students' Work Committee will inform him what type of studies will be accepted for readmission.

27. The cancellation of a student's registration, of his own accord, will not affect his status as a delinquent student or the terms of his readmission. When a student leaves college he will be notified by the registrar's office of his status under these regulations.

28. Students who return under the provision of section 26 will be registered on probation. Such students may be dropped at any time that their work is unsatisfactory to the Students' Work Committee.

29. *Eligibility.*—A student who is on probation or who has an unremoved condition or failure is ineligible:

a. To take part in any public performance of a dramatic or musical club;

b. To be a competitor in public debates or oratorical contests;

c. To be a member of the editorial board of any student publication;

d. To be a member of the All-University Student Council, Academic Student Council, or any other student organization which may make an appreciable demand upon the student's time.

30. A student who is ineligible because of a failure may remove the delinquency (a) by repeating the course with a passing grade, or (b), if the course is not required in his curriculum, by completing one full quarter's work (minimum 13 credits) without condition or failure.

For the removal of a condition, see General Information, sections 23 to 29.

31. *Petitions.*—A student who wishes exception made to any rule of the college should present his request in writing to the Students' Work Committee. Petition blanks may be obtained at 219 Administration Building or 106 Folwell Hall.

Every student who desires to be heard in regard to his petition, will be given such an opportunity by the committee.

COURSES OF STUDY

A student may, while registered in the College of Science, Literature, and the Arts, pursue one of the following courses. (For detailed outlines, see Part II of this bulletin.)

Courses given within this college:

1. A general course leading to the degree of bachelor of arts.
2. Special courses leading to the degree of bachelor of arts.
   a. General Course with a major in Music.
   b. Course in Training for Diplomatic and Consular Service.
   c. Course in Training for Hospital Library Service.
3. Special courses leading to the degree of bachelor of science.
   a. Course in Preventive Medicine and Public Health.
   b. Course for Medical Technicians.
   c. Course in Social and Civic Work.
4. Courses preparing for admission to the School of Business, College of Dentistry, College of Education, the course in Interior Decoration in the College of Engineering and Architecture, the Law School, and the College of Pharmacy.
5. A four-year course leading to the degree either of bachelor of arts or of bachelor of science with special training in military science and tactics.

Combined arts and professional courses:

6. A seven-year course leading to the degrees of bachelor of science, bachelor of medicine, and doctor of medicine.
7. A six-year course leading to the degrees of bachelor of science and master of science in architecture.
8. A five-year course leading to the degrees of bachelor of science and graduate in nursing.
9. A seven-year course leading to the degrees of bachelor of arts and doctor of dental surgery.
10. A six-year course leading to the degrees of bachelor of arts and bachelor of laws.
11. An eight-year course leading to the degrees of bachelor of arts, bachelor of medicine, and doctor of medicine.

DESCRIPTION OF COURSES

EXPLANATIONS

A *dagger* (†) indicates that all quarters of the course must be completed before credit is received for any quarter.

Course numbers.—Junior college courses (primarily for freshmen and sophomores) are numbered from 1 to 49. Senior college courses are numbered as follows: courses primarily for juniors and seniors, from 50 to 99; for juniors, seniors, and graduates, from 100 to 199; for graduates only, from 200 up. This system is not uniformly followed by departments in other colleges than Science, Literature, and the Arts.

ANIMAL BIOLOGY

NOTE.—Credit is given for acceptable work done at any approved seaside laboratory.

INTRODUCTORY COURSES

1-2.† General Zoology. Structure, physiology, embryology, classification, and evolution of animals. Textbook, lectures, laboratory, and quizzes.

5-6-7.† General Zoology. Similar to 1-2, for pre-medical and pre-dental students.

14-15-16.† General Zoology. Similar to 1-2, with the spring quarter devoted to the Arthropoda, principally the Insecta. (For students of Agriculture, Forestry, and Home Economics.)

21. Introduction to General Physiology.

22. General Ecology. Considers the relationships of animals to the inorganic and organic factors of the environment. Lectures, assigned reading, laboratory, and field work.

23. Introductory Entomology. General characters, classification, and habits of insects.

24. Introductory Animal Parasitology. An elementary course, dealing with the parasitic Protozoa, worms, and arthropods, and their relation to diseases of man and animals.

26. Comparative Anatomy. A comparative study of the gross anatomy of vertebrates.

27. Cytology and Technique. The animal cell and elements of microscopical technique.

29-30.† Histology and Organology. For unclassed medical students. Comparative study of the microscopical structure of tissues and organs. Textbook, lectures, laboratory.

INTERMEDIATE AND ADVANCED COURSES

31. General Physiology. Physical and chemical properties of living protoplasm and cells. Rôle of diffusion, osmotic pressure, ions, and colloids in cell physiology. Permeability. Lectures, laboratory, assigned reading.

32. General Physiology. Comparative physiology of respiration, nutrition, and growth. The nature of the production of movement, heat, light, and electricity of organisms. Lectures, laboratory, assigned reading.

33. Principles of Animal Behavior. Comparative physiology of the nervous system and sense organs of lower organisms. Lectures, laboratory, assigned reading.

37-38-39.† General Entomology. Elements of entomology leading up to discussion of the principles of taxonomy and their application to the classification of insects.

44. Animal Parasites and Parasitism. Structure and life history of representative parasites. Methods of control and prevention will be emphasized. Lectures and laboratory.

45. Relations of Insects to Disease. Life history, habits, and methods of control of homonoxious species.

46-47.† Ornithology. Lectures, laboratory, and field work. Field glasses and handbook required.

48-49-50.† Histology and Organology. Comparative study of the microscopic structure of tissues and organs. Textbook, lectures, laboratory.

75. Nature Study. Especially for the fitting of teachers for the secondary schools.

107. Protozoology. Lectures, references, and laboratory work on the structure and life histories of Protozoa.

108. Experimental Zoology. An experimental study of cells and lower organisms with reference to their behavior. Lectures and laboratory or thesis based on reading.

109-110-111. General Physiology. A thoro survey of fundamental physiological processes in organisms. Based on Bayliss's *Principles of General Physiology*. Laboratory, lectures, and reading.

117-118-119. Ecology of Insects. Lectures, assigned reading, laboratory, and field work.

120. Advanced Ecology. Similar to Course 117-118-119 with special field work.

125-126-127.† Advanced Entomology. Morphology and classification of insects, and lectures on the history of entomology.

130. Biology and Taxonomy of the Aphididae.

139-140.† Histology and Development of Insects. Lectures and laboratory work.

144-145-146. Animal Parasites and Parasitism. The second quarter of the course is devoted primarily to the relation of insects to diseases of man and animals.

154-155.† Hematology. Lectures and laboratory work on the blood and blood-forming organs of man and mammals. Primarily for medical students but open to others with proper qualifications.

181-182.† Embryology. A comparative study of the development of Chordata. Reconstruction methods. Textbook, lectures, laboratory.

183. Genetics and Eugenics. Facts and theories of heredity and application to man. Textbook, lectures, and demonstrations.

187. Seminar on the Philosophical Aspects of Zoology.
197-198-199. Problems. Advanced work in some special line.

GRADUATE COURSES. CONSULT GRADUATE SCHOOL BULLETIN

201-204. Research in Entomology.
213-216. Research in Biological Oxidations.
217-218-219. Research in the Physiology of the Lower Organisms with Special Reference to the Protozoa.
229-232. Research in Animal Histology.
233-236. Research in Vertebrate Connective Tissue with Special Reference to the Cellular Elements.
237-240. Research in Vertebrate Hematology.
245-248. Comparative Neurology.
249-252. Research in Neurology.
253-256. Dynamics of Protoplasm and Cells.
257-260. Sensory Physiology of Invertebrates.
205-208, 209-212, 261-264, 265-268. See Entomology and Economic Zoology.

ENTOMOLOGY AND ECONOMIC ZOOLOGY

COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

The courses in this department are closely correlated with those of the Department of Animal Biology. Courses 37-38-39, 44, 45, 117-118-119, 125-126-127, 130, 139-140, 144-145-146 are offered under these numbers in both departments. In addition the following courses in entomology and economic zoology are available.

3. Economic Entomology.
4. Economic Vertebrate Zoology.
8. Varieties and Habits of Fur-Bearing Animals.
150. Insecticides and Their Action.
197. Introduction to Research.

GRADUATE COURSES. CONSULT GRADUATE SCHOOL BULLETIN

201-204. Research in Entomology.
205-208. Research in Economic Entomology.
209-212. Research in Economic Vertebrate Zoology.
261-264. Research in Parasitology and Medical Entomology.
265-268. Research in Insecticides.
213-216, 217-218-219, 225-228, 229-232, 233-236, 237-240, 245-248, 249-252, 253-256, 257-260. See Animal Biology, page 21.

ANTHROPOLOGY

51. Introduction to Anthropology. The early history of man.
53. Cultural Anthropology. Technology and nature philosophy.
54. Cultural Anthropology. Social organization of primitive peoples.
55. Human Migrations. The movements of peoples and immigration.
62. Ethnology. Racial and cultural groups and contacts.

80. American Indian. Ethnology of the New World.
108. Philippine Peoples. Ethnology of the Philippines.
110. Physical Anthropology. The physical types of man, prehistoric and contemporary.
112. The American Negro. Problems and methods of inter-racial adjustments.
113. Peoples of Europe. Racial and cultural characteristics.
121. Advanced Physical Anthropology. A critical study of problems in physical anthropology. Based on 110.
123-124. Problems in Anthropology. Advanced work with individual guidance.
161. Primitive Religion. Religious concepts and practices of primitive peoples. Theories of the evolution of religion. Primitive eschatology.
204, 205, 206. Seminar. Consult Graduate School bulletin.

ARCHITECTURE

COLLEGE OF ENGINEERING AND ARCHITECTURE

JUNIOR COLLEGE COURSES

21-22†-23. Free-Hand Drawing.
31-32†-33. Elements of Architecture.
61-62-63. Shades and Shadows and Perspective.

SENIOR COLLEGE COURSES

14-15-16. Architectural History (Ancient and Renaissance).
17-18-19. Architectural History (Medieval and Modern).
34-35-36. Architectural Design.
51-52-53. Building Construction.
74-75-76. Free-Hand Drawing. For students in Interior Decoration.
81. Color and Design.
134-135-136. Interior Decoration Design.
163. History of Sculpture and Painting.
182-183. Decoration and Allied Arts.

For additional courses, see bulletin of the College of Engineering and Architecture.

ASTRONOMY

11.[1] Descriptive Astronomy. Lectures and recitations on the general principles and fundamental facts of astronomy. Illustrated by lantern slides, simple problems, naked eye and telescopic observations.
25.[1] Stellar Astronomy. Review of present state of knowledge concerning the stars, and nebulae. Theories of stellar evolution.
51-52-53.[2] General Astronomy. A thoro study of the general principles of astronomy, illustrated by lantern slides, simple problems, and telescopic observations.
62. Elements of Practical Astronomy. Theory and use of astronomical instruments in determining time, latitude, longitude, azimuth, and positions of heavenly bodies.

[1] This course does not satisfy the junior college requirement for science.
[2] This course satisfies the junior college requirement for science. Open to sophomores under General Information, section 43.

101-102-103. 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.

111-112-113. Celestial Mechanics. Analytical study of the motion of two bodies. General view of the theory of perturbations.

140. Method of Least Squares. The combination and adjustment of observations and the discussion of their precision as applied especially to engineering, physics, astronomy, and psychology.

BACTERIOLOGY AND IMMUNOLOGY

MEDICAL SCHOOL

51. General Bacteriology.
101. Special Bacteriology for Medical Students.
103. Special Bacteriology for Students of Agriculture.
105. Food Bacteriology.
114. The Higher Bacteria.
116. Immunity.
117. Pathogenic Protozoa.
118. Morphology and Taxonomy of Bacteria.
119. Bacteriological Chemistry.
120. Bacteriological Chemistry (continued).
121. The Common Fermentations.
125. Industrial Bacteriology.
150-151. Advanced Bacteriology.

BOTANY

1-2.† General Botany. Structure, physiology, life histories, and evolution of plants. Lectures, laboratory, textbook, and quizzes.

7. Taxonomy of Flowering Plants. A general study of the classification and relationships of flowering plants.

12. General Morphology of Algae.

13. General Morphology of Fungi.

21. Elementary Ecology. An introductory course in the study of plants in relation to their environment.

22. Elementary Plant Physiology. An introductory course giving a general survey of plant functions.

51. Histological Methods. Training in the technique of preparing plant material for microscopic study.

62. General Morphology of Bryophytes and Pteridophytes. Structure, evolution, and classification of liverworts, mosses, and ferns.

63. General Morphology of Gymnosperms and Angiosperms. Structure, evolution, and classification of seed plants.

101. Elementary Biometry. Lectures, laboratory, and collateral reading.

108. Morphology and Taxonomy of Pteridophytes. An intensive study of lycopods, ferns, and their allies; their structure, history, and classification.

110. Morphology and Taxonomy of Gymnosperms. An intensive study of cycads, conifers, and their allies; their structure, history, and classification.

113-114-115. Advanced Taxonomy. Special attention is given to the taxonomy of difficult natural groups of angiosperms, involving systematic principles and practice, rules of nomenclature, and systems of classification.

118. Cytology. A study of the origin, development, structure, and functions of the plant cell and its various constituents.

123-124-125-126. Morphology and Taxonomy of the Algae. Myxophyceae, Chlorophyceae, Phaeophyceae, Rhodophyceae. Advanced studies in selected groups. Any of the above courses may be taken separately.

127. Anatomy of Vascular Plants. A study of the microscopic structure of vascular plants with particular attention to the development and evolution of the vascular system in the root, stem, and leaf.

131. Field Ecology. A survey of the local plant communities and successions followed by a written report, and by a study of the general principles of plant association and succession.

132. Ecological Anatomy. The individual plant and its parts as related to environment; special plant forms and structures, their causes and significance.

133. 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.

141. Physical Phases of Plant Physiology. The intake and translocation of materials, and the energy relations of the plant.

142. Plant Metabolism. The synthesis of plant food, its transformation and utilization by the plant.

143. Plant Metabolism and Growth. A continuation of Course 142, dealing with respiration, growth, and movement.

144. Plant Microchemistry. A study of the localization of materials of physiological importance in the plant and their relation to physiological processes.

145. Advanced Biometry. Theory and practical exercises in the statistical analysis of biological data.

PLANT PATHOLOGY AND BOTANY

COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

INTRODUCTORY COURSES

1. Plant Pathology.

7-8. Weeds and Grasses.

9. Weeds and Seed-Testing.

10. Forest Pathology.

12. Seed Problems.

14. Plant Disease Control.

ADVANCED COURSES

105-106-107. Mycology.
108. Methods.
110. Principles of Pathology.
111. Diseases of Field Crops.
112. Diseases of Fruit Crops.
113. Diseases of Vegetable Crops.
114. Advanced Forest Pathology.
116. Pathological Histology.

CHEMISTRY

SCHOOL OF CHEMISTRY

COURSES IN GENERAL INORGANIC CHEMISTRY

1-2†-3. General Inorganic Chemistry.
4-5.† General Inorganic Chemistry.
6-7†-8. General Inorganic Chemistry.
9-10.† General Inorganic Chemistry.
11. Qualitative Chemical Analysis.
12-13.† Qualitative Chemical Analysis.
101. History of Chemistry.
102. Advanced Qualitative Analysis.
103-104-105. Advanced Inorganic Chemistry.

COURSES IN ANALYTICAL CHEMISTRY

20-21. Quantitative Analysis.
27. Quantitative Analysis.
123-124-125. Advanced Analytical Chemistry.
127-128-129. Chemistry of the Rare Elements.

COURSES IN ORGANIC CHEMISTRY

31-32.† Elementary Organic Chemistry.
35-36†-37. Organic Chemistry.
132. The Rise and Development of Organic Chemistry.
133. Reagents in Organic Chemistry.
134. The Terpenes.
138. Advanced Organic Chemistry Laboratory.
139. Advanced Organic Chemistry Laboratory.

COURSES IN PHYSICAL CHEMISTRY

140-141†-142. Physical Chemistry.
143. Physical Chemistry.
146-147-148. Advanced Physical Chemistry.
149. Principles of Colloidal Chemistry.
150. Application of Colloidal Chemistry.
157-158-159. Colloid Chemistry Laboratory.

COURSES IN TECHNOLOGICAL CHEMISTRY

161-162-163. Food Analysis.

AGRICULTURAL BIOCHEMISTRY

COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

3-4. Types of Carbon Compounds.
7-8. General Agricultural Biochemistry.
15. Principles of Animal Nutrition.
101-102. Agricultural Quantitative Analysis.
103. Dairy Chemistry.
106. Chemical Technology of Agricultural Products.
108. Chemistry of Wheat and Wheat Products.
110. Flour Laboratory Methods.
111-112. Phytochemistry.
113-114-115. Biochemical Laboratory Methods.
116. Advanced Animal Nutrition.
117. Laboratory Problems in Animal Nutrition.
118. Laboratory Problems in Biochemistry.

COMPARATIVE LITERATURE

101-102-103.† Drama. An outline of the history of drama, including the drama of today. Lectures and readings.
105-106-107.† Principles of Criticism. Lectures and readings.
110. The International Romantic Movement in Europe (1775-1825).
203. The Arthurian Legend. Consult Graduate School bulletin.
206. French and English Literary Criticism: from the sixteenth century to the present time. Consult Graduate School bulletin.

COMPARATIVE PHILOLOGY

101-102.† General Introduction to the Science of Language. Prerequisites, 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) four credits Old English.
103. Universal Language. Comparison of important languages, grammatically and lexically. Movement for creation of an international language. Consideration of Volapük, Esperanto, Ido, etc.
105. The Life of Words. Etymology and semasiology. Growth of vocabulary; change of words in form and meaning.
108. Comparative 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. Identical with German 108.
109-110-111.† History of the German Language. Lectures, discussions, assigned readings. This course is identical with German 109-110-111.
141-142-143.† Historical Grammar of the English Language. I. Sounds and spelling. II. Accidence and syntax.
203-204. Gothic. Consult Graduate School bulletin.
209-210. Old High German. Consult Graduate School bulletin.

DRAWING AND DESCRIPTIVE GEOMETRY

COLLEGE OF ENGINEERING AND ARCHITECTURE

41-42-43. Technical Drawing.
44. Lettering.
45. Alphabets.
47-48-49. Drawing, Engraving, and Decoration.

ECONOMICS

SCHOOL OF BUSINESS

NOTE.—The following courses in other departments carry credit also in this department:

Agricultural Economics 126, 130, 131, 135, 171.
History 80, 81, 82, 83, 84, 113, 114, 115, 116, 117, 118, 169.
Political Science 51-52-53, 105, 157, 158, 159.

1-2.† Introduction to Economics.
3. The Mechanism of Exchange.
4. Principles of Economics—Pre-Business Course.
6-7.† Principles of Economics—General Course.
14. Elements of Statistics.
25-26.† Principles of Accounting.
62. Social Insurance.
72. Economics of Transportation.
74. Transportation Problems.
85. Principles of Marketing.
103-104.† Value and Distribution.
105. History of Economic Ideas—The Classical Economists.
106. History of Economic Ideas—The Critics of the Classical Economists.
108. Marketing Organization.
113-114. Theory of Statistics.
143-144.† The Financial System.
149. Business Cycles.
153. The Trust Problem.
154. Public Utilities.
155. Corporation Finance.
161. Labor Problems and Trade Unionism.
162. The Labor Movement in America and England.
163. Economic Aspects of Population and Immigration.
169. The Labor and Socialist Movement in Europe.
170. Land Economics.
176. Commercial Policies.
191-192.† Public Finance.
193. State and Local Taxation.

ENGLISH

COURSES IN ENGLISH

A-B-C. Freshman English. The study of the fundamental principles of composition; training in the art of writing; an historical survey of the classics of English literature.

1-2-3. General Survey of English Literature. Intended for students who have had work in composition equivalent to that of A-B-C, but who have not had the survey of English classics included in that course.

6. Chaucer. Reading of tales from the Canterbury collection, with introduction dealing with the grammar and literary forms of fourteenth-century English.

8. Shakespeare. Shakespeare's development as a poet and dramatist up to *King Lear*.

40. The Bible As Literature. Special attention to literary forms.

42. Browning.

44-45.† American Literature.

50. Old English. Old English prose and poetry. The relation to modern English is particularly emphasized.

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*.

53. Seventeenth-Century Lyrists. The tradition of the Elizabethan lyric traced in the work of the metaphysical and cavalier schools of poetry.

58-59.† Nineteenth-Century Prose. The more important prose of the nineteenth century, not including fiction.

60. History of the English Language.

61. Present Day English. A consideration of the chief characteristics of English speech of today. Pronunciation, inflection, and syntax will be treated in turn. Differences in usage in the various parts of the English-speaking world will receive due attention.

62. Milton, with some consideration of his contemporaries.

64. Bacon. Bacon as an essayist and as a promoter of learning.

66. The English Novel. Principles and personalities in the evolution of the English novel. Written reports on selected novels.

70. Masterpieces of Elizabethan Drama. Elizabethan dramatic art aside from Shakespeare's. Special attention to the art of the chief writers—Marlowe, Jonson, Beaumont and Fletcher, Webster, and Massinger.

101. Introduction to Middle English. An outline of Middle English grammar, including the interpretation of selected texts.

103. Beowulf. An introduction to the Old English poem, with reading of considerable portions of the text.

105-106.† Eighteenth-Century Poetry. From Pope to Burns, with special reference to the rise and growth of romanticism.

107-108.† Eighteenth-Century Prose. Special study of fiction and the essay.

109-110.† The Romantic Poets of the Nineteenth Century. From Wordsworth to Keats.

111-112.† Seventeenth-Century Prose. General survey of the prose of the century to 1660. History 4-5 is desirable as preparation for this course.

123-124-125.† The Technique of the Novel. Special studies in novels of the late nineteenth and twentieth centuries with particular regard to structure. In 1925-26 Meredith, George Moore, Conrad, and Goldsworthy.

129. Modern Drama. Contemporary drama from 1870 to the present.

133. The English and Scottish Popular Ballads. A study of a large number of traditional ballads, English and foreign, and of ballad style and origins.

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.

140. Advanced Chaucer. The more important poems (except those read in Course 6). The treatment will be primarily literary and historical, linguistic proficiency being presumed.

141-142-143.† Historical Grammar of the English Language. This course is identical with Comparative Philology 141-142-143.

146-147.† The Metrical Romances. The more important Middle English romances of the non-Arthurian cycles.

148-149.† The Arthurian Romances. An introduction to the great stories of love and chivalry connected with King Arthur and the Round Table.

150. Victorian Poetry. The poetry of the Victorian era, aside from Browning's and Tennyson's. The principal names are: Matthew Arnold, the Rossettis, FitzGerald, Morris, Swinburne, and Meredith.

151. Recent Poetry. Poetry in England and America since the death of Queen Victoria. The main tradition and tendencies now prevailing.

152-153.†Pre-Elizabethan Drama. The late medieval and the Renaissance drama, moralities, interludes, and farces up through the earlier years of the Elizabethan period.

155. The American Novel. The history of the American novel from the beginning to the present.

164. Dante in English. The same as Italian 164.

GRADUATE COURSES. CONSULT GRADUATE SCHOOL BULLETIN

201. Old English.

202-203. Old English Poetry.

208. Piers the Plowman.

213-214-215. Seminary in Eighteenth-Century Drama.

220-221-222. Seminary in Medieval Drama.

225-226-227. Seminary in Elizabethan Drama.

228-229-230. Seminary in Eighteenth-Century Novel.

231-232-233. Shakespeare's Tragic and Comic Art.

234-235-236. Seminary in Middle English Alliterative Poetry.

COURSES IN COMPOSITION

A-B-C. Freshman English. The study of the fundamental principles of composition; training in the art of writing; an historical survey of the classics of English literature.

4-5-6. Composition for Technical Students. Practical training in the art of writing; the principles of structure, and analysis of specimens of good prose.

11-12.† Description and Narration.

18-19.† Types of Writing. Exposition and informal argument, first quarter; description and narration, second quarter. Intended for students who do not plan to take advanced work in narrative writing.

20. Informal Exposition. Description and narration as methods of exposition; the informal essay.

31. Technical Writing. (See bulletin of the College of Engineering.)

63-64-65. Studies in Structure and Style. Analysis of standard English prose; themes based on personal observation, current readings, and investigation; preparation of essays with particular classes of readers in view.

67-68.† 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 composition. Number of students limited to twenty-five.

69. Short Story-Writing. The technique of the short story accompanied by constructive work in story-writing. Number of students limited to twenty-five.

100-101.† Versification. The nature of poetry and a detailed analysis of English meters and the various English verse forms. The theory accompanied by criticisms of current poetry and practice in writing verse.

111-112-113. Essay-Writing. Practice in writing didactic, biographical, critical, and informal essays. Analysis of a considerable body of modern essays.

115-116-117. Dramatic Technique. Principles of plotting, characterization, climax, dialog, and scenario-making. Writing of three plays—two original, one dramatized short story. Required readings, laboratory work, criticism of local productions.

119-120-121. Seminary in Writing. Open to advanced students who write with facility and who desire personal direction. Criticism of manuscripts submitted.

COURSES IN PUBLIC SPEAKING

Voice and Speech Correction. The Public Speaking staff conducts a speech clinic twice each week. Every student in Public Speaking 41-42-43 and 45-46 is required to attend this clinic at least three times each quarter. Instructors may also require any student in any course to attend until excused.

41-42-43.† 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.

45-46.† A General Course in Public Speaking. A ten-credit course identical in subject-matter with 41-42-43.

55-56-57. Argumentation and Debating. Analysis, gathering of evidence, briefing. Critical study of models, including Lincoln-Douglas debates. Principles governing persuasive speaking applied in practice debates.

59. Advanced Public Speaking. Preparation and delivery of speeches on public questions. Methods of outlining and of reasoning. Elementary research; emphasis on methods of handling material before an audience. Technique of voice and body. Prerequisite, Public Speaking 41-42-43 or 45-46.

70. Teachers' Problems. A consideration of the problems of the teacher of reading, speaking, dramatics, and debating. Lectures, outside readings, and reports. Special problems assigned.

81-82-83. Interpretative Reading. Various forms of literature, such as the essay, prose narrative, lyric and narrative poetry, and the drama.

91-92-93. Play Production. Principles and practice of play production; studies of the various aspects, such as the reading of lines, characterization, action, stage business, settings, and lighting; the coaching of plays.

97. Intercollegiate Debate and Oratory. The question for intercollegiate debate studied and briefed, and frequent practice debates held.

101-102. Advanced Speech Composition. With emphasis on argumentative method, style, psychology of persuasion; study of models.

105. Theory of Reading and Acting. The forms of literature; literature regarded as an art; psychology of creative imagination; speech elements in literature; technique governing use of auditory and visual symbols. Collateral readings, speech problems, reports, term papers.

GEOGRAPHY

1. Introduction to Human Geography. An introductory study of the distribution and activities of man as affected by the factors of the physical environment, the effect of the individual factors being illustrated by type areas.

33. Climatology. The climatic elements and the distribution of climatic types in the various continents, together with a consideration of the effect of such climatic types on human activities.

51. Human Geography. A study of the factors of the physical environment and their effect on human activities. A more advanced treatment of the material of Course 1.

52. Introductory Regional Geography. A survey of type areas in the different continents with a view to the determination of the effect of the sum total of the environmental factors upon the distribution and activities of man.

61. Geography of Commercial Production. The principal commodities of world trade, with reference to areas of origin and consumption and the geographic elements in their production.

62. Trade Routes and Trade Centers. Major land and ocean routes, the nature of the traffic, ports and interior trade centers, their location and significance, will be studied. Commercial rivalry will be considered in terms of position, resources, and stage of development.

71. Geography of North America. A systematic study of the United States, Canada, Mexico, and the West Indies, with special reference to industrial and commercial opportunities and the distribution and activities of the population.

75. Geography of Europe. A study of the various European countries and their development as influenced by the physical setting.

81. Geography of Minnesota. A regional economic study of the state. The basis for existing development and the problems of the idle lands will receive special consideration. The principal cities will be studied as sites for industry and commerce.

91. Cartography. A study of the use and construction of maps.

95. Field Course for Teachers. A consideration of the problems of field instruction, illustrated by field trips.

101. Research Problems in Geography.

GEOLOGY

1-2.† General Geology (Dynamic and Historical). A synoptical treatment of the materials of the earth and of geologic processes, together with a study of the history of the earth and its inhabitants as recorded in the rocks.

1-3.† General Geology (Dynamic and Economic). A synoptical treatment of the materials of the earth and the origin, distribution, and occurrence of metals, non-metals, coal, and petroleum.

4. Geology of Minnesota. The physical geography and geologic history of Minnesota. The relations of industrial development to geological features.

8. Introductory Geology. A course designed especially for students who want a short introductory course as an elective. Principles of earth sculpture; topographic changes and their causative agents; dynamic, structural, and historical geology.

11. Elements of Paleontology. An introduction to the study of fossil organisms. Lectures supplemented by laboratory work and field excursions.

15. Minerals and Rocks. An outline study of general principles of petrography; classification of minerals and rocks and practice in their identification.

23-24-25.† Mineralogy. The crystal systems; morphological, physical, and chemical characters of minerals; occurrence, genesis, and uses of minerals; classification and description of common minerals; rock minerals, and common rocks. Determinative work in laboratory, blowpipe analysis, sight identification.

27. Outlines of Mineralogy. A course designed especially for teachers. Methods of identification of minerals, laboratory practice, conferences, reference reading.

29. General Physiography. Principles of earth sculpture; physiographic changes in progress, and agencies causing them; hydrography and oceanography; planetary relations; climatology.

61. Blowpipe Analysis. The determination of minerals by systematic blowpipe analysis.

65. Crystallography. Study of crystal models and space groups. Crystal drawings and measurements. Projections and mathematical calculations.

67. Mineralogy of Chemical Materials. Methods of mineralogy; identification of the chief commercial minerals; the world's supply. Laboratory work.

73. Economic Geology. Study of non-metallic minerals of economic value, and discussions of geologic guides to prospecting for these deposits.

85. Field Work. About two weeks in June are spent in geologic mapping of selected areas in the iron districts of Minnesota. Involves preparation of geologic maps and written reports.

91-92-93. Index Fossils of North America. A study of fossils and their uses in correlation. A course intended primarily for mining geologists.

101. Sedimentation. The origin of sedimentary rocks and their primary structures; interpretation of sediments in relation to paleogeography. Lectures and assigned readings.

105. Rock Study. The occurrence and genesis of rocks; their mineral and chemical composition and classification; their structure, texture, and alteration.

106. Petrography. The study of rocks by optical methods.

107-108-109. 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.

111. Ore Deposits. The nature, distribution, and genesis of ore deposits; relations of ore deposits to geologic structure; the deformation and superficial alteration of ore deposits.

112. Geology of Petroleum. The nature, origin, and distribution of petroleum. Discussion of the oil fields of the world.

113. Problems in Ore Deposits. Field excursions, map work, lectures on field and laboratory methods.

124-125. Structural and Metamorphic Geology. A study of the principles and application of structural geology. The conditions, processes, and results of metamorphism.

127. Geology of the Lake Superior Region. Structure and correlation of districts. Interpretation of field notes and survey reports. Practical problems.

131-132-133. 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.

137. Testing Economic Minerals. Methods of determining quality of mineral deposits, described and illustrated by laboratory tests of coal, clay, oil, building stone, and metallic ores.

140-141. Applied Petrography. Determination of ores and gangue minerals. Microscopic studies of paragenesis. Practical problems in mining and geology, settled by microscopic and optical examination.

144-145. Interpretation of Geologic Maps. Study and problems in construction and interpretation of geologic maps; recognition of structural and stratigraphic relations. Geology 124 should precede or accompany this course.

149. Methods of Field Geology. General methods of field work necessary for Course 150.

150. Field Geology. Detailed, systematic work conforming with official surveys. Geologic maps, structure sections, reports; paragenesis of ores and their relations to geologic structures. Field for 1926, Black Hills, South Dakota. May 1 to June 15.

151-152-153. Advanced General Geology. Geologic processes and their results; development of the North American continent.

166-167. Mineralography. Methods of studying opaque minerals and the application of the methods to problems in ore genesis and history.

GRADUATE COURSES

211. Advanced Paleontology.
214. Seminar in Ore Deposits.
215. Geology and Ore Deposits of the Western Hemisphere.
216. Geology and Ore Deposits of the Eastern Hemisphere.
220. Glacial Geology.
241. Field Course in Geology.
243-244. Research Course in Geology.
246. Pre-Cambrian Geology.
251-252. Original Problems.
253-254. Research Course in Ore Deposits.
263-264. Research Course in Petrology.

GERMAN

1. Beginning A. Pronunciation, conversation, grammar, and composition; selected readings in easy prose and verse.
2. Beginning B. Continuation of Course 1.
3. Beginning C. Selected texts from modern writers.
4. Rapid Reading. Modern narrative prose.
7. Prose and Poetry. Selected short story. German ballads.
8. Advanced Prose and Poetry. Selected prose and drama.
15. Narrative Prose for Pre-Medical Students. Reading, grammar review.
24-25-26.† Beginning German for Chemists. Pronunciation, conversation, grammar, and composition; selected readings in easy prose.
27. Narrative Prose for Chemists. Reading, grammar review.
28-29.† Chemical German. Selections from more difficult works on chemistry.
31-32.† Medical German. Reading from general works on physiology, anatomy, and bacteriology.
50-51-52.† Composition. Aims to develop grammatical correctness. Translations from English selections. Essay-writing on assigned subjects.

56-57.† Essay-Writing. Syntax, structure, and style; criticism of essays on assigned subjects.

62. Nineteenth-Century Prose. Narrative readings from modern novelists.

63. Modern Drama. Plays of modern dramatists, Hauptmann, Sudermann, Fulda, and others.

64. Classic Drama. Plays of Lessing, Goethe, and Schiller.

65. Survey of German Literature through the Reformation Period. Lectures, assigned readings, reports.

66. Survey of German Literature of the Eighteenth Century. Lectures, assigned readings, reports.

67. Survey of German Literature of the Nineteenth Century. Lectures, assigned readings, reports.

72. Drama since 1880. The beginnings of the dramatic revival; Sudermann and others.

73. Drama since 1880. Hauptmann, Wedekind, Halbe, Schnitzler, and others.

74. German Poets. Survey of German poetic literature.

77. Goethe's Faust, Part I. Reading and interpretation of the text; genesis of the work; the Faust legends, Faust books, puppet plays, Marlowe's *Faustus*.

100-101-102.† Middle High German. Phonology, morphology, and syntax.

108. Comparative Phonetics. A study of speech sounds, and the nature of their production with special reference to English, French, and German. Identical with Comparative Philology 108. Open to students of the modern languages.

109-110-111.† History of the German Language. Lectures, discussions, assigned readings. Identical with Comparative Philology 109-110-111.

115-116-117.† Middle High German Literature: The Nibelungenlied, the Court Epic, the Minnesong.

140-141-142.† Early New High German Literature, 1500-1700. German literature from the Reformation and the Renaissance to the beginning of the modern High German classical period.

150-151-152.† Die Novelle. A study of the technique and development. Assigned readings and reports.

153-154-155.† Studies in German Literature of the Nineteenth Century. Subject for 1925-26: Austrian Drama.

160-161-162.† Lyric Poetry of the Eighteenth and Nineteenth Centuries. Historical review of the best lyric poetry and chief writers.

163-164-165.† German and English Literary Relations in the Sixteenth, Seventeenth, and Eighteenth Centuries.

225-226-227.† Literary Problems. Subject for 1925-26: Schiller.

GREEK

1-2†-3. Beginning Greek. Grammar, composition, word formation, oral exercises, and selected readings in simple prose.

8-9-10. Beginning Greek B. Identical with 1-2-3, but more intensive, three hours weekly.

14. History: Xenophon. Selections from Books II-IV of the *Anabasis,* or their equivalent; syntax, irregular verbs, exercises based on the text.
15. History: Herodotus. Selected readings, syntax, irregular verbs, dialectical forms.
16. Epic Poetry. Selections from the *Iliad,* Books I-VI; scansion, mythology, dialectical forms.
17. Greek Sources of English (Everyday Greek). A brief course in Greek sources of English words. The practical purpose is to enable students to trace the origin and feel the force of English words derived from Greek, and especially of scientific terms.
51. Philosophy. Plato's *Apology,* or selections from other dialogs of Plato and from Xenophon's *Memorabilia.*
52. Oratory. Selections from Lysias and Demosthenes; study of the principles of Greek rhetoric and Greek oratory.
53. Dramatic Poetry. One play of Euripides; introductory course in the drama.
105. Lyric Poetry. Selections from the elegiac, iambic, lyric, and bucolic poets.
106. Advanced Drama. Aeschylus, Sophocles, or Aristophanes. Special attention given to the development of the drama, and to the literary form and dramatic representation of the plays read.
107. Advanced Prose. Selections from the Greek historians, or from Plato, or from the orators. Alternates with Course 106.
108. Advanced Epic Poetry. A course of rapid readings in the *Iliad* or the *Odyssey.*
109. The New Testament. Especially intended for those who are preparing for the ministry, or for some other form of religious work. Alternates with Course 108.

COURSES FOR WHICH NO KNOWLEDGE OF GREEK IS REQUIRED

42. Greek Sculpture. Lectures, textbook work, assigned readings; stereopticon illustrations of the famous temples, statues, friezes, reliefs, and monuments of Greece.
43. Greek Drama. Reading and interpretation of representative Greek plays; lectures dealing with the origin, growth, character, and influence of the Greek drama; stereopticon illustrations. Students taking this course may not receive credit for Course 44 without permission.
44. Greek Literature and Life. Lectures, textbook work, illustrative and assigned readings; stereopticon views. Recommended to those who intend to teach Greek, Latin, English, or ancient history.
45. Greek Mythology. Lectures, textbook work, and illustrative readings, supplemented by occasional stereopticon views. Recommended to those specializing in languages, literature, or philosophy.

HISTORY

JUNIOR COLLEGE COURSES

1.[1] The Modern World, 1648-1795.

2.[2] The Modern World, 1795-1871.

3. The Modern World, 1871 to 1914.

4-5.† England, 1066 to the Present.

7-8.† American History. The national period to 1877.

9. Recent American History. The national period after 1877.

11-12-13.† Medieval History through the Reformation. Primarily for music and architecture students, but open to others who have ten credits in the social science group.

16. Europe in the Middle Ages.

33. English Legal Institutions.

SENIOR COLLEGE COURSES

American History

112. History of American Immigration.

125-126.† American Diplomatic History. A survey of the development of the foreign policy of the United States.

141. The West in American History to 1815.

142. The West in American History, 1815-65.

143. American Political Parties. A study of the origin, organization, and activity of political parties, considering in some detail important presidential campaigns.

144-145.† History of Minnesota.

146-147.† Constitutional History of the United States.

148-149.† English Colonies in America and the Revolution. A brief consideration of the period of discovery and the founding of the English colonies, followed by a more detailed examination of the political and social institutions after 1669. The second quarter will be devoted primarily to imperial organization and the causes of the Revolution.

152. Select Topics in the History of the West to 1815.

153. The West in American Politics since 1865.

154. Select Topics in the History of Minnesota. Students will be expected to use material in the library of the Minnesota Historical Society, St. Paul.

155. The United States, 1850-1865.

156. Select Topics in the Reconstruction Period.

166. Select Topics in the History of Immigration.

168. Topics in American Foreign Relations.

208-209-210.† Seminar in American History. Consult Graduate School bulletin.

[1] To receive credit for Course 1, a student must complete both 1 and 2.

[2] To receive credit for Course 2, a student must complete either 1 and 2 or 2 and 3.

Ancient History

103. Political History of Greece.
105. History of Rome.
133. Old Orient.
134. Ancient Civilization: Greece.
135. Ancient Civilization: Rome.

Economic History

80. Introduction to Economic History. Outline of general economic development; industrial revolution in England and America; changes in transportation and exchange.
81. Introduction to Economic History. Chief historical changes in land, capital, enterprise, and labor.
82,83,84.* Economic History of the United States. Colonial period, early national period since 1860.
113,114,115.* Economic History of Europe since 1750.
116,117,118.* Economic History of Europe, 1300-1750.
169. Economic History of the United States since the Civil War.

English History

109. Modern England since 1815.
121. English Backgrounds and the American Colonies.
162. The Beginnings of Parliament.
183. The Stuart Period.

See also 113, 114, 115 and 116, 117, 118 under Economic History.

European History

NOTE.—The following courses carry credit also in this department: Political Science 136-137 and 138-139.

101-102. The French Revolution and Napoleonic Era.
104. The Near East: Modern. Russian history will also be outlined.
106-107-108. Europe, 1815-1914. Reading knowledge of French and German desirable.
111. European Backgrounds of American Immigration.
119. The Renaissance and the Reformation.
120. Medieval Civilization.
124. European Expansion since 1815. Special attention to Africa, India, and Central Asia.
127. Feudal Institutions.
128. Rise of Nationalism in Europe. A study of the growth of central government and the influences which led to the formation of nations to 1600.
129-130.† The Formation and Fall of the Modern German Empire.
131-132.† France under Louis XIV and Louis XV. Reading knowledge of French desirable.

* This course may henceforth be taken by quarters, credit being given for any part.

157-158.†* Topics in European History, 1815-1914. Reading knowledge of French or German required.

164. Studies in the Crusades. Reading knowledge of at least high school Latin required.

201-202-203. Historical Bibliography and Criticism. Consult Graduate School bulletin.

See also 113, 114, 115 and 116, 117, 118 under Economic History.

HOME ECONOMICS

COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

3. Textiles.
4. Textiles.
11. Garment-Making.
13. Dressmaking.
17. Advanced Clothing Construction.
21. Foods and Cookery.
22. Food Economics.
50. Color and Design.
52. Art History and Appreciation.
53. Advanced Design.
56. Application of Color and Design.
70. Food Preparation.
71. Elementary Dietetics for the Social Worker.
72. Special Problems in Home Management for Social Workers.
123. Clothing Economics.
131. Home Management: House-Planning and Equipment.

HUMAN ANATOMY

MEDICAL SCHOOL

For complete list of courses, see bulletin of the Medical School.

Students in this college may elect other courses in human anatomy (see Medical School bulletin) only by arrangement with the head of the Department of Anatomy.

2. Elementary Anatomy. Primarily for nurses.

HUMAN PHYSIOLOGY

MEDICAL SCHOOL

4. Human Physiology. A brief course for academic and home economic students. Lectures and laboratory work.

57.[1] Physiologic Chemistry. Intermediate course.

58-59.[1] Human Physiology. Intermediate course.

* Each term may be taken separately with the permission of the instructor.

[1]Courses 57, 58-59 constitute a sequence recommended for students who wish a knowledge of human physiology, but who do not desire the detailed consideration given in Courses 100-101, 103, and 104. A student cannot receive credit for both of these sequences.

100-101. Physiologic Chemistry. Inorganic, carbohydrate, fat, protein and heat metabolism.

103. Physiology of Muscle, Nerve, Blood, Circulation, Respiration, Digestion.

104. Physiology of the Nervous System and Special Senses. Metabolism, Nutrition, and Excretion.

113. 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. Conferences and reading. May be taken one or more quarters.

131. Advanced Physiology of Muscle, Blood, Circulation, and Digestion. Alterations due to physiologic conditions. Special laboratory work.

153. Problems in Physiologic Chemistry. Course arranged by instructors with qualified students for special work. May be taken one or more quarters.

155,156,157. Pathological Chemistry. Blood chemistry of diabetes and nephritis. Basal metabolism, deficiency diseases.

163. Metabolism. Lectures and laboratory work on special phases of metabolism.

NOTE.—For other courses, see Medical School bulletin.

JOURNALISM

Descriptions of courses in Journalism will be published later.

LATIN

JUNIOR COLLEGE COURSES

1-2.† Beginning Latin. Ten weeks are spent in mastering inflections; the remainder of the course is devoted to reading easy Latin prose and the study of elementary syntax.

3. Caesar. Selections from the Gallic Wars are read. Elementary Latin composition is taken in connection. Students entering with one year of Latin may select this course.

11. Virgil: Books I and II of the Aeneid. Includes also practice in Latin composition. A continuation of Course 3. Students entering the first quarter with two years' preparation in Latin may select Course 11.

12. Virgil: Books III and IV of the Aeneid. Includes also practice in Latin composition. Students entering the second quarter with two years of Latin may select Course 12.

13. Selections from the Works of Ovid. Students entering the third quarter with two years of Latin may select Course 13.

21. Selections from Latin Authors.

22. Selections and Survey of Roman Literature.

23. Plautus and Terence. One play each of Plautus and Terence with a study of the beginnings of Roman drama. Students entering the third quarter with four years' preparation in Latin may select Course 23.

SENIOR COLLEGE COURSES

51. Pliny's Letters. Selected letters of Pliny the Younger with a study of Roman society in his time.
52. Horace's Satires and Epistles.
53. Suetonius. Selected Lives of the Caesars.
62. Horace's Odes and Epodes. Alternates with Course 52.
63. Apuleius.
71. Cicero's "De Amicitia and De Senectute." Alternates with Course 51.
73. Advanced Grammar and Composition.
121. Advanced Virgil. Selections from the Eclogues and Georgics and from Books VIII to XII of the *Aeneid*. Alternates with Course 131.
122. Cicero's Letters.
123. Medieval Latin. Selections from ecclesiastical writers; *Itinerarium Regis Richardi;* selections from Mathew Paris, etc. Aims to accustom students to handle medieval Latin easily for historical and literary purposes.
131. Juvenal. Selected satires. Alternates with Course 121.
132. Seneca's Epistles. Alternates with Course 122.
133. Vulgar Latin. Lectures on Vulgar Latin; selections from Petronius and Gregory of Tours.
201-202-203. Tacitus. Graduate seminar, but open to students who register for a major in Latin.
211-212-213. Lucretius. Graduate seminar but open to students who register for a major in Latin.
221-222-223. Graduate Seminar.

COURSES FOR WHICH NO KNOWLEDGE OF LATIN IS REQUIRED

43. Roman Literature and Life. Lectures, textbook work, and assigned reading in standard translations.

LIBRARY METHODS

1. Use of Books and Libraries. Introductory study of reference books and library methods as applied to individual study and research. Lectures, examination of reference material, and problems in its use.
101-102. Bibliographic Seminar. Study of typical bibliographies of general value in research. Principles of bibliographic method. Preparation of reference lists and an original bibliography in the individual student's major field of study.

NOTE.—For courses in hospital library service, consult the special bulletin.

MATHEMATICS

3. Higher Algebra. (For pre-medical students only.) A review and a collegiate treatment of the topics of elementary algebra for those who have had one year of elementary algebra. Not open to those who presented higher algebra for entrance.
4. College Algebra and Trigonometry. (For pre-medical students only.) Selected topics in algebra and trigonometry with special reference to preparation for the course in physics required of pre-medical students.
5. Higher Algebra. A review and a collegiate treatment of the topics of elementary algebra for those who have had one year of elementary algebra. Not open to those who presented higher algebra for entrance.

6.[2] Trigonometry. Logarithms and plane trigonometry.

7.[2] College Algebra. Quadratic equations, equations in the quadratic form, simultaneous quadratic equations, graphical representation, progressions, mathematical induction, the binomial theorem, permutations, combinations, probability, determinants, and the theory of equations with special reference to graphical methods.

8.[2] Commerce Algebra. Logarithms and selected topics in college algebra. A preparatory course for Mathematics of Investment, designed primarily for pre-business students.

20. The Mathematics of Investment. First principles of the mathematical theory of interest, annuities, amortization, valuation of bonds, sinking funds and depreciation, etc., with brief discussion of probability and its application to life annuities and some problems in life insurance.
30. Analytic Geometry. The elements of plane analytic geometry including the geometry of the conic sections, with a brief introduction to solid analytic geometry.

50.[3] Calculus I. Differential calculus.

51.[3] Calculus II. Integral calculus.

52.[3] Calculus III. Selected topics in differential and integral calculus with special reference to infinite series, partial differentiation, multiple integrals, and applications of the calculus.

60. Synthetic Metric Geometry. The modern developments of Euclidean geometry, with a detailed study of some of the more modern geometry of the triangle and the circle.

[2] Courses 6 and 8 involve some duplication, and no student may take both without special permission. No student may receive credit for both of Courses 7 and 8. Students who elect mathematics to meet the requirement of 10 credits in mathematics or laboratory science in the pre-business course should take Courses 5 and 8 if they have not had high school higher algebra and Courses 8 and 20 if they have had high school higher algebra.

[3] Courses 50, 51, 52 constitute a course in differential and integral calculus in three parts. The course is so arranged that the student may discontinue it at the end of Calculus I or the end of Calculus II, but students who expect to do graduate work in mathematics, physics, or astronomy ought to finish Calculus III.

62-63. Theory of Equations. Cubic and biquadratic equations, the solution of numerical algebraic equations, reciprocal equations and the construction of regular polygons, determinants and symmetric functions with applications to systems of linear equations and the theory of elimination.

70. History of Elementary Mathematics. A brief course in the history of arithmetic, algebra, and geometry intended primarily for those who are preparing to teach high school mathematics.

71. Solid Analytic Geometry.

102-103-104. Advanced Analytic and Synthetic Geometry.

106. Differential Equations.

107-108. Advanced Calculus. Selected topics in advanced differential and integral calculus.

115-116-117. Differential Geometry.

118-119-120. Vector Analysis.

121-122-123. The Mathematical Theory of Statistics. Frequency curves, averages, measures of dispersion, ordinary and partial correlation, theory of probability and the method of least squares, theory of sampling, construction and smoothing of tables, curve-fitting, analysis of time series.

140. The Method of Least Squares. The same as Astronomy 140.

Some of the courses listed in the bulletin of the Graduate School are open to properly qualified juniors and seniors. For more information consult the chairman of the Department of Mathematics.

MECHANICAL ENGINEERING

COLLEGE OF ENGINEERING AND ARCHITECTURE

11. Elementary Shop Practice. Wood-working and pattern-making.

12. Elementary Shop Practice. Floor and machine molding. Iron and brass casting.

13. Elementary Shop Practice. Forging and tempering.

MILITARY SCIENCE AND TACTICS

1-2-3. First Year Basic Course R.O.T.C. Infantry. Practical and theoretical instruction in school of soldier squad and company; elementary subjects of military training; infantry weapons and equipment.

4-5-6. Second Year Basic Course R.O.T.C. Infantry. Practical instruction in the school of platoon and company; military sketching and map-reading; infantry weapons including machine gun and automatic rifle; minor tactics.

51-52-53. First Year Advanced Course R.O.T.C. Infantry. Field engineering; infantry weapons, including trench mortars, 37 mm. gun, grenades, and pistol; minor tactics; musketry.

54-55-56. Second Year Advanced Course R.O.T.C. Infantry. Minor tactics; administration; military law; military history and policy of the United States; rules of land warfare.

MUSIC

1-2-3.† Harmony. The study of chords, their construction, relations, and progressions. Written exercises on basses, the harmonization of given melodies.

4-5-6.† Counterpoint. Strict counterpoint up to eight parts; free contrapuntal harmonization of chorales and composition of smaller contrapuntal forms as inventions.

7-8-9. Ear-Training.

10-11-12. First Year Organ.

13-14-15. Second Year Organ.

16-17-18. First Year Pianoforte.

19-20-21. Second Year Pianoforte.

22-23-24. First Year Violin.

25-26-27. Second Year Violin.

28-29-30. First Year Vocal Training

31-32-33. Second Year Vocal Training.

34-35-36, 37-38-39, 74-75-76, 77-78-79. Other Orchestral Instruments.

40-41-42. Orchestra. Study of standard orchestral literature and accompaniment of vocal and instrumental soloists. This ensemble group is an ideal campus institution, supporting and inducing campus spirit and activities.

43-44-45. University Chorus. Open to juniors and seniors. May be taken only with the consent of the instructor. May be taken a second year with credit.

50-51-52. Third Year Organ.

53-54-55. Fourth Year Organ.

56-57-58. Third Year Pianoforte.

59-60-61. Fourth Year Pianoforte.

62-63-64. Third Year Violin.

65-66-67. Fourth Year Violin.

68-69-70. Third Year Vocal Training.

71-72-73. Fourth Year Vocal Training.

86-87-88. Normal Piano. Special course offered to students desiring to teach pianoforte as a profession.

89-90-91. Advanced Normal Piano. Practice teaching.

92-93-94. Principles of Vocal Technique. Historical development of vocal technique to meet demands of various schools of composition, and an appraisement of modern theories.

100-101-102. Composition Orchestration. For those specializing in theory. May be taken only with the consent of the instructor.

103-104-105. 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.

106-107-108. 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.

109-110-111. Bach and Beethoven, Wagner and Brahms. Critical study of selections from master works of the four greatest composers. Biographical readings, topics, and analyses, giving historical and literary background to culminate periods in composition.

112-113-114. Ensemble. Section 1. (For students of piano, violin, organ, etc.) Chamber music, duos, trios, and quartets and other larger combinations for strings and wind instruments. Section 2. (For voice students.) Oratorio and opera.

115-116-117. Advanced Ensemble. Section 1. (For students of piano, organ, violin, etc.) Chamber music continued. Section 2. (For voice students.) Offers to groups made up of students from all voice ensemble classes, practical experience in scenes from opera.

121-122-123. Romantic Movement. An analytical course covering the romantic movement with illustrations by the instructor. Papers assigned during the year.

124-125-126. Advanced Harmony. Harmony 1-2-3 prerequisite. A course designed to develop more freedom in expression and in musical effect. Especial attention given to modulations.

127-128-129. Advanced Composition.

ORIENTATION

1-2.† Orientation. A course intended to orient the student in the world of nature, of man, and of organized society; and to arouse in him a consciousness of his relationships and realization of his responsibilities.

PHILOSOPHY

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 discussed.

2. Logic. The nature of knowledge, the laws of reasoning, the principles and methods of scientific proof.

3. 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.

10. Science and Religion. Religious problems as affected by the results of modern science.

50. Ancient and Medieval Philosophy. An introduction to philosophy through a study of typical world views: Greek, Roman, medieval, Christian, and Renaissance.

51. Modern Philosophy. Sketch of the development of philosophy from the Renaissance to the present.

100. History of Religions. A comparative survey of primitive, national, and personal religions. Readings in sacred scriptures and in oriental philosophies and literatures.

101. Psychology of Religion. The organization of mental life in emotions, sentiments, and values. Studies in the psychology of conversion, faith, healing, mysticism, etc.

102. Philosophy of Religion. A critical discussion of esthetic, ethical, and religious attitudes toward life.

103. Esthetics. An introduction to the history and theory of esthetics, psychological analysis of beauty, and a discussion of the arts.

104. History of Esthetics. A survey of the chief esthetic theories of ancient and modern thinkers.

108-109. History of Ethics. A survey of the chief ideals of conduct and theories of life from Socrates to the present day.

120. Scandinavian Philosophy. The philosophical thought of the nineteenth century in Scandinavian countries, including a comparative study of Boström and Kierkegaard.

124. Political and Social Ethics. The fundamental aspects of society and the state, considered from the point of view of ethics.

129. Modern Political Thought. The state in modern political philosophy; its nature, basis, and authority. Individualism and socialism in the eighteenth and nineteenth centuries.

135-136. The Philosophy of Plato. The reading and discussion of the principal dialogs with a view to understanding the problem and method of Greek philosophy as illustrated in the writings of Plato.

141-142. Metaphysics. A critical study of the fundamental metaphysical concepts, ontological and cosmological, that constitute the framework of reality.

147-148. 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.

151-152. Modern Idealism. Discussions of the place of mind in the world, based upon the works of philosophers from Kant to Royce.

161-162-163. Seminar in Philosophy.

PHYSICAL EDUCATION FOR MEN

1, 2, 3. Freshman Physical Education. Mass activities, corrective exercise, apparatus work, swimming, athletics, games, and efficiency tests.

4. Freshman Hygiene. Fall quarter A—H; winter quarter I—R; spring quarter S—Z.

7, 8, 9. Advanced Leaders. One hour of instruction; two hours leading squads in Physical Education 1, 2, 3 or 16, 17, 18 under supervision.

13, 14, 15. Corrective Work. By petition in place of Physical Education 1, 2, 3.

16, 17, 18. Drill Substitution. By petition in substitution for military science.

PHYSICAL EDUCATION FOR WOMEN

1-2-3. Elementary Physical Training. Gymnastics, apparatus work, orthopedic exercise, folk dancing, indoor and outdoor games. Individual health consultations.

4. Preliminary Hygiene. One lecture a week. The most essential aspects of the care of personal health.

7-8-9. Sophomore Physical Training. Floor work, apparatus, and indoor and outdoor games.

10-11-12. Sophomore Orthopedic Gymnastics. For those who need more individual supervision than is possible in other classes.

13-14-15. Sophomore Interpretive Dancing. An art and a phase of physical education designed to develop a sense of beauty and body control through rhythmic movements prompted by the imagination.

16-17-18. Sophomore Games and Folk Dancing. Suitable in strength for C-D girls. Conducted outdoors when weather permits.

19-20-21. Sophomore Major Sports. Hockey in autumn, basket-ball in winter, baseball in spring. Suitable in strength for A-B girls.

22-23. Sophomore Elementary Swimming. Course 22, elementary; 23, low intermediate.

25-26. Sophomore Intermediate Swimming. Wide range of strokes, elementary diving.

28-29. Sophomore Advanced Swimming. Advanced strokes and diving, life-saving.

30. Sophomore Figure Skating. Practice of strokes on the rink, or when rink is unusable, practice of balance and co-ordination exercise indoors.

31. Life-Saving. Red Cross life-saving leading to membership in the Life Saving Division of the American Red Cross.

32. General Swimming. For both beginners and advanced swimmers and divers. Shower bath tickets may be bought of the matron. No registration necessary.

33-34-35. Hockey, Basket-Ball, and Baseball. Hockey in autumn, basket-ball in winter, baseball in spring.

36. Winter Sports. Study of figure skating and ice games on the rink; technique of activities outdoors, or in the gymnasium in unfavorable weather; study of an all-round winter sport program, its activities, equipment, and necessary facilities.

43-44-45.† Play and the Playground. Graded games, folk dances, and track for school and playground, two hours. A consideration of nature and function of play and practical conduct of playground, one hour.[1]

66-67-68.† Interpretive Dancing. Similar to 13-14-15. Three hours.

69-70-71. Advanced Interpretive Dancing. Two hours of dancing. Written work and prescribed reading.[1]

[1] If taken for no credit, no reading or written work will be required.

PHYSICS

INTRODUCTORY COURSES

1. Elements of Mechanics and Sound. First part of general course, 1, 21, 31, 41. Course 2 should be taken in conjunction with this course. Three lectures, one quiz hour a week.
2. Elements of Mechanics and Sound Laboratory. The laboratory part supplementing Course 1. One two-hour session in the laboratory a week.
9. Acoustics. A study of the principles of sound. A course designed primarily for the students in the Department of Music. Open also to other students. Three lectures a week.
21. Heat. Course 22 should be taken in conjunction with this course. Three lectures, one quiz hour a week.
22. Heat Laboratory. The laboratory part supplementing Course 21. One two-hour session in the laboratory a week.
31. Optics. Course 32 should be taken in conjunction with this course. Three lectures, one quiz hour a week.
32. Optics Laboratory. The laboratory part supplementing Course 31. One two-hour session in the laboratory a week.
35. Optics. A brief study of light phenomena. Designed for those who cannot take the fuller course. Two lectures, one quiz hour a week.
41. Electricity. Course 42 should be taken in conjunction with this course. Three lectures, one quiz hour a week.
42. Electricity Laboratory. The laboratory part supplementing Course 41. One two-hour session in the laboratory a week.

INTERMEDIATE COURSES

101-103-105. Theoretical Physics. Intensive analytical survey of fundamental principles of mechanics, sound, heat, light, electricity, and magnetism, designed to supplement the general courses and to prepare students for more specialized graduate courses. Five lectures a week.

102. Laboratory Arts. Designed to acquaint students with the methods used in glass-blowing, silvering, etching metal to glass seals, making quartz fibers, soldering, spinning, spot-welding, etc., as a preparation for general experimental work.

104. Precision Mechanics. Standard methods of precise measurements of length, mass, and time.

114-116-118. Elementary Physical Investigation. The experimental or theoretical study of physical phenomena the nature or laws of which are not as yet understood.

115-117-119. Problem Course. A study of the fundamental principles and standard methods involved in the mathematical analysis of physical problems. Three lectures a week.

122. Pyrometry and Heat. An experimental study of pyrometry, heat quantity, heat transfer, hygrometry, and gas liquefaction. One lecture, two three-hour sessions in the laboratory a week.

132. Applied Optics. Special experimental work in spectrometry, optical instruments, photometry, absorption, polarized light. Two three-hour laboratory periods a week.

142. Electrical Measurements. Devoted mainly to the study of potentiometer methods, capacity, inductance, magnetic flux. Three two-hour laboratory periods a week.

146. 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.

148. Radioactivity. An analytical study of the theories and methods of investigation supplemented by laboratory technique. Those pursuing this course should continue with Chemistry 151, Radiochemistry.

150. Conduction through Gases. An analytical study of the theories and methods of investigation, supplemented by laboratory technique.

POLITICAL SCIENCE

BEGINNING COURSES

1. American National Government.

2. American State Government.

INTERMEDIATE COURSES

3. Comparative European Government.

11. Municipal Government in the United States.

15. Introduction to Political Science. Introductory presentation of the problem of government. The nature of the state, the forms and functions of government, the principles of politics.

25. World Politics. A study of the foreign policies and international relations of the leading European powers today.

ADVANCED COURSES

51-52-53.† Business Law. Principles governing ordinary business transactions.

102. Political Parties. The nature, function, organization, and methods of political parties; legal control of parties and elections; public opinion as a factor in popular government.

105. Colonization. The economic and political factors in colonization; forms of government, commercial policies, and mandates.

111-112.† Municipal Powers and Functions. The historical development and present range of municipal activities; problems of police, welfare, education, streets, water supply, sanitation, and public utilities; municipal ownership; city-planning.

113. Municipal Problems. A specialized course in modern, legal, administrative, and functional problems of cities.

121-122.† International Law. Nature, sources, and sanction of international law. The laws of peace, war, and neutrality.

123. International Organization. Systems of international relations, international administrative organizations, and political guarantees of the past with a detailed study of the League of Nations.

124. Problems in International Law. Intensive study of the solution of selected international controversies by national and international courts, arbitration tribunals, and diplomatic conferences.

125-126.† American Diplomatic History. The history, principles, and policies of American diplomacy.

127. American Foreign Relations. Such topics as the Monroe Doctrine, freedom of the seas, the "open door," arbitration, and disarmament will be considered with particular reference to the future policy of the United States.

130. Introduction to Administration. Introduction to the administrative aspects of the problems of social control: the formulation of policy, the organization of administration, and control over administration.

131-132.† Principles of Public Administration. Source of the administrative power; administrative areas; the budget; personnel; purchasing; organization; public service as a career. Special problems relating to education, finance, safety, health, welfare, commerce, labor, and conservation of natural resources.

136-137.† Far Eastern Government and Politics. The constitutional development of Japan and China; government, parties, and political problems.

138-139.† Far Eastern Diplomacy. The international relations of China from the earliest period; early contacts between Japan and China; the policy of exclusion gradually overcome by western powers; the opening of the Far East in the nineteenth century; the open door policy; the contemporary situation.

141. Problems in State Government and Constitutional Law. A selected group of current problems in state government will be studied intensively in their constitutional and political aspects.

145. Legislative Power and Methods. Source and scope of the legislative power; methods used by legislative bodies; current political questions; formulation and defense of legislative bills.

151-152.† Constitutional Law. Separation of powers; relationship of states to national government; fundamental rights and immunities of citizens; obligation of contracts; due process of law; equal protection of laws.

155. Administrative Law. The nature and scope of administrative law with special reference to the law of officers and special administrative tribunals.

157. 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.

158. Government and Business. Governmental powers; restraint of trade and manipulation of prices; protection of debtors; business affected

with a public interest; combinations of laborers; corporations; compulsory benefits; conservation of natural wealth; vested rights; confiscatory legislation.

159. Law of Public Utilities. The rise and development of the law of public service companies; the rights and duties of such companies; present methods of control.

161. Comparative Federal Government. Ancient and modern federal unions.

166-167.† Government and Politics of the British Empire. Organization, working, and international status of the Imperial and Dominion governments.

181. Modern Political Thought. (See Philosophy 129.)

187. Problems in Democracy. An examination of a few key problems of a democratic society—individual and class differences, opinion, dictatorships, expert knowledge, and leadership.

190. Jurisprudence. (See Law School program.)

GRADUATE COURSES. CONSULT GRADUATE SCHOOL BULLETIN

201-202-203. Seminar in Public Law.

211-212-213. Seminar in Modern Government and Political Theory.

221-222-223. Seminar in Local Government and Administration.

231-232-233. Seminar in International Relations.

PREVENTIVE MEDICINE AND PUBLIC HEALTH

MEDICAL SCHOOL

2. First Aid.

3. Personal Hygiene and Elementary Sanitation. Elementary principles of normal body function; predisposing and actual causes of disease; ways in which disease may be avoided.

50. Public and Personal Health. Discusses the causes of diseases and of physical defects and presents the fundamental principles and working methods of health conservation and disease prevention. Lectures, demonstrations, discussions, inspection trips, and directed readings.

52. Health Care of the Family.

53. Elements of Preventive Medicine.

58. Maternal and Child Hygiene.

59. Social Hygiene.

60. The Tuberculosis Problem.

61. Mental Hygiene.

62. Principles of Public Health Nursing.

63. Special Fields in Public Health Nursing.

64. Field Practice in Infant Welfare Nursing.

65. Field Practice in School Nursing.

66. Field Practice in County Nursing.

67. Field Practice in a Tuberculosis Sanatorium.

68. Field Practice in Visiting Nursing.

69. School Health Work.

73. Occupational Hygiene and Disease.

80. Educational Hygiene.
102. Sanitation.
103. Public Health Bacteriology.
105. Vital Statistics.
106. Public Health Administration.
107. Sanitary Surveys.

PSYCHOLOGY

1-2.† General Psychology. An introductory survey of psychology; its material, fundamental laws, applications, and relations to other sciences. Two lectures, one recitation per week.

1-6.† General Psychology for Business Students. Offered only to business and pre-business students.

3. Psychology Applied to Daily Life. The applications of psychology to selected problems in medicine, law, education, sociology, and daily life.

4-5.† Introductory Laboratory Psychology. Simple experiments providing the beginner illustrative material and training in the methods of laboratory psychology. Required for all advanced courses in general psychology. Four laboratory hours per week.

7. Introductory Laboratory Psychology. Identical with 4-5 combined. Eight laboratory hours per week.

9. Animal Behavior. An account of the evolution of instinct, habit, and intelligence in animals. The application of animal studies to problems of human psychology. Lectures, demonstrations, and reading on assigned topics.

15. Psychology of Sensation. Vision, audition, taste and smell, and sensations arising from the skin and internal organs. Sensory acuity and defects. The dependence of sensory qualities upon sense organs and conditions of stimulation.

56. Psychology of Advertising. Psychological analysis of advertising. Intensive study of national and local advertising from the standpoint of attention, association, memory, desire, and action. Assigned readings, observation, experiments, reports.

60. Psychology in Personnel Work. Psychology as applied to the selection and retention of a stabilized personnel. The standardized interview; principles and technique of employment tests; methods of judging character qualities; the rating scale; personnel classification methods.

101-102†-103. Experimental Psychology. The theory and technique of the leading methods of experimental investigation in human psychology. Individual minor research problems in the third quarter. One lecture, four laboratory hours per week.

108. Systematic Psychology. A comparative study of the problems, methods, and viewpoints of modern systems of psychology.

109. Readings in Psychology. Intensive study of selected topics such as attention, perception, imagination, thinking. For properly qualified students with special interests, much of the classroom work will be replaced by individual assignments.

114-115.† Human Behavior. An analysis of the development and organization of human behavior. Consciousness or mind, as a property of the living body, is discussed in its dependence upon response.

121-122†-123. Neuropsychology. Functions of the nervous system in behavior. Neural basis of reflex, instinct, habit. Physiology of motivation. Individual investigation of special problem in third quarter. One lecture and six laboratory hours per week.

124. Psychology of Learning. Critique of current theories concerning the nature of the learning process. Problems and methods bearing upon the physiology of learning. Not open to students who take Neuropsychology.

125-126.† Psychology of Individual Differences. Experimental and statistical study of influence of sex, race, immediate ancestry, environment, and maturity, in causation of individual differences in mental traits. Each student participates in investigation of definite problems and in analysis of results.

127. Social Psychology. An examination of the behavior of men in groups, and of some important social institutions, as determined by human motives and traditions.

130. Vocational Psychology. Psychology of individual differences in intelligence, aptitudes, interests, and training, with special reference to vocational guidance.

144-145.† Abnormal Psychology. Systematic review of psychiatry in relation to normal behavior. Types of social maladjustment; delinquency, criminality, fanaticism. Psychology of creative ability. The organization of personality as revealed by studies in psychopathology.

GRADUATE COURSES. CONSULT GRADUATE SCHOOL BULLETIN

200-201.† Seminar in the History of Psychology.

205. Advanced Differential Psychology.

206-207-208. Research in Animal Behavior.

210-211-212. Research Problems.

215-216-217.† Seminar in Physiological Psychology.

220-221-222.† Journal Club and Seminar in Contemporary Trends in Psychology.

ROMANCE LANGUAGES

FRENCH

1-2.† Beginning French.

3-4. Intermediate French.

8-9-10. Scientific French. (Pre-medical students.)

20. Oral and Written French.

21-22-23.† Survey of French Literature. An outline of the history of French literature from 1600 to the present.

24-25.† Survey of French Literature. Same as 21-22-23.

49. French Pronunciation. The essentials of French pronunciation and diction. A rapid survey and intensive drill designed as an introduction to the French conversation courses.

50-51-52.† French Conversation.
53-54-55.† French Composition.
56-57-58.† Advanced French Conversation.
59-60-61.† Advanced French Composition.
62. Practical French Phonetics. Organs of speech. Alphabet of the International Phonetic Association. Articulation of sounds. Ear-training. (With the aid of sound charts and phonographic records.)
80-81-82.† French Literature: Nineteenth Century. The romantic and realistic movements as manifested in the novel, drama, and poetry. Assigned texts and collateral reading. The course is conducted entirely in French.
100. Diction Française. Étude, théorique et pratique, du français parlé.
103-104-105.† French Syntax and Composition. Studies in characteristic problems of French syntax especially for prospective teachers.
115-116-117.† French Literature: Seventeenth Century. Reading, discussions, and reports.
118-119-120.† French Literature: Eighteenth Century. Philosophic movement: Bayle, Fontenelle, Montesquieu, Voltaire, l'Encyclopédie, Rousseau. Lectures and reports.
121-122-123.† French Literature: Sixteenth Century. Marot and l'École Lyonnaise. The Renaissance and the Reformation, Rabelais, the Pléiade, Montaigne.
141. Realistic Novel: Nineteenth Century. A study of realism with especial reference to the novel. Flaubert, Maupassant, Zola, etc.
150-151-152.† French Dramatic Literature. A study of the development of dramatic literature in France from the classical period to the present time.
153. French Lyric Poetry. Contemporary French poets.
156. Molière.
157. Contemporary French Novel. Bourget, Loti, France, etc.
162. French Romantic Poets.
171-172-173.† History of the French Language. Lectures and illustrative texts giving the development of the French language from its origins to the nineteenth century. Especially intended for those who are going to teach French.
174-175-176. Lectures in French.
191-192-193.† Research Methods and Material.

ITALIAN

1-2.† Beginning Italian.
80. Manzoni and Leopardi. Alternates with 81.
81. Carducci, Fogazzaro, Giacosa. Alternates with 80.
159-160. Dante: the *Divina Comedia*. Alternates with 161-162.
161-162. The Sixteenth Century. Reading of texts and study of literary influences. Alternates with 159-160.
164. Dante in English. Lectures, reading and discussion of the *New Life* and parts of the *Divine Comedy*.

SPANISH

1-2.† Beginning Spanish.
3-4. Intermediate Spanish.
20. Oral and Written Spanish.
50-51-52.† Spanish Conversation.
53-54-55.† Spanish Composition.
56-57-58.† Advanced Spanish Conversation.
59-60-61.† Advanced Spanish Composition.
62. Practical Spanish Phonetics.
65-66-67.† Survey of Spanish Literature. An outline of the history of Spanish literature from 1500 to the present day.
68-69.† Survey of Spanish Literature. Same as 65-66-67.
73-74-75.† Spanish Commercial Correspondence.
80-81-82.† Spanish Literature: Nineteenth Century. Assigned texts and collateral reading. Lectures in Spanish.
83-84-85.† Spanish-American Literature. An outline of South American literary history. Reading of representative authors. Lectures in Spanish.
100. Spanish Oral Diction. Exercises in diction, syntax, and vocabulary.
103-104-105.† Spanish Syntax. Special studies in characteristic problems of Spanish syntax.
115-116-117.† Spanish Literature: Seventeenth Century. Alternates with 156-157-158.
141. Spanish Contemporary Novelists.
150. Spanish Dramatic Literature. Contemporary dramatists.
156-157-158.† Spanish Literature: Sixteenth Century.
159. Cervantes. A study of his life and works. Attention will be centered upon *Don Quixote* and the *Novelas Exemplares*.
174-175-176. Lectures in Spanish.

GRADUATE COURSES. CONSULT GRADUATE SCHOOL BULLETIN

201-202-203. Old French Phonology and Morphology.
204-205-206. Readings in Old French Literature.
207-208-209. Old Provençal.
222-223-224. Seminar in Modern French Literature.
241-242-243. Old Spanish Philology.
244-245-246. Old Spanish Literature.
250-251-252. Spanish Seminar.
259-260-261. Research in Romance Languages.

SCANDINAVIAN

1-2. Beginning Norwegian. Grammar, composition, select readings in easy prose and poetry.
3. Intermediate Norwegian. Grammar, composition, conversation, elementary history of literature, and select works of modern authors.
4-5. Advanced Norwegian (Survey). Prose and poetry.

7-8. Beginning Swedish. Grammar, composition, conversation, reading of selected prose texts.

9. Intermediate Swedish. Reading selected works in prose and verse.

10-11. Advanced Swedish (Survey). Brief survey of the history of Swedish literature, reading of Tegner's *Fritiofs Saga,* Runeberg's *Fänrik Ståls Sägner,* and selected texts in Swedish history.

12. Ancient and Medieval Scandinavian History. The antiquities of Scandinavian formation of states, the Viking expeditions, medieval culture. Knowledge of Scandinavian not required.

45. Scandinavian Mythology. Lectures, textbook, and illustrated reading. Knowledge of Scandinavian languages not required.

101-102-103. Modern Norwegian Literature. Norwegian literature from 1814 to the present day.

104-105. Modern Scandinavian History. Religious, political, and economic changes in the north, military enterprises, growth and liberalism, material progress. Knowledge of Scandinavian not required.

107-108-109. Modern Swedish Literature. The Swedish novel. Study of a selected list of Swedish classics.

110. Ibsen. Lectures, reading, and interpretation.

111-112-113. Old Norse (Icelandic). Grammar and reading. *Gunnlaug's Saga Ormstungu.*

114. Strindberg. Lectures, reading, and interpretation.

116. History of Scandinavian Languages.

117. Early Norwegian Literature. History of literature. Saga period. Norwegian and Danish folk songs. Holberg. Oplysningstiden.

130-131-132. Danish Literature of the Nineteenth Century. From Oehlenschläger to the end of the century.

134-135. The Landsmaal Movement and Literature. From Aasen to Garborg.

136. Björnson. A study of his activity as a central figure in modern Norway.

GRADUATE COURSES. CONSULT GRADUATE SCHOOL BULLETIN

209-210. Seminar in Modern Swedish Languages and Literature.

215-216-217. Seminar in Modern Norwegian Literature.

SOCIOLOGY

1. Introduction to Sociology. A study of the origin and development of human societies; various agencies which have determined the type of social life; social organization, institutions, and progress; bearing of sociology upon other social sciences and arts.

6. Modern Social Reform Movements. A survey of attempts to overcome certain social maladjustments; child labor, the city, bad housing, poverty, degeneracy; movements for public health, industrial democracy, social insurance, protection in infancy and youth, public recreation, etc.

14. Rural Sociology. The background and evolution of country life; rural conveniences, communication, co-operation; rural social institutions,

especially the family, school, church, and social center; rural leadership, surveys, organization, social agencies.

45. Social Statistics. Statistical method applied to the quantitative study of population and problems of group living. Especially designed to give social workers and public health officers the training necessary to carry on their work successfully.

51. The Occurrence of the Socially Inadequate. The significance of the socially inadequate in contemporary and industrial societies and the description of the methods used in their care.

52. Elementary Social Case Work. The methods of case work as applied to the treatment of the socially inadequate.

53. Elements of Criminology. Development of the general concept of crime and criminals; historical methods of dealing with criminals; types of criminals; causes of crime; social control of crime; treatment of the criminal; agencies for the prevention of crime.

55. Housing Problems. An examination of housing evils and their causes; the various movements for the prevention or improvement of bad housing; town- and city-planning; garden cities. Lectures, readings, field work, and essay.

60. 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.

70. Group Work in the Community. Activities and problems of the settlement worker, especially the technique of organizing and directing boys' and girls' clubs. Discussion and field work.

90. Elementary Field Work. Designed to give first-hand knowledge of the conditions out of which dependency develops, by field work with a social service agency.

91. Elementary Field Work. Designed for students who have taken 90, and aiming to give practice in the methods of treatment outlined in Course 52.

92. Elementary Field Work. Field work on special research problems, principally in the field of child welfare, depending upon proficiency attained in 90 and 91.

100. Social Psychology. The social attitudes; their development and modification under social pressure; the interactions of individuals and groups.

101. Social Organization. The organization and structure of social groups; the selection of group types and values; the disorganization and reorganization of institutions; purposive social organization.

102. Social Control. Nature, purpose, and methods of social control, institutional and non-institutional controls; the evolution of sanctions in social control; the revision of the social controls under the influence of modern science.

103. Sociology of Conflict. An appraisal of competition, combat, and cooperation; causes, manifestations, results, and cures of conflict between nations, races, religions, and economic and social classes.

110. Methods of Community Organization and Social Work in Small Towns and Country. Concrete problems and methods are emphasized.

112. The Rural Social Survey. A critical study of the methods and scope of the social investigation and survey of rural communities; the development of methods of analyzing and comparing rural communities.

114. Rural Social Institutions. A detailed study of the problems of organization and efficiency of selected rural institutions, especially religious, educational, civic, and recreational. For advanced students. Lectures, discussions, reports.

115. The Rural Church As a Social Institution.

119. The Family. The evolution of the family; its various forms and their relation to other social institutions; the rôle of the family in social evolution; contemporary problems of the family.

120. Social Progress. A study of the basis for social progress in human nature; analysis of fundamental social institutions with regard to their contributions to human advance; necessary social readjustments to convert drift into progress.

121. Advanced Statistical Methods. The analysis and interpretation of social data by application of the theory of errors, the theory of probability, the theory of sampling, partial correlation, and the analysis of time series.

122-123. Methods of Social Investigation. A study of progress in methods of social investigation; a critical study of the scientific method applied to social phenomena; survey of some specific community or study of a specific problem; field work and analysis of material.

126-127. Settlement and Community Center Work.

128. Principles of Administration Applied to Social Work. 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.

130. Advanced Social Case Work. The method of case work in some special applications to specific problems presented by the socially inadequate; conducted by case conferences and case studies.

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 courts and probation.

133. Social Case Work in Health Problems. A course open only to students who are properly grounded in case work and who wish to specialize in this field.

134. Legal Protection of the Child. A study of the relation of law to child welfare. A survey of existing children's protective legislation, of its administration and its future development.

135. Field Practice in Legal Protection of the Child. Designed to meet the individual needs of students in the course on Legal Protection of the Child.

138-139. Mental Case Work. A study of mental abnormality and its treatment through case work. Lectures and clinical instruction.

140. History of Social Theory. A rapid survey of the leading social theories from the time of the Greeks with special reference to the more recent development of sociology. The theories are related to their social backgrounds.

141. Contemporary Social Theory. An intensive study of developments in the social theory of the late nineteenth and twentieth centuries.

152. Seminar. Problems of institutional administration.

153-154-155. Advanced Field Work. May be taken in specialized fields of child welfare and medical, as well as family, work.

158. The Sociology of Revolution.

187-188-189. Seminar in Educational Sociology. A discussion of the sociological foundations of educational theory, with investigation of special problems.

GRADUATE COURSES. CONSULT GRADUATE SCHOOL BULLETIN

200-201-202. Seminar in Applied Sociology.

203-204-205. Seminar in Social Theory.

206-207-208. Seminar: Statistical Theory in Relation to Social Theory and Practice.

209-210-211. Seminar: The Theory of Social Evolution.

215-216-217. Seminar in Rural Sociology.

221-222-223. Graduate Field Training.

The Bulletin *of the* University *of* Minnesota

The College of Science, Literature, and the Arts

Part II

Announcement of Program for the Year 1926-1927

Vol. XXIX No. 21 May 3 1926

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FRESHMAN WEEK

Every student entering any department of the University for the first time as a freshman in the fall of 1926 is required to be here throughout the week before the opening of classes. Every new freshman must present himself at the registrar's office either Friday, September 17, Saturday, September 18, or Monday, September 20, to begin the process of registration. Those coming later than 5:00 p.m. Monday, September 20, will be subject to the usual penalty for late registration. See Penalty Fees, page 50 of the bulletin of general information.

During the week September 21 to 25, in addition to carrying out their registration, freshmen will meet for lectures on such subjects as how to study, the use of the library, important university and college regulations, and will visit the library, the scientific laboratories, and other points of interest to them in connection with their choice of studies and of their future occupations.

During this week there will be the usual physical examinations and psychological tests and such other examinations as will enable the faculty to place the students in classes for which they are best fitted.

The general purpose of the Freshman Week is to help the student to make a good start on his work and to adjust himself to the new and perplexing conditions of university life.

NOTICE THAT ATTENDANCE THROUGHOUT FRESHMAN WEEK IS A REQUIREMENT

It is recommended that as many as possible present themselves for registration on Friday, September 17, in order to avoid the inconvenience and delay incident to the congestion on the last day.

1926

JULY

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1927

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DECEMBER

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UNIVERSITY CALENDAR
1926-27

1926

Fall Quarter

September	16	Thursday	Payment of fees closes, except for new students
September	16-18		Entrance examinations (for removal of entrance deficiencies)
September	17-20		Registration of all new students entering the freshman class
September	20-24		Examinations for removal of conditions
			Registration period[1]
September	21-25		Freshman week
September	24	Friday	Payment of fees for new students closes
September	24-25		Necessary changes in registration
September	27	Monday	Fall quarter classes begin, 8:30[2] a.m.
October	21	Thursday	Senate meeting, 4:30 p.m.
November	2	Tuesday	General Election Day; a holiday
November	11	Thursday	Armistice Day; a holiday
November	20	Saturday	Homecoming Day
November	25	Thursday	Thanksgiving Day; a holiday
December	2	Thursday	State Day Convocation
December	15-18		Final examination period
December	16	Thursday	Commencement Convocation
			Senate meeting, 4:30 p.m.
December	18	Saturday	Fall quarter ends, Christmas vacation begins, 5:20 p.m.
December	22	Wednesday	Payment of fees closes for all students in residence fall quarter[3]

Winter Quarter

December	27-29		Entrance examinations
December	30-31		Registration days for new students[1]
			Necessary changes in registration

[1] Registration subsequent to the date specified will necessitate the approval of the assistant dean for students' work. See also penalty fees for late registration, General Information, section 13.

No student will be allowed to register in the University after one week from the beginning of the quarter excepting in unusual cases wherein special circumstances shall justify the assistant dean for students' work in permitting registration at a later date.

[2] First hour classes begin at 8:00 in the Medical School and at 8:15 at University Farm.

[3] New students must pay fees on dates announced for registration.

1927			
January	3	Monday	Christmas vacation ends, winter quarter classes begin, 8:30[2] a.m.
February	12	Saturday	Lincoln's Birthday; a holiday
February	17	Thursday	Charter Day Convocation
			Senate meeting, 4:30 p.m.
February	22	Tuesday	Washington's Birthday; a holiday
March	16-19		Final examination period
March	17	Thursday	Payment of fees closes for all students in residence winter quarter[3]
March	19	Saturday	Winter quarter ends, spring vacation begins, 5:20 p.m.

Spring Quarter

March	21-23		Entrance examinations
March	25-26		Registration days for new students[1]
			Necessary changes in registration
March	28	Monday	Spring vacation ends, spring quarter classes begin, 8:30[2] a.m.
April	15	Friday	Good Friday; a holiday
May	12	Thursday	Cap and Gown Day Convocation
May	19	Thursday	Senate meeting, 4:30 p.m.
May	30	Monday	Memorial Day; a holiday
June	8-11		Final examination period
June	11	Saturday	Spring quarter closes, 5:20 p.m.
June	12	Sunday	Baccalaureate service
June	13	Monday	Fifty-fifth annual commencement

Summer Session

June	17-18		Summer Session first term begins, registration and payment of fees
June	20	Monday	Classes begin, 8:00 a.m.
July	4	Monday	Independence Day; a holiday
July	30	Saturday	Registration and payment of fees for second term closes
August	1	Monday	Second term classes begin
September	3	Saturday	Second term Summer Session closes

[1] Registration subsequent to the date specified will necessitate the approval of the assistant dean for students' work. See also penalty fees for late registration, General Information, section 13.

No student will be allowed to register in the University after one week from the beginning of the quarter excepting in unusual cases wherein special circumstances shall justify the assistant dean for students' work in permitting registration at a later date.

[2] First hour classes begin at 8:00 in the Medical School and at 8:15 at University Farm.

[3] New students must pay fees on dates announced for registration.

COURSES OF STUDY

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

GENERAL REQUIREMENTS

1. The student must earn 180 credits and 180 honor points, or a smaller number of credits determined as follows: for every five honor points in excess of one honor point per credit, the number 180 is diminished by one.

A student entering with advanced standing from some other institution must secure a total of 180 credits, and an average of one honor point per credit for the work done in this college. For every five honor points earned in this college in excess of one honor point per credit, the number 180 is diminished by one.

2. The student may not receive credit for beginning courses (two quarters, 10 credits) in more than one of the foreign languages, exclusive of Greek and Italian, unless his major adviser approves such courses as necessary for the proper development of the student's major work.

3. Not later than the end of his sophomore year, each student must elect the department in which he intends to do his major work. He will then be assigned to a major adviser by that department.

SPECIFIC REQUIREMENTS

Grouping of Departments in the Junior College

Group A English

Group B Foreign languages: German, Greek, Latin, Romance Languages, Scandinavian.

Group C Social sciences: Economics, Geography, History, Political Science, Sociology.

Group D Natural sciences: Animal Biology, Astronomy, Bacteriology and Immunology, Botany, Chemistry, Geology and Mineralogy, Human Physiology, Physics, Psychology.

Group E Architecture, Mathematics, Music, Philosophy.

For admission to the Senior College the student must have completed the following work in the Junior College or the equivalent in another recognized institution.

1. Group A 15 credits of Freshman English.

Group B The student must present for entrance four years of one foreign language, or he must complete 20 credits in one language in college, or he must continue a language which he presented for entrance, according to the following schedule:

	Amount Presented for Entrance	*Amount Required in Junior College*
	Four years of one language	None
	Three years of one language	5 credits in same language
	Two years of one language	10 credits in same language
	One year of one language	15 credits in same language
	Less than a year of one language	20 credits in one language
Group C	10 credits in one subject.	
Group D	10 credits in one subject.	
Group E	No requirement.	

2. Every student should plan to begin work in each of groups A, B, C, and D, early enough to provide for the completing of all group requirements before the end of his sophomore year, because otherwise his admission to the Senior College will be delayed.

3. In addition the student must secure the necessary preparation for a senior college major sequence in one subject.

4. The requirements in physical education and military drill (General Regulations, sections 6 and 7) must be met during the junior college years.

5. The student must earn a total of 90 credits with an average of one honor point per credit,* or a smaller number of credits determined as follows: For every five honor points in excess of one honor point per credit, the number 90 is diminished by one.

A student entering with advanced standing from some other institution must secure a total of 90 credits, and an average of one honor point per credit for the work done in this college. For every five honor points earned in this college, in excess of one honor point per credit, the number 90 is diminished by one.

Senior College

Requirements.—1. A major sequence, 27 to 36 credits. Each student must complete a coherent and progressive sequence of courses, known as a major sequence, which shall include, as specified by the department which offers it, from 27 to 36 credits in senior college courses. Such major sequences are offered by the following departments: Animal Biology, Anthropology, Architecture, Astronomy, Bacteriology, Botany, Chemistry, Economics, English, Geography, Geology and Mineralogy, German, Greek, History, Human Physiology, Latin, Mathematics, Music, Philosophy, Physics, Political Science, Psychology, Romance Languages, Sociology. The courses constituting a major sequence in any department are announced in the program.

A student must maintain an average of one honor point per credit in the work of the major sequence.

* For students entering the Senior College before the fall of 1927, the requirement is a total of 90 credits and 90 honor points, or a smaller number of credits determined as above.

2. A minor sequence, 9 credits. A student must secure in some department other than his major department and in addition to his major sequence 9 credits in senior college courses.

*Graduation Honors**

The degree B.A. may be awarded *cum laude, magna cum laude,* or *summa cum laude* upon the recommendation of the Committee on Honors.

Honors are awarded only to students who have a scholastic record of two honor points per credit in all work carried. A student who has this record will be awarded the degree B.A. *cum laude.*

Students wishing to become candidates for the higher honors *(magna cum laude, summa cum laude)* must signify their intention not later than the beginning of the third quarter before graduation. Students are admitted as candidates upon the recommendation of the major department with the approval of the Committee on Honors. The committee will not admit as a candidate a student who has limited his senior college work to the minimum requirements in major and minor subjects. The purpose of granting honors is to secure scholarly ideals and achievements, and the candidate is expected to show his interest and ideals in his election of studies.

With the approval of the Committee on Honors the candidate may pursue a course of reading in addition to the required major and minor studies and in lieu of any or all elective courses. Near the close of the senior year the candidate will take a special examination which may touch upon any part of the field of his college course. In this comprehensive examination the candidate should show (a) an acquaintance with the chief literature and sources of information in the fields studied, and (b) an ability to discuss with intelligence and clear reasoning, questions or problems upon which he has had opportunity to secure the necessary information. Such questions may be new to the student. The object is to test the student's ability to bring facts and theories to bear upon problems presented in the examination. The examination should be a test not of memory but of assimilation, of culture, and of power to command or use the knowledge which courses of study have put within the student's reach. Candidates who pass this examination will, upon recommendation of the committee, be awarded the degree B.A. *magna cum laude.*

A candidate whose standing in the comprehensive examination is satisfactory and who in addition presents an acceptable critical paper, a piece of creative work, or a thesis embodying the results of original research will, upon recommendation of the committee, be awarded the degree B.A. *summa cum laude.* The preparation of the paper should be begun early in the senior year.

* Students who enter with advanced standing are eligible to become candidates for honors if they will have earned 75 credits of work in residence before graduation.

II. SPECIAL COURSES LEADING TO THE DEGREE OF BACHELOR OF ARTS

A. GENERAL COURSE WITH A MAJOR IN MUSIC

For the specific requirements of this course, see the program of the Department of Music, in this bulletin.

B. COURSE IN TRAINING FOR DIPLOMATIC AND CONSULAR SERVICE

For the specific requirements of this course, see the program of the Department of Political Science, in this bulletin.

C. COURSE IN TRAINING FOR HOSPITAL LIBRARY SERVICE

For the specific requirements of this course, see the special bulletin, obtainable at the office of the registrar.

III. SPECIAL COURSE LEADING TO THE DEGREE OF BACHELOR OF MUSIC

For the specific requirements of this course, see the special pamphlet of the Department of Music.

IV. SPECIAL COURSES LEADING TO THE DEGREE OF BACHELOR OF SCIENCE

A. COURSE IN PREVENTIVE MEDICINE AND PUBLIC HEALTH

For the specific requirements of this course, see the special bulletin, obtainable at the office of the registrar.

B. COURSE FOR MEDICAL TECHNICIANS

For the specific requirements of this course, see the special bulletin, obtainable at the office of the registrar.

C. COURSE IN SOCIAL AND CIVIC WORK

This course is organized in response to a demand for distinctive pre-technical training for professional service. Satisfactory completion of the four-year course leads to the degree of bachelor of science. The fifth year's work, regarded as adequate professional training, leads 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 degree of master of arts 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 biology, history, economics, political science, psychology, and language. To this end all intensive specialization is reserved for the fourth and graduate years of study.

During the four years, the student must secure 180 credits and 180 honor points. (For each five honor points in excess of one honor point per credit, the required number of credits will be diminished by one.)

First and Second Years

Common basic foundation

Required	Advised Electives
Freshman English (15 credits)	Foreign language
Sociology 1, 6, 45	Sociology 14
Economics 6-7	Philosophy 2, 3
Political Science 1, 11[1]	Political Science 2
Psychology 1-2; 7 or 4-5	Inorganic Chemistry 1-2-3 or 4-5[2]
Animal Biology 1-2	Psychology 3
	Bacteriology 51[2]
	Physiology 4[2]

Third Year

Concentrated sociological study and training, in which students become familiarized with the three chief techniques of social work: case work, group work, research.

Sociology 51, 52, 53,[1] 55, 60, 70, 90, 91	Sociology 100, 101, 102, 114
Economics 62	Anthropology 110, 112
Preventive Medicine 50 or 53	Preventive Medicine and Public Health 60[2]
Home Economics 70, 71, 72	Political Science 157
or	Medicine 1[2]
Economics 161, 162	Pathology 1[2]

Fourth Year

Professional specialization by election of grouped requirements.

a. *Case work:* Sociology 92, 100 or 120, 119, 128, 130, 134, 135, 153-154; Economics 161; Political Science 157.

b. *Group work:* Sociology 100 or 101, 128, 122-123, 134, 153-154; Preventive Medicine 60, and Economics 161 or Physical Education for Women 43-44-45.

c. *Medical social work:* Sociology 100 or 119, 133, 138-139, 153-154; Preventive Medicine 58, 73; Psychology 144-145.

d. *Rural social work:* Sociology 101, 110, 112, 114, 115, 153-154; Preventive Medicine 60; Agricultural Education 154.

Recommended electives for all students: Sociology 121, 122-123, 128, 130, 133, 138-139, 140, 141; Anthropology 113; Animal Biology 183; Economics 161, 162; Political Science 145, 151-152, 157; Philosophy 124; Psychology 124, 125-126, 140, 144-145.

Fifth Year

Graduate professional study. Sociology 121, 122-123, 130, 133, 134, 138-139, 140, 141, 153-154-155, 200-201-202, 203-204-205, 206-207-208, 221-222-223; with a suggested minor in anthropology, economics, education, psychology, political science, preventive medicine or public health.

[1] Elective for students preparing for medical social work.
[2] Required of students preparing for medical social work.

V. COURSES PREPARING FOR ADMISSION TO THE PROFESSIONAL SCHOOLS

A. PRE-BUSINESS COURSE

The pre-business course in the College of Science, Literature, and the Arts, required for admission to the School of Business, is made up as follows:

1. 10 credits in Introduction to Economics (Economics 1-2)
2. 15 credits in Freshman English
3. 10 credits in *one* of the following social sciences: geography, history, political science, sociology
4. 10 credits in mathematics or in *one* of the laboratory sciences: animal biology, botany, chemistry, physics. (Mathematics 8 and 20 are required of students who intend to specialize in accounting or banking.)
5. 5 credits in the Mechanism of Exchange (Economics 3)
6. 6 credits in psychology (Psychology 1-6)
7. 5 credits in the Principles of Economics (Economics 4)
8. 8 credits in the Principles of Accounting (Economics 25-26)
9. 5 credits in Statistics (Economics 14)
10. Sufficient electives to make a minimum of 90 credits with one honor point per credit, or a smaller number of credits to be determined as follows: For every five honor points in excess of one honor point per credit, the number 90 is diminished by one.

B. PRE-DENTAL COURSE

The pre-dental course, required for admission to the College of Dentistry, consists of two years of prescribed work, during which the students are registered in this college and subject to its regulations. The required courses are as follows:

1. Animal Biology 5-6-7
2. Inorganic Chemistry 1-2-3 or 4-5, and 11
3. Organic Chemistry 6-7
4. Mathematics 4 or 3-4
5. Physics, 2 quarters, with laboratory
6. Drawing 41-42-43
7. Mechanical Engineering 11-12-13
8. Freshman English or Composition 4-5-6
9. Psychology 1-2
10. Bacteriology 51
11. Electives to make a total of 90

C. GENERAL COURSE PRELIMINARY TO THE COLLEGE OF EDUCATION

The requirements for admission to the College of Education are identical with those for admission to the Senior College, with the addition that the student must have completed six credits in General Psychology. He must earn 90 credits and 90 honor points. All students who expect to receive the teacher's certificate from the University of Minnesota at the end of a four-year college course must register in the College of Education beginning with their junior year.

The College of Education has arranged for a number of specialized curricula leading to the teacher's certificate in a special subject or group of subjects. In the cases of some specialized curricula, the regular requirements of the Junior College are waived or readjusted. In order properly to complete certain of these curricula, it is necessary for a student to begin a proper arrangement of his program during the freshman or sophomore year. Students planning to teach should consult the statement of requirements in the College of Education bulletin.

For a major in a given subject (history, mathematics, etc.) the requirements of the College of Education may differ from those of the College of Science, Literature, and the Arts. Prospective students of education should therefore consult the College of Education bulletin for the major requirements not later than the beginning of the sophomore year.

D. COURSE PRELIMINARY TO TRAINING IN INTERIOR DECORATION IN THE COLLEGE OF ENGINEERING AND ARCHITECTURE

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 domestic architecture and interior decoration without taking the full technical course in Architecture.

During the first two years, the student is registered in this college. He must complete the requirements stated below and must earn 90 credits and 90 honor points. At the beginning of his course, he should consult the Department of Architecture regarding electives.

During the third and fourth years, the student registers in the College of Engineering and Architecture and upon the satisfactory completion of the prescribed work, amounting to 102 additional credits, receives the degree of bachelor of science in interior decoration. (See bulletin of the College of Engineering and Architecture.)

Courses Required in the First Two Years	Credits
Freshman English	15
Mathematics 6 (with prerequisite)	5 or 10
French (see Junior College Requirements, page 6)	0 to 20
History 11-12-13	10
Architecture 31-32-33	15
Physics 3 and 4 and any of the continuations, 23, 33, 43, with laboratory	8
or	
Chemistry 1-2-3 or 4-5	8 to 12
Architecture 21-22-23	6
Architecture 31-32-33	15
Architecture 61-62-63	6

For Those Who Enter with Higher Algebra and Two Years of French

Freshman Year

Fall	Credits	Winter	Credits	Spring	Credits
Freshman English	5	Freshman English	5	Freshman English	5
Mathematics	5	French	5	French	5
Elective	5	Elective or physics	5	Elective or physics	5

Sophomore Year

	Credits
Architecture 21-22-23	6
Architecture 31-32-33	15
History 11-12-13	10
Chemistry or physics	8 to 12
Architecture 61-62-63	6

Electives to complete a total of 90 for the two years.

Note.—Students who intend to take physics should elect Physics 3 and 4 during the freshman year.

E. GENERAL COURSE PRELIMINARY TO THE LAW SCHOOL

This course is designed to satisfy the requirements for admission to the Law School, which are ninety academic credits and an average of one honor point for each credit earned up to the time of admission.

Pre-legal students are regularly registered in the Junior College, subject to the requirements of the General Course. (See pp. 6 and 7.)

The following course is recommended by the faculty of the Law School as the best available under these rules:

1. Latin, 0 to 20 credits
2. Freshman English
3. Natural science, 10 credits
4. Political Science 1
5. Philosophy 2 and 50-51
6. History 4-5 and 33
7. Economics 6-7

Other subjects recommended for pre-legal students are Psychology 1-2; Public Speaking 41-42-43 or 45-46, 55-56-57; Economics 3, 155; History 146-147 and 116-117-118; Philosophy 1, 3, 124, and 129; Political Science 2, 11, 15, 121-122-123, and 161.

The faculty of the Law School strongly advises students to complete the whole or at least three years of the Arts course before entering upon the study of law. Attention is called to the combined six-year course in Arts and Law, on page 17.

F. COURSE PRELIMINARY TO THE COLLEGE OF PHARMACY

For a year of academic work recommended as preliminary to the College of Pharmacy, consult the bulletin of the College of Pharmacy.

VI. MILITARY SCIENCE AND TACTICS

Credit for advanced military science.—Students who have completed the Basic Course, R.O.T.C., and are selected for advanced work by the professor of military science and tactics, and who sign an agreement with the government to continue this work for the remainder of their college course (not to exceed two years) and to attend one summer training camp, are eligible for the Advanced Course, R.O.T.C., prescribed in Special Regulation No. 44, War Department, 1921.

The faculty will recommend for graduation, in any of its courses of study leading to the degree of bachelor of arts or bachelor of science, any student who has satisfactorily completed the work of the Advanced Course, R.O.T.C., and has completed 174 college credits, with 174 honor points, including all other specific requirements for graduation.

Students enrolled in the Advanced Course, R.O.T.C., are furnished with a special uniform and receive from the government a fixed allowance per day while enrolled in this course, except during the period in which they are actually at a training camp, when they are paid at the rate prescribed for the seventh grade in the army.

All students who complete the Advanced Course, R.O.T.C., will, if recommended by the professor of military science and tactics and the president of the University, be commissioned in the Officers' Reserve Corps of the United States Army.

Special course for students of military science.—The degree of bachelor of science will be given to students who complete the following special course of study.

JUNIOR COLLEGE

1. A total of 90 credits and 90 honor points including
   Group A, 15 credits in Freshman English or equivalent.
   Group C, History 1-2 or 2-3.
   Group D, Animal Biology 1-2, Psychology 1-2, Chemistry 10 credits.
2. Preparation for a major sequence in history, political science, or mathematics.

SENIOR COLLEGE

1. For the completion of the Advanced R.O.T.C. Course as now given, a total of ..... 12 credits
2. Bacteriology 51 ..... 5 credits
3. Preventive Medicine 50, 53 ..... 6 credits
4. One of the following (in senior college courses)
   1. History, including 101-102, 156 ..... 21 credits
   2. Political Science, including 121-122, 151-152 ..... 21 credits
   3. Mathematics including 50, 51, 52 ..... 21 credits
   4. Additional electives to make a total of 180 credits and 180 honor points.

The quality credit rule applies to this course in so far as the number of elective credits is concerned.

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

During the first two years the student is registered in the College of Science, Literature, and the Arts. He must complete the courses listed below and must secure ninety credits with an average of one honor point per credit.

* Composition 4-5-6
Animal Biology, 12 credits
Inorganic Chemistry 11, Analytical Chemistry 7, and Organic Chemistry 6-7, with the elementary courses prerequisite to them
Physics 3 and 4, 23 and 24, 33 and 34 (or 35), 43 and 44.
French or German sufficient to secure a reading knowledge. Students may meet this requirement by passing two quarters' work in Scientific French (French 8-9-10), or Medical German (German 31-32), or by taking special examinations after completing 15 credits of French or two college years of German. This examination is conducted by the department concerned.

The following subjects are recommended as electives: advanced animal biology and chemistry, freehand drawing, Latin, higher mathematics, psychology, and sociology. With the approval of the Students' Work Committee of the Medical School and the assistant dean for the Junior College, a pre-medical student may take one subject in the Medical School in any quarter. With similar permission, pre-medical students whose academic record shows an average of C, may take any two of the following freshman medical subjects at the same time: Human Physiology 100-101, Physical Chemistry 110, Bacteriology 51.

For admission to the Medical School, a candidate's record must show a number of honor points equal to the total number of credits in the required subjects of animal biology, chemistry, physics, and composition; also a number of honor points equal to the total number of credits in all subjects; and the student must be accepted by the Medical School under the limited registration regulation of that school. A student applying for admission must have satisfied all requirements before July 1.

The work during the third and fourth years is taken in the Medical School and is credited toward the degree of bachelor of science. To secure this degree, a student must have 180 credits and 180 honor points, and must have completed the first two years of the medical course in accordance with the standards of the Medical School.

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 this 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 will be determined by the Students' Work Committee of the College of Science, Literature, and the Arts, but such credits will not become effective until the student has completed, with the required standing, two full years of work in the Medical School of the University of Minnesota.

PROGRAM FOR THOSE WHO ENTER IN THE FALL WITH TWO YEARS OF EITHER FRENCH OR GERMAN

First Year

Inorganic Chemistry 1-2-3, or 4-5 and 11
French 3 and 9-10, or German 15 and 31-32
Mathematics 3 and 4, and Physics 3 and 4
or
Mathematics 4 and Physics 3, 4, 43, and 44
Animal Biology 5-6-7

Second Year

Inorganic Chemistry 11, if not already completed
Analytical Chemistry 7
Organic Chemistry 6-7
Physics to complete the requirement of four quarters. See above.
Composition 4-5-6

PROGRAM FOR THOSE WHO ENTER IN THE FALL WITHOUT LANGUAGE AND WITHOUT HIGHER ALGEBRA

First Year

Inorganic Chemistry 1-2-3, or 4-5 and 11
French 1-2-3 or German 1-2-3
Mathematics 3 and 4, and Physics 3 and 4
Animal Biology 5-6-7

Second Year

Inorganic Chemistry 11, if not already completed
Analytical Chemistry 7
Organic Chemistry 6-7
French 8-9 or 9-10; or German 4 and 31-32
Physics 23 and 24, 33 and 34 (or 35), 43 and 44
Composition 4-5-6

NOTE.—Students who have had no chemistry in high school are advised to take Chemistry 11 in the summer of their first year.

VIII. SIX-YEAR COURSE IN ARTS AND ARCHITECTURE

This course is designed to combine with the full technical course in Architecture the broad cultural training recognized as most desirable in preparation for the practice of this profession. The course will lead to the degrees of bachelor of science at the end of four years, and master of science 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 are the same as those laid down in the course in Interior Decoration, page 12 of this bulletin, except that the student will register in Mathematics 11, 12, and 13 (College of Engineering) and complete these courses by the end of his sophomore year.

During the first three years of this course the student is registered in the College of Science, Literature, and the Arts. He must complete the requirements for admission to the Senior College, and is subject to the regulations governing other students in this college.

IX.[1] SEVEN-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. He must complete the requirements for admission to the Senior College, and is subject to the regulations governing other students of the college. He must secure 135 credits and 135 honor points. (For each five honor points in excess of one honor point per credit, the required number of credits will be diminished

[1] Only students who have completed the required work in the College of Science, Literature, and the Arts before entering the professional school will be permitted to avail themselves of the privilege of securing the B.A. degree in a combined course.

by one.) In his third year the student elects work in this college subject to the approval of the dean of the College of Dentistry and of the assistant dean for the Senior College. The final year of the course in the College of Dentistry when completed with the standard required by that college for graduation, counts as the equivalent of the fourth year (45 credits) of the Arts course.

X.[1] SIX-YEAR COURSE IN ARTS AND LAW, LEADING TO THE DEGREES OF BACHELOR OF ARTS AND BACHELOR OF LAWS

The work of the first years of this course is done in the College of Science, Literature, and the Arts. The student must complete the requirements for admission to the Senior College, and is subject to all the regulations which govern the work of other Arts students. During these three years the student must secure at least 135 credits and an average of one honor point per credit for all credits earned. (For each five honor points in excess of one honor point per credit, the required number of credits will be diminished by one.) During his third year the student will elect work in this college subject to the approval of the dean of the Law School and the assistant dean for the Senior College. The first year of the course in the Law School, when completed with the standing required by that college for graduation, counts as the equivalent of the fourth year (45 credits) of the Arts course.

XI.[1] EIGHT-YEAR COURSE IN ARTS AND MEDICINE, LEADING TO THE DEGREES OF BACHELOR OF ARTS, BACHELOR OF MEDICINE, 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 the other students of the college, and must secure at least 135 credits, with an average of one honor point per credit for all credits earned. (For each five honor points in excess of one honor point per credit, the required number of credits will be diminished by one.) He must complete the requirements for admission to the Senior College and also the work in animal biology, chemistry, physics, and foreign language, prescribed for the seven-year course in Science and Medicine (p. 14).[2]

During his third year, the student elects work in this college subject to the approval of the director of the professional course and the assistant dean for the Senior College. The first year of the course in the Medical

[1] Only students who have completed the required work in the College of Science, Literature, and the Arts before entering the professional school will be permitted to avail themselves of the privilege of securing the B.A. degree in a combined course.

[2] For recommended electives and the restrictions governing them, see p. 15.

School, when completed with the standards required by that school, counts as the equivalent of the fourth year (45 credits) of the Arts course.

For admission to the Medical School, a student's record must show a number of honor points equal to the number of credits in the required subjects of English, chemistry, physics, and animal biology; and also a number of honor points equal to the total number of credits; and the student must be accepted by the Medical School under the limited registration regulations of that school.

XII. FIVE-YEAR COURSE IN ARTS AND NURSING LEADING TO THE DEGREES OF BACHELOR OF SCIENCE AND GRADUATE IN NURSING

During the first two years of three quarters each in this course the student is registered in the College of Science, Literature, and the Arts. This period is followed by ten quarters during which the student is registered in the University School of Nursing. The last two quarters of the fifth year are devoted to elective work in the University, in preparation either for teaching and supervision in schools of nursing or for public health nursing.

The student is required to earn one hundred thirty-five credits and one hundred thirty-five honor points in courses which regularly carry credit in the College of Science, Literature, and the Arts. The satisfactory completion of the required professional work is accepted as the equivalent of the senior year in this college.

Students should consult Miss Vannier before registering.

FIRST AND SECOND YEARS AND FIRST QUARTER OF THIRD YEAR

The following courses are required, and should be taken during the first two years and the first quarter of the third year:

	Credits
Animal Biology 1-2	10
Bacteriology 51	5
Bacteriology 101 (elective)	4
Chemistry 6-7-8	15
English A-B-C	15
Foreign language	15
History 1-2	10
or	
History 2-3	10
History of Nursing 10	1
Home Economics 21	5
Human Anatomy 2	4
Human Physiology 4	5
Drawing 44	1
Nursing Ethics 11	1
Psychology 1-2-3	9
Composition 18-19 or 11-12	6
Sociology 1	5

THIRD YEAR—WINTER QUARTER

The theoretical and practical work of this quarter includes metrology, pharmacology, hospital economics, personal hygiene, and nursing practice; with general work in the wards for a portion of each day under supervision.

THIRD AND FOURTH YEARS

In the succeeding spring and summer quarters of this year and in the four quarters of the fourth year the student is assigned to graded services and to lecture and recitation courses in the associated hospitals.

FIFTH YEAR

During the final year the first two quarters are devoted to advanced nursing in hospital service. The last two quarters are taken in class and field or practice work in a course which the student elects either in public health nursing or in nursing education. Schedules of these courses will be found in the bulletin of the School of Nursing and the bulletin of Public Health Nursing. Either election must include courses carrying twenty-five credits in the College of Science, Literature, and the Arts, and must be approved by the assistant dean for the Senior College.

DIRECTORY OF ADMINISTRATIVE AND DEPARTMENTAL OFFICES

J. B. Johnston, Dean of the College of Science, Literature, and the Arts	219Adm
J. M. Thomas, Assistant Dean for the Senior College	219F
W. H. Bussey, Assistant Dean for the Junior College	106F
R. R. Shumway, Assistant Dean for Students' Work	219Adm

Animal Biology	308AB	Human Physiology	215MH
Anthropology	11F	Journalism	1F
Architecture	315E	Latin	118F
Art Education	414F	Library Methods	107Lib
Astronomy	123F	Mathematics	106F
Bacteriology	228MH	Mechanical Engineering	105ME
Botany	106AB	Military Science and Tactics	105A
Chemistry	127C	Music	107Mu
Child Welfare	1CWI	Orientation	215OL
Comparative Literature	111F	Philosophy	323F
Comparative Philology	216F	Physical Education for Men	110A
Drawing & Descriptive Geometry	208E	Physical Education for Women	101WGm
Economics	113B	Physics	20Ph
English	219F	Political Science	201OL
Geography	101OL	Preventive Medicine and Public Health	101bMH
Geology and Mineralogy	108P	Psychology	112Psy
German	211F	Romance Languages	200F
Greek	112F	Scandinavian	122F
History	102OL	Sociology	17F
Home Economics	201HE		
Human Anatomy	204IA		

EXPLANATIONS

Course numbering.—A course is designated by a department name, a number, and a letter. It has the same number in whatever quarter it is offered. The quarter is indicated by the letter (f, fall; w, winter; s, spring; su, summer).
Examples:

1f-2w, a two-quarter course given in the fall and winter.
1w-2s, the same course given in the winter and spring.
3f,w,s, a one-quarter course given each quarter.
(1s)-2f, a two-quarter course completed in the fall of 1926.
1s-(2f), a two-quarter course begun in the spring of 1927.

Junior college courses (primarily for freshmen and sophomores) are numbered from 1 to 49. Senior college courses are numbered as follows: courses primarily for juniors and seniors, from 50 to 99; for juniors, seniors, and graduates, from 100 to 199; for graduates only, from 200 up. This system is not uniformly followed by departments in other colleges than Science, Literature, and the Arts.

Statement of credits.—The number of credits stated for two- and three-quarter courses is the number for the entire course, not the number for each quarter.

Buildings.—A, Armory; AB, Animal Biology; Adm, Administration; Ad(F), Administration, University Farm; B, Business; C, Chemistry; CWI, Child Welfare Institute; D, Dentistry; E, Engineering; F, Folwell; G, Greenhouse; HE, Home Economics, University Farm; Lib, Library; ME, Mechanical Engineering; MH, Millard Hall; Mu, Music; OL, Old Library; P, Pillsbury; Ph, Physics; Psy, Psychology; Pu, Publications; S, Stadium; SBH, State Board of Health; WGm, Women's Gymnasium.

OTHER ABBREVIATIONS AND SYMBOLS

I, II, III, etc.	First hour (8:30 to 9:20), second hour (9:30 to 10:20), third hour (10:30 to 11:20), fourth hour (11:30 to 12:20), fifth hour (12:30 to 1:20), sixth hour (1:30 to 2:20), seventh hour (2:30 to 3:20), eighth hour (3:30 to 4:20), ninth hour (4:30 to 5:20). (At the University Farm, first hour, 8:15 to 9:05; second hour, 9:15 to 10:05, etc., to 1:05; sixth hour, 1:30 to 2:20, etc.)
Ar.	To be arranged or assigned.
Aud.	Auditorium.
Cred.	Credits.
Lab.	Laboratory.
Lect.	Lecture.
MTWThFS	Monday, Tuesday, etc.
Prereq.	Prerequisite.
Rec.	Recitation.

A parenthetical statement after the title of each course gives the following information: the number of credits the course carries, the classes to whom it is open, and the courses prerequisite to it. *Abbreviated statement:* (5 cred.; jr., sr.; prereq., 6). *Expanded statement:* This course carries five credits, is open to juniors and seniors only, and has for a prerequisite, Course 6 in the same department.

ANIMAL BIOLOGY

Major Advisers

Professors Riley, Downey, and Chapman; Associate Professors Lund and Minnich; Assistant Professors Johnson and Ringoen.

Major Sequences

Prerequisites, 1-2 or equivalent, and one of each of the alternatives 21 or 22, 23 or 24, and 25 or 26.

A. In animal biology, Courses 109-110 or 117-118-119; 48-49-50* or 125-126-127 or 144-145-146; 107 or 108; 183; additional credits in approved courses, if necessary to make a total of 27 credits in senior college courses.

B. In ecology, Courses 109-110; 183; 117-118-119; 197-198-199.

C. In embryology, Courses 181-182; 183; 197-198-199, and 9 additional credits in approved courses.

* Course 50 is a senior college course; Courses 48-49 are not.

D. In entomology, Courses 125-126-127 or 139-140; 144-145-146 or 197-198-199; additional credits in approved courses to make a total of 27 credits in senior college courses.

E. In physiology, Courses 109-110; 183; 197-198-199. In addition the student should get 10 to 12 credits early in his course in Human Physiology 100-101, or Physical Chemistry 101-102-103, or Organic Chemistry 51-52.

F. In hematology, Courses 109-110, or 181-182 and 183, or Human Physiology 103, 104; 154-155 and 197-198-199; additional credits in approved courses, if necessary to make a total of 27 credits in senior college courses.

G. In histology, Courses 181-182; 183; 197-198-199, and 9 additional credits in approved courses.

Courses in human anatomy and mammalian embryology may be arranged for with the head of the Department of Anatomy.

Courses in human physiology may be arranged for with Dean Lyon.

Courses in psychology may be arranged for with Mr. Elliott.

Modifications of these sequences will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

No.	Title		Hour	Day	Bldg.	Instructor
1f-2w†	General Zoology					Mr. Minnich
	(10 cred.; all; no prereq.)					
	Sec. 1	Lab.	III, IV	MWF	101AB	
	(Limit, 150)	Lect.	III	TThS		
			IV	T	313AB	
	Sec. 2	Lab.	VI, VII	MWF	101AB	
	(Limit, 150)	Lect.	VI, VII	TTh	313AB	
1w-2s†	General Zoology					Mr. Sigerfoos
	(See 1f-2w)					
	Sec. 1	Lab.	I, II	MWF	101AB	
		Lect.	I	T		
			II	TThS	313AB	
1s-(2su† or 2w†)	General Zoology					
	(See 1f-2w)	Lab.	VI, VII, VIII	WF	101AB	Ar
		Lect.	VI, VII	MTh	313AB	
5f-6w-7s†	General Zoology					
	(12 cred.; pre-medical and pre-dental students; no prereq.)					
	Sec. 1	Lab.	I, II	TS	101AB	Mr. Ringoen
	(Pre-dental)	Lect.	I	MWF	313AB	
	Sec. 2	Lab.	III, IV	TS	101AB	Mr. Sigerfoos
	(Pre-medical)	Lect.	IV	MWF	313AB	
	(Spring)	Lab.	III, IV	WF	101AB	
		Lect.	IV	MTS	313AB	
14f-15w-16s†	General Zoology		See College of Agriculture bulletin.			
	(9 cred.; Agr., For., H.E.; no prereq.)					
21s	Introd. to General Physiology ...		VI, VII, VIII	MW	Ar	Mr. Minnich
	(5 cred.; fr., soph., jr., sr.; prereq., 1-2, chem. or phys. desirable)		VI, VII, VIII, IX	F		

† The entire course must be completed before credit is received for any quarter.

( ) Numbers in parentheses do not refer to the year 1926-27. See Course Numbering, page 20.

22s	General Ecology ..... (5 cred.; fr., soph., jr., sr.; prereq., 1-2)	VI, VII, VIII MW VI, VII, VIII, IX F	401AB	Mr. Chapman
23f	Introd. Entomology ..... (5 cred.; soph., jr., sr.; prereq., 1-2)	VI, VII MTWThF	211AB	Ar
24f	Introd. Animal Parasitology ... (5 cred.; soph., jr., sr.; prereq., 1-2)	VI, VII, VIII MWF	208AB	Mr. Riley
25w	Histology ..... (5 cred.; soph., jr., sr.; prereq., 1-2)	VI, VII, VIII MWF	201, 211AB	Mr. Ringoen
26w	Comp. Anatomy ..... (5 cred.; soph., jr., sr.; prereq., 1-2)	III, IV MTWFS	202, 211AB	Mr. Johnson
27w	Technique ..... (3 cred.; soph., jr., sr.; prereq., 15 cred.)	Ar Ar	201AB	Miss Slider
31f	General Physiology ..... (5 cred.; soph., jr., sr.; prereq., 15 cred. in an. biol. or 10 cred. in an. biol. and 10 cred. in chem. or phys.)	VI, VII, VIII MW VI, VII, VIII, IX F	10AB	Mr. Lund
32w	General Physiology ..... (5 cred.; soph., jr., sr.; prereq., as for 31)	VI, VII, VIII MW VI, VII, VIII, IX F	10AB	Mr. Lund
33s	Principles of Animal Behavior .. (5 cred.; soph., jr., sr.; prereq., 15 cred. in an. biol. or 10 cred. in an. biol. and 10 cred. in chem. or phys. or psy.)	VI, VII, VIII MW VI, VII, VIII, IX F	10AB	Mr. Lund
37f-38w-39s†	General Entomology ..... (9 cred.; soph., jr., sr.; prereq., 1-2)	I, II MWF	208AB	Ar
44s	Animal Parasites ..... (3 cred.; fr., soph., jr., sr.; prereq., 1-2)	VI, VII, VIII WF	208AB	Mr. Riley
45w	Insects and Disease ..... (3 cred.; fr., soph., jr., sr.; prereq., 1-2)	VI, VII, VIII WF	208AB	Mr. Riley
46w-47s†	Ornithology ..... (6 cred.; soph., jr., sr.; prereq., 1-2 and permission of instructor)	VI, VII, VIII MW	314AB	Dr. Roberts
48f-49w-50s†	Histology and Organology ..... (9 cred.; soph., jr., sr.; prereq., 1-2 and permission of the head of the department)	III, IV MWF	201, 211AB	Mr. Downey
75s	Nature Study ..... (3 cred.; jr., sr.; prereq., 20 cred. incl. 1-2)	VI, VII, VIII TTh	213AB	Mr. Sigerfoos
107s	Protozoology ..... (3 cred.; jr., sr., grad.; prereq., 15 cred. incl. 1-2)	I, II MWF	211, 213AB	Mr. Sigerfoos

† The entire course must be completed before credit is received for any quarter.

108w,s	Experimental Zoology ..... (6 cred.; jr., sr., grad.; prereq., 15 cred. in an. biol. or An. Biol. 1-2 and Psy. 1-2)	IV	WF and Ar	10AB	Mr. Minnich
109f-110w-111s	General Physiology ..... (15 cred.; jr., sr., grad.; prereq., 20 cred. in an. biol.)	Ar	Ar	Ar	Mr. Lund
117f-118w-119s	Ecology of Insects ..... (9 cred.; jr., sr., grad.; prereq., 15 cred. incl. 1-2)	VI, VII, VIII	TTh	401AB	Mr. Chapman
120su	Advanced Ecology ..... (5 cred.; jr., sr., grad.; prereq., 117-118-119)	Ar	Ar	Ar	Ar
125f-126w-127s†	Advanced Entomology ..... (9 cred.; jr., sr., grad.; prereq., 1-2 and 37-38-39)	Ar	Ar	208AB	Ar
130w	Biology of Aphididae ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. incl. 1-2)	III, IV	MWF	208AB	Ar
139f-140w†	Histol. and Develop. of Insects .. (6 cred.; jr., sr., grad.; prereq., 1-2 and 37-38-39)	III, IV and ar	TTh	208AB	Mr. Riley
144f-145w-146s	Animal Parasites and Parasitism (9 cred.; jr., sr., grad.; prereq., 1-2 and 5 add. cred.)	VI, VII, VIII	WF	208AB	Mr. Riley
154f,w-155s†	Hematology ..... (6 cred.; jr., sr., grad.; prereq., histol., embryol.)	VII, VIII, IX	TTh	201, 211AB	Mr. Downey
181f-182w†	Embryology ..... (6 cred.; jr., sr., grad.; prereq., 1-2 and 27 or equiv.)	VI, VII	MWF	201, 211AB	Ar
183s	Genetics and Eugenics ..... (3 cred.; jr., sr., grad.; prereq., 1-2 and 5 other cred. in an. biol. or botany)	IV	MWF	211AB	Ar
197f-198w-199s	Problems ..... (9 or 18 cred.; sr., grad.; prereq., 1-2 and special requirements)	Ar	Ar	Ar	Ar

ENTOMOLOGY AND ECONOMIC ZOOLOGY

Students in this college may elect courses in Entomology and Economic Zoology by arrangement with the department. See program of the College of Agriculture, Forestry, and Home Economics.

ANTHROPOLOGY

Major Advisers

Professor Jenks: Associate Professor Wallis.

Major Sequences

Prerequisites: Course 51, with fifteen additional credits from the social sciences and fifteen credits from the biological sciences.

At least twenty-four credits selected from the following courses: 80, 108, 110, 112, 113, 121, 161; History 121, 166. In addition, Psychology 114-115 is required.

† The entire course must be completed before credit is received for any quarter.

Modifications of this sequence will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

No.	Title	Hour	Day	Bldg.	Instructor
51f,w,s	Introd. to Anthropology ..... (5 cred.; jr., sr.; prereq., 10 cred. of a science and 10 cred. of a social science)	VI	MTWThF	15F	Mr. Jenks and Mr. Wallis
53	*Cultural Anthropology: Technology* ..... (3 cred.; jr., sr.; prereq., 51)	*Not offered in 1926-27*			
54s	Cultural Anthropology: Social Organization ..... (3 cred.; jr., sr.; prereq., 51)	II	TThS	15F	Mr. Wallis
55w	Human Migrations with Special Reference to Immigration .... (3 cred.; jr., sr.; prereq., 51)	II	MWF	15F	Mr. Jenks
56w	Primitive Science ..... (3 cred.; jr., sr.; prereq., 51)	II	TThS	15F	Mr. Wallis
62f	Ethnology ..... (3 cred.; jr., sr.; prereq., 51)	IV	MWF	15F	Mr. Jenks
80w	The American Indian ..... (3 cred.; jr., sr.; prereq., 51)	II	MWF	12F	Mr. Wallis
106f	Prehistoric Man ..... (3 cred.; jr., sr.; prereq., 51)	III	MWF	15F	Mr. Jenks
108	*Philippine Peoples* ..... (3 cred.; jr., sr.; prereq., 51)	*Not offered in 1926-27*			
110f	Physical Anthropology ..... (3 cred.; jr., sr.; prereq., 51)	II	TThS	12F	Mr. Wallis
112s	The American Negro ..... (3 cred.; jr., sr.; prereq., 51)	III	MWF	15F	Mr. Jenks
113s	Peoples of Europe ..... (3 cred.; jr., sr.; prereq., 51)	IV	MWF	15F	Mr. Jenks
121w	Advanced Phys. Anthrop. ..... (3 cred.; jr., sr.; prereq., 110)	Ar	Ar	12F	Mr. Wallis
123w-124s	Problems in Anthropology ..... (6 cred.; jr., sr., grad.; prereq., three courses)	VII-VIII	Th	12F	Mr. Jenks
161s	Primitive Religion ..... (3 cred.; jr., sr.; prereq., 51)	II	MWF	12F	Mr. Wallis

ARCHITECTURE

COLLEGE OF ENGINEERING AND ARCHITECTURE

Major Adviser

Professor Mann.

Major Sequence

Courses 34-35-36, 14-15-16, 17-18-19, 163; Architecture 182-183, or five credits in senior college courses in philosophy, history, or French. (Prerequisites: Courses 31-32-33, and 10 credits in philosophy, history, or French.)

Modifications of this sequence will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

Junior College Courses

No.	Title	Hour	Day	Bldg.	Instructor
21f-22w†-23s	Freehand Drawing ..... (6 cred.; soph., jr., sr.; prereq., soph. standing)				
31f-32w†-33s	Elements of Architecture ..... (15 cred.; soph., jr.; prereq., soph. standing)				
31w-32s†-33su	Elements of Architecture ..... (See 31f-32w-33s)				
61f-62w-63s	Projections, Shades, and Shadows, Perspective ..... (6 cred.; soph.; prereq., Math. 5)				
84-85-86f,w,s	Modeling ..... (6 cred.; jr., sr.; no prereq.)				

Senior College Courses

14f-15w-16s	History of Architecture ..... (6 cred.; jr., sr.; prereq., 31-32-33)				
17f-18w-19s	History of Architecture ..... (6 cred.; jr., sr.; prereq., 14-15-16)				
34-35-36f,w,s	Architectural Design ..... (12 cred.; jr., sr.; prereq., 31-32-33, 23, 61-62-63)				
51f-52w-53s	Building Construction ..... (6 cred.; jr., sr.; prereq., 31-32-33)				
74f-75w-76s	Freehand Drawing ..... (9 cred.; jr., sr., int. dec.; prereq., 23)				
81f	Color and Design ..... (2 cred.; stud. of dram.; prereq., Pub. Speak. 91-92-93‡)				
87-88-89f,w,s	Hand Print Process ..... (3 cred.; jr., sr.; prereq., 21-22-23 or equiv.)				
90-91-92f,w,s	Illustration ..... (3 cred.; jr., sr.; prereq., 21-22-23 or equiv.)				
134-135-136f,w,s	Interior Decoration Design .... (21 cred.; sr.; prereq., 34-35-36)				
163s	History of Sculpture and Painting ..... (2 cred.; jr., sr.; prereq., 14-15-16)				
182f-183w	Decoration and Allied Arts ..... (6 cred.; sr.; prereq., 17-18-19)				

NOTE.—Consult the bulletin of the College of Engineering and Architecture for program of hours, days, buildings, and instructors.

ART EDUCATION

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
1f,w,s	Art Appreciation ..... (1 cred.; soph., jr., sr.; no prereq.)	II	W	114F	Miss Raymond

† The entire course must be completed before credit is received for any quarter.
‡ May be taken at the same time.

ASTRONOMY

Major Adviser

Professor Leavenworth.

Major Sequence

Courses 51-52-53, 101-102-103, and Mathematics 50, 51, 52. (Prerequisites: Mathematics 5-6-7 or physical science and Mathematics 6.)

Modifications of this sequence will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

No.	Title	Hour	Day	Bldg.	Instructor
11f§*	Descriptive Astronomy ..... (5 cred.; 3d qtr. fr., soph., jr., sr.; no prereq.)	III	MTThFS	124F	Mr. Beal
11w§*	Descriptive Astronomy ..... (See 11f)				
	Sec. 1	III	MTThFS	124F	Mr. Beal
	2	IV	MTWFS	124F	Mr. Leavenworth
11s§*	Descriptive Astronomy ..... (See 11f)				
	Sec. 1	I	TWThFS	124F	Mr. Beal
	2	III	MTThFS	124F	Mr. Leavenworth
25w§*	Stellar Astronomy ..... (3 cred.; soph., jr., sr.; prereq., 11)	II	TThS	124F	Mr. Beal
25s§*	Stellar Astronomy ..... (See 25w)	IV	MWF	124F	Mr. Leavenworth
51f-52w-53s*‡	General Astronomy ..... (10 cred.; jr., sr.; prereq., Math. 5, 6, and 7, or phys. sci. and Math. 6)	II	MWF (fall, winter) MWF and ar (spring)	124F	Mr. Leavenworth
62f	Elements of Practical Astron. .. (3 cred.; jr., sr.; prereq., Astron. 11 or 51, and Math. 6, 7)	III	MWF	123F	Mr. Leavenworth
101f-102w-103s	Practical Astronomy ..... (9 or 18 cred.; jr., sr., grad.; prereq., Astron. 11 or 51, and Math. 50)	Ar	Ar	123F	Mr. Leavenworth
111f-112w-113s	Celestial Mechanics ..... (9 cred.; sr., grad.; prereq., Math. 51)	Ar	Ar	123F	Mr. Beal
140w	Method of Least Squares ..... (3 cred.; jr., sr., grad.; prereq., Math. 51)	II	TThS	123F	Mr. Leavenworth

* Courses 11-25 and 51-52-53 cover much the same field. Students are advised not to take both 51-52-53 and 11-25.

‡ Satisfies the junior college requirement for science. Open without petition to sophomores who have completed the prerequisites with a grade of C and have an average of one honor point per credit in all their work.

§ Does not satisfy the junior college requirement for science.

BACTERIOLOGY

MEDICAL SCHOOL

Major Advisers

Professors Larson and Henrici; Associate Professor R. G. Green.

Major Sequence

Sequence A. For work in medical or public health bacteriology. Course 101, 114, 116, 117, 119-120, 150-151. (Prerequisites: besides the necessary courses in this department, Animal Biology 144-145-146 and Human Physiology 100-101 or Agricultural Biochemistry 111-112.)

Sequence B. For work in industrial bacteriology. Courses 103, 105, 114, 118, 119-120, 125, 150-151. (Prerequisites: besides the necessary courses in this department, Human Physiology 100-101 or Agricultural Biochemistry 111-112.)

Modification of these sequences will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

No.	Title	Hour	Day	Bldg.	Instructor
51f	General Bacteriology ..... (5 cred.; jr., sr.; prereq., chem. 10 cred. and biol. 8 cred.)				
	Sec. 1	VI, VII, VIII	MWF	MH	Ar
	2	VI, VII, VIII, IX	TTh	MH	Ar
51w,s	General Bacteriology ..... (See 51f)	VI, VII, VIII	MWF	MH	Ar
101f	Special Bacteriology for Medical Students ..... (4 cred.; jr., sr.; prereq., 51)	I, II I, II, III	ThS T	MH	Ar
103w	Special Bacteriology for Students of Agriculture ..... (5 cred.; jr., sr.; prereq , 51)	I, II, III I, II	TS Th	MH	Ar
105f	Food Bact. ..... (3 cred.; jr., sr.; prereq., 51)	VII, VIII	TTh	MH	Ar
114s	Higher Bacteria ..... (3 cred.; jr., sr.; prereq., 101 or 103)	VII, VIII	TTh	MH	Ar
116w	Immunity ..... (3 cred.; jr., sr.; prereq., 101 or 103)	VII, VIII	TTh	MH	Ar
117s	Pathogenic Protozoa ..... (3 cred.; jr., sr.; prereq., 101 or 103)	VII, VIII	TTh	MH	Ar
118f	Morphology and Taxonomy of Bacteria ..... (3 cred.; jr., sr.; prereq., 101 or 103)	VII, VIII	TTh	MH	Ar
119f-120w	Bacteriological Chemistry ..... (4 cred.; jr., sr.; prereq., 101 or 103; Physiology 100, 101, or Agr. Biochem. 111-112)	VI, VII, VIII	TTh	MH	Ar
121w	Common Fermentations	See Medical School bulletin.			
125f	Industrial Bacteriology	See Medical School bulletin.			
150f-151w, or 150w-151s	Advanced Bacteriology ..... (Cred. ar.; jr., sr.; prereq., see instructor)	VII, VIII	TTh	MH	Ar

BOTANY

Major Advisers

Professors Harris, Rosendahl, and Tilden; Associate Professors Butters and Harvey; Assistant Professors Cooper and Huff.

Major Sequence

(Prerequisite: 20 credits from courses numbered below 50.)

Courses 62, 63, 113-114, 118, 124, nine credits from one of the following groups, and five credits from another group:

A. In ecology, Courses 131, 132, 133.

B. In physiology, Courses 141, 142, 143, 144.

C. In morphology, Courses 108, 110, 123, 125, 126, 127, and Plant Pathology 105-106-107.

Modifications of this sequence will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

No.	Title		Hour	Day	Bldg.	Instructor
1f-2w†	General Botany					Mr. Huff
	(10 cred.; all; no prereq.)					
	Sec. 1	Lab.	I, II	MWF	212, 214, 220P	
		Quiz	I	T	212, 214, 220P	
		Lect.	II	TThS	210P	
	2	Lab.	VI, VII	MWF	212, 214, 220P	
		Quiz	VII	Th	210P	
		Lect.	VI, VII	T	210P	
			VI	Th	210P	
	3	Lab.	III, IV	MWF	(fall)	
			III, IV	TS		
			III	Th	(winter)	
				1 hr ar		
		Lect. and quiz with either Sec. 1 or 2.				
1w-2s†	General Botany					Mr. Huff
	(See 1f-2w)					
		Lab.	III, IV	MWF	212, 214, 220P	
		Quiz	IV	T	212, 214, 220P	
		Lect.	III	TThS	210P	
1s-(2f)†	General Botany					Mr. Huff
	(See 1f-2w)					
		Lab.	I, II	TThS	212, 214, 220P	
		Quiz	I	W	212, 214, 220P	
		Lect.	II	MWF	210P	
(1s)-2f†	General Botany					Mr. Huff
	(See 1f-2w)					
		Lab.	I, II	TThS	212, 214, 220P	
		Quiz	I	W	212, 214, 220P	
		Lect.	II	MWF	210P	
7s	Taxonomy of Flowering Plants					
	(5 cred.; all; prereq., 2)					
		Lab.	I, II	MWF	212, 214, 220P	
						Mr. Rosendahl
		Quiz	I	S	210P	
		Lect.	I	TTh	210P	

† The entire course must be completed before credit is received for any quarter.

( ) Numbers in parentheses do not refer to the year 1926-27. See Course Numbering, page 20.

No.	Title	Hour	Day	Bldg.	Instructor
12w	Morphology of Algae ..... (3 cred.; all; prereq., 2)	I, II	TThS	104AB	Miss Tilden
13	*Morphology of Fungi* ..... (3 cred.; all; prereq., 2)	*Not offered in 1926-27*			
21s	Elementary Ecology ..... (5 cred.; all.; prereq., 2)	III, IV	MTWFS	G	Mr. Cooper
22f,s	Elementary Plant Physiol. ..... (5 cred.; all; prereq., 2, and Inorg. Chem. 6-7-8 or 9-10)	III, IV	MTWFS	G	Mr. Harvey
51f	Histological Methods ..... (3 cred.; jr., sr.; prereq., 15 cred.)	I, II	MWF	213AB	Miss Thompson
62w	Bryophytes and Pteridophytes .. (3 cred.; jr., sr.; prereq., 15 cred.)	Ar	Ar	Ar	Mr. Huff
63s	Gymnosperms and Angiosperms (3 cred.; jr., sr., grad.; prereq., 7 or 62)	VI, VII, VIII	TTh	Ar	Mr. Butters
101f	Elementary Biometry ..... (3 cred.; jr., sr., grad.; prereq., 18 cred., biol. sci.)	Ar	Ar	Ar	Mr. Harris
108	*Pteridophytes* ..... (5 cred.; jr., sr., grad.; prereq., 7 and 62)	*Not offered in 1926-27*			
110s	Gymnosperms ..... (5 cred.; jr., sr., grad.; prereq., 7 and 63)	Ar	Ar		
113f-114w-115s	Adv. Taxonomy ..... (9 cred.; jr., sr., grad.; prereq., 15 cred. incl. 7)	VI, VII	MWF	213AB	Mr. Rosendahl
118w	Cytology ..... (3 cred.; jr., sr., grad.; prereq., 18 cred.)	VI, VII, VIII	TTh	213AB	Mr. Rosendahl
123s	Algae: Blue-Green ..... (3 cred.; jr., sr., grad.; prereq., 15 cred. incl. 12)	I-II	TThS	104AB	Miss Tilden
124w	Algae: Green ..... (3 cred.; jr., sr., grad.; prereq., 15 cred. incl. 12)	III, IV	TThS	104AB	Miss Tilden
125s	Algae: Brown ..... (3 cred.; jr., sr., grad.; prereq., 15 cred. incl. 12)	VI, VII, VIII	TTh	104AB	Miss Tilden
126w	Algae: Red ..... (3 cred.; jr., sr., grad.; prereq., 15 cred. incl. 12)	VI, VII, VIII	TTh	104AB	Miss Tilden
127s	Anatomy of Vascular Plants .. (5 cred.; jr., sr., grad.; prereq., 18 cred.)	Ar	Ar	213AB	Mr. Butters
131f	Field Ecology ..... (5 cred.; jr., sr., grad.; prereq., 21)	VI, VII, VIII	MWF	G	Mr. Cooper
132w	Ecological Anatomy ..... (5 cred.; jr., sr., grad.; prereq., 21)	III, IV	MTWFS	G	Mr. Cooper
133s	Forest Geography of North America ..... (5 cred.; jr., sr., grad.; prereq., 21)	VI, VII	MWF	G	Mr. Cooper

No.	Title	Hour	Day	Bldg.	Instructor
134s	Research Methods in Ecology ... (5 cred.; jr., sr., grad.; prereq., 21)	VI, VII, VIII	MWF	G	Mr. Cooper
141f	Physical Phases of Plant Physiology ..... (5 cred.; sr., grad.; prereq., 22 and gen. org. chem.)	I, II	MTWThF	G	Mr. Harvey
142w	Plant Metabolism ..... (5 cred.; sr., grad.; prereq., 22 and gen. org. chem.)	I, II	MTWThF	G	Mr. Harvey
143s	Plant Metabolism and Growth .. (5 cred.; sr., grad.; prereq., 22 and gen. org. chem.)	I, II	MTWThF	G	Mr. Harvey
144s	Plant Microchemistry ..... (5 cred.; sr., grad.; prereq., 22 and gen. org. chem.)	Ar	Ar	G	Mr. Harvey
145f,w,s	Advanced Biometry ..... (3 cred.; sr., grad.; prereq., 101)	Ar	Ar	Ar	Mr. Harris

PLANT PATHOLOGY AND BOTANY

Students in this college may elect courses in Plant Pathology and Botany by arrangement with the department. See program of the College of Agriculture, Forestry, and Home Economics.

CHEMISTRY

SCHOOL OF CHEMISTRY

Major Advisers

Professors Hunter and Sneed.

Major Sequence

Analytical Chemistry 1-2; Organic Chemistry 51-52-53; Physical Chemistry 101-102-103. (Prerequisites: Inorganic Chemistry 12-13.)

Modifications of this sequence will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

NOTE.—Analytical Chemistry 1-2 and 7, Organic Chemistry 6-7, and all courses numbered above 50 count as senior college courses.

Changes in Numbering of Courses

Many courses in Chemistry are assigned new numbers to take effect in 1926-27. Where changes have been made, the old numbers are shown in parentheses following the new ones.

INORGANIC CHEMISTRY

No.	Title		Hour	Day	Bldg.	Instructor
1f-2w†-3s	Gen. Inorg. Chemistry (pre-med. and pre-dent.) ..... (12 cred.; pre-dent., pre-med.; no prereq.)					
		Lect.	VI	MWF	225C	Mr. Reyerson
	Sec. 1	Lab.	VI, VII	TTh	110C	Mr. Reyerson
	2		VIII, IX	TTh		and assistants

† The entire course must be completed before credit is received for any quarter.

No.	Title		Hour	Day	Bldg.	Instructor
4f-5w†	Gen. Inorg. Chemistry (pre-med. and pre-dent.) ..... (8 cred.; pre-dent., pre-med. only; prereq., entrance cred. in chem.)					
		Lect.	VI	MWF	100C	Mr. Stephens
	Sec. 1	Lab.	VI, VII	TTh	210C	Mr. Stephens
	2		VIII, IX	TTh		and assistants
6f-7w†-8s	Gen. Inorg. Chemistry ..... (15 cred.; those entering without chem.; no prereq.)					
		Lect.	II	MWF	225C	Miss Cohen
		Lab.	I, II, III	ThS	210C	Miss Cohen and assistants
9f-10w†	Gen. Inorg. Chemistry ..... (10 cred.; all; prereq., entr. cred. in chem.)					
		Lect.	II	MWF	100C	Mr. Sneed
		Lab.	I, II, III	ThS	290C	Ar
9w-10s†	Gen. Inorg. Chemistry ..... (See 9f-10w)					
		Lect.	III	MWF	100C	Mr. Kirk
		Lab.	VIII-IX	MWF	290C	Ar
11f	Qual. Chemical Anal. (pre-med. and pre-dent.) ..... (4 cred.; pre-med. and pre-dent. only; prereq., 3 or 5)					
		Lect.	IV	MWF	225C	Miss Cohen
		Lab.	VI, VII	MW	290C	Miss Cohen and assistants
11s	Qual. Chemical Anal. (pre-med. and pre-dent.) ..... (See 11f)					
		Lect.	VI	MWF	100C	Mr. Stephens
	Sec. 1	Lab.	VI, VII	TTh	210C	Mr. Stephens
	2		VIII, IX	TTh	210C	
12f-13w†	Qual. Chemical Analysis ..... (10 cred.; all; prereq., 8 or 10)					
	Fall	Lect.	I	TThS	325C	Mr. Maynard
		Lab.	VI, VII, VIII	MW	290C	
	Winter	Lect.	I	TTh	325C	
		Lab.	VI, VII, VIII	MWF	290C	
12s†	Qual. Chemical Anal. ..... (See 12f-13w†)					
		Lect.	II	MWF	100C	Mr. Sneed
		Lab.	I, II, III	ThS	290C	Mr. Sneed and assistants
13f†	Qual. Chemical Anal. ..... (See 12f-13w†)					
		Lect.	VI	MW	111C	Mr. Kirk
		Lab.	VII, VIII, IX	MW	290C	
			VI, VII, VIII	F		
101s	History of Chemistry ..... (2 cred.; sr., grad.; prereq., Org. Chem. 52)		Ar	Ar	Ar	Miss Cohen

† Two quarters must be completed before credit is received for either quarter.

No.	Title		Hour	Day	Bldg.	Instructor
102w	Adv. Qual. Chemical Anal. .... (2 or 3 cred.; jr., sr., grad.; prereq., Anal. Chem. 1, 2, Org. Chem. 52)		Ar	Ar	290C	Mr. Sneed
103f-104w-105s	Adv. Inorg. Chemistry ..... (3 to 9 cred.; jr., sr. grad.; prereq., Anal. Chem. 1, 2, Org. Chem. 52)		IV	MWF	111C	Mr. Sneed
	ANALYTICAL CHEMISTRY					
1w-2s(20-21)*	Quant. Analysis ..... (10 cred.; soph., jr., sr.; prereq., Inorg. Chem. 12-13)					
		Lect.	VI	M	325C	Mr. Geiger
		Rec.	VI	F	315C	
		Lab.	VII-IX	MF	310C	
			VI-IX	W	310C	
7f(27)	Quant. Analysis (pre-med.) .... (4 cred.; pre-med. only; prereq., Inorg. Chem. 11 or 13)					Mr. Geiger
	Sec. 1 (Limit 30)	Lect.	VI	M	325C	
		Rec.	VI	W	315C	
		Lab.	VII-IX	MW	310C	
			VI-IX	F	310C	
	2 (Limit 30)	Lect.	VI	M	325C	
		Rec.	VI	F	315C	
		Lab.	VII-IX	MF	310C	
			VI-IX	W	310C	
	3	Lect.	VI	M	325C	
		Rec.	VI	Th	315C	
		Lab.	VI-IX	T	310C	
			I-IV	S	310C	
			VII-IX	Th	310C	
7w,s(27)	Quant. Analysis ..... (See 7f)					
		Lect.	VI	Th	325C	Mr. Sarver
		Rec.	VI	T	410C	
		Lab.	VII-IX	TTh	310C	
			I-IV	S	310C	
123f-124w-125s	Adv. Analytical Chemistry .... (3 to 9 cred.; jr., sr., grad.; prereq., 1, 2, or 7)					
		Lect.	VI	T	315C	Mr. Sarver
		Lab.	VII-IX	T	310C	
			VI-IX	Th	310C	
127f-128w-129s	Chemistry of Rare Elements ... (9 cred.; jr., sr., grad.; prereq., 1, 2)		Ar	Ar	Ar	Mr. Brinton

* Course 2s may precede 1w, if desired.

Organic Chemistry

No.	Title	Hour	Day	Bldg.	Instructor
6w-7s†(31-32)	Elem. Organic Chemistry ..... (8 cred.; pre-med.; prereq., Inorg. Chem. 11)				
	Lect.	IV	MWF	100C	Mr. Smith
	Sec. 1 (Limit 80)	VI-VIII	TTh	390C	Mr. Smith
	2 (Limit 30, pre-med. only)	VI-VIII	WF	390C	
	3	I-III	TTh	390C	
	4*	I-III	WF	390C	
51f-52w†-53s (35-36-37)	Organic Chemistry ..... (10 or 15 cred.; jr., sr.; prereq., 15 cred. in college chem.)				
	Lect.	III	MWF	325C	Mr. Hunter
	Rec.	III	Th	111C	Mr. Lauer
	Lab.	VI-VIII	TTh	390C	Mr. Lauer

Physical Chemistry

101f-102w-103s (140-141-142)	Physical Chemistry ..... (9, 12, or 15 cred.; jr., sr., grad.; prereq., 2 yrs. col. chem., 1 yr. col. phys.)				Mr. MacDougall
	Lect.	IV	MWF	325C	
	Lab.	VI-VIII	F	15C, 117C	
	Rec.	IV	S	115C	
110f,w(143)	Physical Chemistry (medic.) .... (4 cred.; pre-med. and biol. students; prereq., Org. Chem. 7)				
	Lect.	VI	TTh	225C	Mr. Taylor
			F	325C	
	Sec. 1 Lab.	I-III	MW	15C	
	2	VII-IX	TTh	117C	
116f-117w-118s (146-147-148)	Adv. Physical Chem. ..... (9 or 12 cred.; jr., sr., grad.; prereq., 103 and calculus)	Ar	Ar	Ar	
129s(149)	Prin. of Colloidal Chemistry ... (2 cred.; sr., grad.; prereq., 102)	Ar	Ar	Ar	Mr. Reyerson
130(150)	*Appl. of Colloidal Chemistry* ... (2 cred.; sr., grad.; prereq., 102)	*Not offered in 1926-27*			
131f-132w-133s (157-158-159)	Colloid Chemistry Lab. ..... (Cred. ar.; sr., grad.; prereq., 129 or 130)	Ar	Ar	Ar	Mr. Reyerson
143s	Magnetochemistry ..... (3 cred.; jr., sr., grad.; prereq., 103)	Ar	Ar	Ar	Mr. Taylor

For advanced courses in Organic Chem., see bulletin of the School of Chemistry.

* For students repeating Org. Chem. 6; positively no others admitted.

† Two quarters must be completed before credit is received for any quarter.

Technological Chemistry

No.	Title		Hour	Day	Bldg.	Instructor
100f-101w-102s (161-162-163)	Food Analysis ..... (9 cred.; jr., sr., grad.; prereq., Anal. Chem. 1, 2)					
		Lect.	III	F	215C	Mr. Stoppel
		Lab.	VI-VIII	TF	217C	Mr. Stoppel

AGRICULTURAL BIOCHEMISTRY

Students in this college may elect courses in Agricultural Biochemistry by arrangement with the department. See program of the College of Agriculture, Forestry, and Home Economics.

CHILD WELFARE

No.	Title	Hour	Day	Bldg.	Instructor
50w-51s†	Nursery School Methods ..... (6 cred.; jr., sr.; prereq., 60 and 6 cred. in psy. or ed.)	VI	MWF	212F(w) 217F(s)	Ar
52f-53w-54s†	Nursery School Technique .... (6 cred.; jr., sr.; prereq., 50-51 and permission of instructor)	Ar	Ar	105CWI	Ar
60f	The Nursery School and Parental Education Movement ..... (2 cred.; jr., sr.; prereq., 6 cred. in psy. and 5 cred. in soc. sci.)	VI	TTh	212F	Miss Dixon
130s	The Development of the Young Child ..... (3 cred.; sr., grad.; prereq., 12 cred. in psy. or equivalent, and permission of instructor)	I	TThS	111OL	Mr. Anderson
170f	Parental Education in Child Care and Training ..... (3 cred.; sr., grad.; prereq., 52-53-54, or H.E. 34, 35, and 44, or 15 cred. in ed. or psy., or soc., or prev. med.)	VI	MWF	212F	Miss Dixon
173w-174s†	Technique and Practice of Parental Education ..... (6 cred.; sr., grad.; prereq., 170, and permission of instructor)	Ar	Ar	100CWI	Miss Dixon
190f-191w	Mental Examination of Pre-School Children ..... (4 cred.; sr., grad.; prereq., Ed. Psy. 143-144-145 or 134-135-136 or equivalent, and permission of instructor)	Ar	Ar	201CWI	Miss Goodenough

† The entire course must be completed before credit is received for any quarter.

COMPARATIVE LITERATURE

No.	Title	Hour	Day	Bldg.	Instructor
101f-102w-103s†	Drama ..... (9 cred.; jr., sr., grad.; prereq., jr. col. requirement in Eng. and foreign lang.)	III	TThS	113F	Mr. Firkins
105f-106w-107s†	Criticism ..... (9 cred.; jr., sr., grad.; prereq., jr. col. requirement in Eng. and foreign lang.)	VI	MWF	113F	Mr. Firkins
110w	Romantic Movement ..... (3 cred.; sr., grad.; prereq., permission of instructor)	II	TThS	113F	Mr. Firkins

COMPARATIVE PHILOLOGY

No.	Title	Hour	Day	Bldg.	Instructor
101-102†	*Science of Language* ..... (4 cred.; jr., sr., grad.; prereq., see note)	*Not offered in 1926-27*			
103	*Universal Language* ..... (2 cred.; jr., sr., grad.; prereq., see note)	*Not offered in 1926-27*			
105s	Life of Words ..... (2 cred.; jr., sr., grad.; prereq., see note)	VI	TTh	217F	Mr. Klaeber
108s	Comparative Phonetics ..... (3 cred.; jr., sr., grad.; prereq., see note)	Ar	Ar	Ar	Mr. Kroesch
109f-110w-111s†	History of German Lang. ..... (6 cred.; jr., sr., grad.; prereq., see note)	Ar	Ar	Ar	Mr. Klaeber
141f-142w-143s†	Hist. Gram. of Eng. Lang. .... (6 cred.; jr., sr., grad.; prereq., see note)	Ar	Ar	Ar	Mr. Klaeber

NOTE.—Prerequisite for all courses, 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) 4 credits in Old English.

DRAWING AND DESCRIPTIVE GEOMETRY

COLLEGE OF ENGINEERING AND ARCHITECTURE

No.	Title	Hour	Day	Bldg.	Instructor
41-42-43f,w,s	Technical Drawing ..... (6 cred.; all; no prereq.)				
	Sec. 1	VI, VII	MWF	455C	
	2	III, IV	MWF		
	3	VIII, IX	MWF(f,w)		
		VIII, IX	MTF(s)		
44f,w,s	Lettering ..... (1 cred.; all; no prereq.)				Mr. Schuck, Mr. Levens
	Sec. 1	IV	T	Ar	
	2	II	Th	Ar	

† The entire course must be completed before credit is received for any quarter.

No.	Title	Hour	Day	Bldg.	Instructor
45f,w,s	Alphabets ..... (2 cred.; soph., jr., sr.; no prereq.)	II	TTh	206E	Mr. Kirchner
47f-48w-49s	Drawing, Engraving, and Decoration ..... (9 cred.; jr., sr.;‡ no prereq.)	II	MWF	208E	Mr. Kirchner

ECONOMICS

SCHOOL OF BUSINESS

Major Advisers

Professor Garver; Assistant Professor Myers.

Major Sequence

Prerequisites: 3, 6-7. In addition the student is urged to earn at least 10 credits in History, Political Science, or Sociology.

The student majoring in Economics must take Courses 103-104, 141, 161; at least 9 credits from Group A (below); and a sufficient number of credits from Groups A and B to make a total of 32 credits.

Group A: 149, 154, 155, 163, 172, 191-192.

Group B: 62, 85, 105, 106, 113-114, 153, 162, 174, 176, 193.

Modifications of this sequence will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

NOTE.—The following courses in other departments carry credit also in this department:

Agricultural Economics 126, Economics of Consumption; 130, Prices of Farm Products; 131, Market Prices; 135, Methods of Forecasting Prices; 171, Land Tenure; History 80-81, Introduction to Economic History; 82, 83, 84, Economic History of the United States; 113-114-115, Economic History of Europe since 1750; 116-117-118, Economic History of Europe, 1300-1750; 169, Economic History of the United States since the Civil War.

Political Science 51-52-53, Business Law; 105, Colonization; 157, Police Power; 158, Government and Business; 159, Law of Public Utilities.

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w†	Introduction to Economics ..... (10 cred.; pre-bus. fr.; no prereq.)				Mr. Black and others
	Lect.	III	Th	OLAud	
	Sec. 1	I	TThFS	104B	
	2	I	TThFS	109B	
	3	II	TThFS	209B	
	4	II	TThFS	204B	
	5	III	MWFS	109B	
	6	III	MWFS	104B	
	7	IV	MWFS	209B	
	8	IV	MWFS	109B	
	9	V	MTWF	6B	
	10	VI	MWThF	109B	
	11	VII	MWThF	109B	
	12	VIII	MWThF	6B	

† The entire course must be completed before credit is received for any quarter.

‡ Not a senior college course. Not open to sophomores.

No.	Title		Hour	Day	Bldg.	Instructor
1s-(2f)†	Introduction to Economics ..... (See 1f-2w)					Mr. Black and others
		Lect.	III	Th	202B	
		Sec. 1	II	TThFS	204B	
		2	IV	MWFS	213B	
		3	VI	MWThF	109B	
3w	The Mechanism of Exchange .. (5 cred.; 3d qtr. fr., soph., jr., sr.; no prereq.)					Mr. Dowrie and others
		Lect.	III	TTh	202B	
		Sec. 1	II	MWF	109B	
		2	III	MWF	204B	
		3	VI	MWF	6B	
3s	The Mechanism of Exchange ... (See 3w)					Mr. Dowrie and others
		Lect.	III	TS	OLAud	
		Sec. 1	I	TThS	6B	
		2	I	TThS	102B	
		3	II	TThS	102B	
		4	II	TThS	209B	
		5	III	MWF	213B	
		6	III	MWF	204B	
		7	IV	MWF	109B	
		8	IV	MWF	204B	
		9	V	MWF	202B	
		10	VI	MWF	202B	
		11	VII	MWF	209B	
		12	VIII	MWF	209B	
4f*	Principles of Economics—Pre-Business Course ..... (5 cred.; soph., pre-bus. only; prereq. 1-2)					Mr. Hansen and others
		Lect.	I	M	301F	
		Sec. 1	I	TThFS	213B	
		2	II	MWFS	202B	
		3	III	TThFS	204B	
		4	IV	MWFS	213B	
		5	V	MTWF	202B	
		6	VI	MWThF	6B	
4s*	Principles of Economics—Pre-Business Course ..... (See 4f)					Mr. Hansen and others
		Lect.	I	M	202B	
		Sec. 1	I	TThFS	109B	
		2	III	TThFS	6B	
		3	VI	MWThF	6B	

* Open to pre-business students only.

† The entire course must be completed before credit is received for any quarter.

( ) Numbers in parentheses do not refer to the year 1926-27. See Course Numbering, page 20.

No.	Title		Hour	Day	Bldg.	Instructor
(6s)-7f†‡	Principles of Economics—General Course ..... (10 cred.; soph., jr., sr.; no prereq.)					Mr. Hansen and others
		Lect.	II	T	202B	
		Sec. 1	II	MWFS	6B	
		2	IV	MWFS	6B	
6f-7w†‡	Principles of Economics—General Course ..... (10 cred.; soph., jr., sr.; no prereq.)					Mr. Hansen and others
		Lect.	III	W	301F	
		Sec. 1	II	TThFS	109B(f) 6B(w)	
		2	III	TThFS	202B(f) 213B(w)	
		3	V	MTWF	109B	
		4	VI	MWThF	102B(f) 202B(w)	
6w-7s†‡	Principles of Economics—General Course ..... (See 6f-7w)					Mr. Hansen and others
		Lect.	II	T	301F	
		Sec. 1	I	TThFS	102B(w) 213B(s)	
		2	II	MWFS	202B	
		3	IV	MWFS	6B	
		4	V	MTWF	102B	
		5	VI	MWThF	204B	
		6	VII	MWThF	204B	
6s-(7f)†‡§	Principles of Economics—General Course ..... (See 6f-7w)					Mr. Hansen and others
		Lect.	III	W	202B	
		Sec. 1	II	TThFS	213B	
		2	IV	MWFS	104B	
		3	VI	MWThF	209B	
14s	Elements of Statistics ..... (5 cred.; soph., jr., sr.; prereq., 4 or 6-7)					Mr. Mudgett and others
		Sec. 1	I	MTWThF	301B	
		2	II	MTWThF	301B	
		3	III	MTWThF	301B	
		4	IV	MTWFS	301B	
		5	V	MTWThF	301B	
		6	VI	MTWThF	301B	
		7	VII	MTWThF	301B	
		8	VIII	MTWThF	301B	

† The entire course must be completed before credit is received for any quarter.
‡ Not open to pre-business students.
§ Open with permission to third quarter pre-legal freshmen.
( ) Numbers in parentheses do not refer to the year 1926-27. See Course Numbering, page 20.

No.	Title	Hour	Day	Bldg.	Instructor
25f-26w†	Principles of Accounting ..... (8 cred.; soph., jr., sr.; no prereq.)				Mr. Heilman and others
	Lect. Sec. 1	I	MWF	301B	
	2	I	TThS	301B(fall only)	
	3	II	MWF	301B	
	4	II	TThS	301B	
	5	III	MWF	301B(fall only)	
	6	III	TThS	301B	
	7	IV	MWF	301B(fall) 213B(winter)	
	8	V	MWF	301B(fall only)	
	9	VI	MWF	301B	
	10	II	MWF	303B(fall) 213B(winter)	
	Laboratory sections to be arranged.				
25w-26s†	Principles of Accounting ..... (See 25f-26w)				Mr. Heilman and others
	Lect. Sec. 1	II	MWF	303B	
	2	I	TThS	301B	
	3	III	MWF	303B	
	4	IV	MWF	301B(winter) 302B(spring)	
	5	VI	MWF	302B(winter only)	
	Laboratory sections to be arranged.				
62s	Social Insurance ..... (3 cred.; jr., sr.; prereq., 4 or 6-7)	III	TThS	102B	Mr. Graves
85f,s	Economics of Marketing ..... (3 cred.; jr., sr.; prereq., 4 or 6-7)				
	Lect.	I	T	202B	Mr. Vaile
	Sec. 1	I	ThS	202B	
	2	I	WF	209B	
	3	III	ThS	213B	
103f-104w†	Value and Distribution ..... (6 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. including Econ. 4 or 6-7)				Mr. Garver, Mr. Waite
	Sec. 1	I	MWF	204B	
	2	VII	MWF	102B	
105s	History of Economic Ideas (The Classical Economists) ..... (3 cred.; jr., sr., grad.; prereq., 103-104)	VII	MWF	102B	Mr. Garver
106	*History of Economic Ideas (The Critics of the Classical Economists)* ..... (3 cred.; jr., sr., grad.; prereq., 105 or permission of instructor)	*Not offered in 1926-27*			
108w	Marketing Organization: Agricultural Products ..... (3 cred.; jr., sr., grad.; prereq., 85. Not open to agr. bus. stud.)	VIII	MWF	102B	Mr. Price

† The entire course must be completed before credit is received for any quarter.

No.	Title	Hour	Day	Bldg.	Instructor
113w-114s	Theory of Statistics ..... (6 cred.; jr., sr., grad.; prereq., 14)	I	MWF	6B	Mr. Mudgett
141f	Monetary and Banking Policy .. (3 cred.; jr., sr., grad.; prereq., 3, and 4 or 6-7)				Mr. Dowrie and others
	Sec. 1	I	MWF	102B	
	2	III	TThS	209B	
	3	IV	MWF	204B	
	4	VI	MWF	209B	
141w	Monetary and Banking Policy .. (See 141f)				Mr. Dowrie and others
	Sec. 1	II	TThS	102B	
	2	IV	MWF	104B	
	3	VIII	MTW	209B	
141s	Monetary and Banking Policy .. (See 141f)				Mr. Dowrie and others
	Sec. 1	II	MWF	209B	
	2	VII	MWF	109B	
149f	Business Cycles ..... (3 cred.; sr., grad.; prereq., 3, and 4 or 6-7)	VIII	MTW	209B	Mr. Ebersole
149w	Business Cycles ..... (See 149f)	III	MWF	6B	Mr. Myers
149s	Business Cycles ..... (See 149f)				
	Sec. 1	VIII	MTW	202B	Mr. Ebersole
	2	III	MWF	102B	Mr. Myers
153w	Trust Problem ..... (3 cred.; jr., sr., grad.; prereq., 155)	II	MWF	202B	Mr. Stehman
154	*Public Utilities* ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. Econ. 4 or 6-7)	*Not offered in 1926-27*			
155s	Corporation Finance ..... (3 cred.; jr., sr., grad.; prereq., 3, and 4 or 6-7)				Mr. Stehman
	Lect.	III	Th	OLAud	
	Sec. 1	I	TTh	204B	
	2	III	MW	6B	
	3	III	MW	104B	
	4	IV	MW	209B	
	5	II	TTh	109B	
	6	VII	TTh	102B	
161f	Labor Problems and Trade Unionism ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. including Econ. 4 or 6-7)				Mr. Hansen
	Lect.	IV	MW	202B	
	Sec. 1	III	F	213B	
	2	IV	F	202B	

No.	Title	Hour	Day	Bldg.	Instructor
161w	Labor Problems and Trade Unionism ..... (See 161f)				Mr. Hansen
	Lect.	III	TTh	209B	
	Sec. 1	III	S	209B	
	2	IV	S	202B	
162w	Labor and Economic Reform Movements ..... (3 cred.; jr., sr., grad.; prereq., 161)	IV	MWF	202B	Mr. Hansen
163s	Economic Aspects of Population and Immigration ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. including Econ. 4 or 6-7)	IV	MWF	202B	Mr. Hansen
170s	Land Economics ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. including Econ. 4 or 6-7)	2:30-4:00	TTh	209B	Mr. Black
172f	Economics of Transportation ... (3 cred.; jr., sr.; prereq., 20 cred. in soc. sci. including Econ. 4 or 6-7)	VI	MWF	202B	Mr. Cummings
172w	Economics of Transportation ... (See 172f)	VI	MWF	102B	Mr. Cummings
172s	Economics of Transportation ... (See 172f)	VII	MWF	202B	Mr. Cummings
174s	Transportation Problems ..... (3 cred.; jr., sr.; prereq., 172)	VI	MWF	102B	Mr. Cummings
176f	Commercial Policies ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. including Econ. 4 or 6-7)	I	MWF	202B	Mr. Blakey
176s	Commercial Policies ..... (See 176f)	I	MWF	204B	Mr. Blakey
187s	Market Prices ..... (3 cred.; grad., sr. by permission; prereq., 101-102 or 103-104)	VIII-IX½	WF	104B	Mr. Vaile, Mr. Garver, Mr. Waite
191f-192w†	Public Finance ..... (6 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. including Econ. 4 or 6-7)	II	MWF	102B	Mr. Blakey
193s	State and Local Taxation ..... (3 cred.; jr., sr., grad.; prereq., 191-192)	II	MWF	109B	Mr. Blakey

ENGLISH

Major Advisers

Professors Beach and Moore; Associate Professor Ruud; Assistant Professors Hillhouse, Van Winkle, and Carr.

† The entire course must be completed before credit is received for any quarter.

Major Sequences

Prerequisites: Courses 6 and 8.

A. Medieval. Courses 50; 51 or 136; 53 or 70; 101 or 103; 133 or 152-153; 140; 109-110 or 105-106 or 107-108; 141-142-143 or 146-147 or 148-149 or German 100-101-102 or Latin 123 and 121.

B. Renaissance. Courses 136; 62; 152-153 or 51; two of 133, 53, and 64; 50 or 109-110 or 107-108 or 146-147 or 148-149; 70 and 111-112 or French 150-151-152 or 121-122-123 or Italian 159-160 or Latin 121 and 132.

C. Drama. Courses 136; 129; two of 50, 62, 133, and 152-153; 123-124-125 or 146-147 or 148-149 and 140 or Comparative Literature 101-102-103 or Public Speaking 91-92-93 or Composition 115-116-117; 53 and 70 or French 150-151-152 or German 63, 64, and 77 or Spanish 150-151 and 159.

D. Poetry. Courses 62 or 70; 51 and 53 or Composition 100-101; 150 or 151; 136 or 140 or 133; 50 or 105-106 or 109-110; 146-147 or 148-149 or 111-112 or 107-108 or Italian 159-160 or French 153 or German 160-161-162.

E. Prose. Courses (1 out of 3) 66, 155, 64; (2 out of 4) 58-59, 107-108, 111-112, 123-124-125; (2 out of 7) 50, 51, 62, 140, 150, 151, 105-106; Composition 63-64-65, 67-68 and 69, or 111-112-113. Additional prerequisite: Composition 11-12 or 18-19, and 20.

Modification of these sequences will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

No.	Title		Hour	Day	Bldg.	Instructor
Af-Bw-Cs	Freshman English (See Composition)					
1f-2w-3s*	English Survey ..... (9 cred.; soph., jr., sr.; prereq., 9 cred. in composition)					
		Lect.	II	M or	OLAud	
			IV	T		
		Sec. 1	II	WF	5F(fall, winter) 217F(spring)	
		2	III	TTh	25F	
		3	V	WF	306F	
		4	VII	TTh	107F	
6f	Chaucer ..... (4 cred.; soph., jr., sr.; prereq., 15 cred. in Fr. Eng.)					
		Sec. 1	II	TWThS	205F	Mr. Ruud, Mr. Van Winkle
		2	V	MTWF	204F	Miss Carr, Miss Lambert
6w	Chaucer ..... (See 6f)					
		Sec. 1	II	TWThS	205F	Mr. Ruud
		2	V	MTWF	204F	Miss Carr, Miss Lambert

* Students may enter any quarter.

No.	Title	Hour	Day	Bldg.	Instructor
6s	Chaucer ..... (See 6f)				
	Sec. 1	II	TWThS	205F	Mr. Hillhouse
	2	V	MTWF	204F	Miss Carr, Mr. Loveland
8f	Shakespeare ..... (4 cred.; soph., jr., sr.; prereq., 15 cred. in Fr. Eng.)				
	Sec. 1	I	TThFS	204F	Miss Jackson, Mr. Nichols
	2	VI	MTThF	204F	Mr. Hillhouse, Mr. Van Winkle
8w	Shakespeare ..... (See 8f)				
	Sec. 1	I	TThFS	204F	Miss Jackson
	2	VI	MTThF	204F	Mr. Hillhouse, Mr. Hessler
8s	Shakespeare ..... (See 8f)				
	Sec. 1	I	TThFS	204F	Mr. Van Winkle
	2	VI	MTThF	204F	Mr. Hillhouse, Mr. Nichols
40	*Bible As Literature* ..... (3 cred.; soph., jr., sr.; prereq., 15 cred. in Fr. Eng.)	*Not offered in 1926-27*			
41w	Browning and Tennyson ..... (4 cred.; soph., jr., sr.; prereq., 15 cred. in Fr. Eng.)	IV	MTWF	204F	Mr. Stoll
44f-45w†	American Literature ..... (6 cred.; soph., jr., sr.; prereq., 15 cred. in Fr. Eng.)	IV	MWF	301F	Mr. Moore
44w-45s†	American Literature ..... (See 44f-45w)	VI	MWF	301F	Mr. Nichols, Miss Jackson
50f	Old English ..... (4 cred.; jr., sr.; prereq., 15 cred in Fr. Eng.)	III	TThFS	306F	Mr. Ruud
51	*Spenser* ..... (3 cred.; jr., sr.; prereq., 15 cred. in Fr. Eng.)	*Not offered in 1926-27*			
53f	Seventeenth-Century Lyrists ... (4 cred.; jr., sr.; prereq., 15 cred. in Fr. Eng.)	III	MTThF	205F	Mr. Moore
58f-59w†	Nineteenth-Century Prose ..... (6 cred.; jr., sr.; prereq., 15 cred. in Fr. Eng.)	II	TThS	204F	Mr. Beach
60w	History of English Language .. (2 cred.; jr., sr.; prereq., 50)	VI	TTh	205F	Mr. Klaeber

† The entire course must be completed before credit is received for any quarter.

No.	Title	Hour	Day	Bldg.	Instructor
61	*American Pronunciation* ..... (3 cred.; jr., sr.; prereq., 15 cred. in Fr. Eng.)	*Not offered in 1926-27*			
62f	Milton ..... (4 cred.; jr., sr.; prereq., 15 cred. in Fr. Eng.)	VII	MTWF	204F	Mr. Stoll
62w	Milton ..... (See 62f)	VII	MTWF	205F	Mr. Van Winkle
63s	American Usage ..... (3 cred.; jr., sr.; prereq., 15 cred. in Fr. Eng.)	I	MWF	125F	Mr. Ruud
64	*Bacon* ..... (3 cred.; jr., sr.; prereq., 15 cred. in Fr. Eng.)	*Not offered in 1926-27*			
66	*English Novel* ..... (4 cred.; jr., sr.; prereq., 15 cred. in Fr. Eng.)	*Not offered in 1926-27*			
70f	Elizabethan Drama ..... (4 cred.; jr., sr.; prereq., 8)	VI	MTWF	205F	Mr. Stoll
101f	Middle English ..... (2 cred., jr., sr., grad.; prereq., 6 and 50)	VI	TTh	217F	Mr. Klaeber
103s	Beowulf ..... (3 cred.; jr., sr., grad.; prereq., 50 and either 6 or 8)	VII, VIII VII	T Th	217F	Mr. Klaeber
105-106†	*Eighteenth-Century Poetry* ..... (6 cred.; jr., sr., grad.; prereq.§)	*Not offered in 1926-27*			
107w-108s†	Eighteenth-Century Prose ..... (6 cred.; jr., sr., grad.; prereq.§)	VII	MWF	204F	Mr. Moore
109f-110w†	Romantic Poets ..... (6 cred.; jr., sr., grad.; prereq.§)	III	TThS	204F	Mr. Beach
111-112†	*Seventeenth-Century Prose* ..... (6 cred.; jr., sr., grad.; prereq.§)	*Not offered in 1926-27*			
123f-124w-125s†	Technique of the Novel ..... (9 cred.; sr., grad.; prereq.§)	4 to 6 o'clock	T	204F	Mr. Beach
129s	Modern Drama ..... (4 cred.; jr., sr., grad.; prereq., 8 and one other course numbered above 5)	II	MTWF	204F	Mr. Stoll
133w	Ballads ..... (3 cred.; jr., sr., grad.; prereq.§)	III	MWF	205F	Mr. Ruud
136s	Advanced Shakespeare ..... (4 cred.; jr., sr., grad.; prereq., grade of B in Eng. 8)	I	MTWF	205F	Mr. Stoll
140s	Advanced Chaucer ..... (3 cred.; jr., sr., grad.; prereq., 6 with grade of B, or 6 and one other course numbered above 5)	I, II	S	217F	Mr. Ruud
141f-142w-143s†	Historical Grammar ..... (6 cred.; sr., grad.; prereq.§)	Ar	Ar	Ar	Mr. Klaeber

† The entire course must be completed before credit is received for any quarter.
§ Courses 6 and 8, or either 6 or 8 and one other course numbered above 5.

No.	Title	Hour	Day	Bldg.	Instructor
146f-147w†	The Metrical Romances ..... (6 cred.; jr., sr., grad.; prereq., 6, and one other course numbered above 5)	II	MWF	204F	Miss Carr
148-149†	*The Arthurian Romances* ..... (6 cred.; jr., sr., grad.; prereq., 6, and one other course numbered above 5)	*Not offered in 1926-27*			
150	*Victorian Poetry* ..... (4 cred.; jr., sr., grad.; prereq.§)	*Not offered in 1926-27*			
151s	Recent Poetry ..... (4 cred.; jr., sr., grad.; prereq.§)	III	TWThS	301F	Mr. Beach
152w-153s†	Pre-Elizabethan Drama ..... (6 cred.; jr., sr., grad.; prereq., 8, and one other course numbered above 5)	III	TThS	205F	Mr. Van Winkle
155s	American Novel ..... (4 cred.; jr., sr., grad.; prereq., 44-45 and either 6 or 8)	VI	MTThF	205F	Mr. Moore
164s	Dante in English ..... (See Italian 164s)	IV	MWF	213F	Miss Phelps

COMPOSITION

Major Advisers

Professor Thomas; Assistant Professors Chase, Nichols, Sutcliffe; Miss Macgregor.

Major Sequences

Prerequisites: Courses 11-12 or 18-19, and 20; English 6 and 8, or either 6 or 8 and one other course numbered above 5.

A. Courses 119-120-121; 100-101; English 50 or 58-59 or 107-108 or 111-112; and 12 additional credits from the following group of courses: English 51, 53, 62, 109-110, 140, 150, and 151.

B. Courses 119-120-121; 63-64, or 67-68 and 69, or 111-112-113; and 16 credits from the following group of courses: English 50, 58-59, 64, 107-108, 111-112, 150, 151.

C. Courses 119-120-121; 115-116-117; English 50 or 58-59 or 107-108 or 111-112; English 129; English 136 or Public Speaking 91-92-93.

Modifications of these sequences will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

IMPORTANT NOTE.—Freshman English is a 15-credit course consisting of 9 credits of literature (English 1-2-3) and 6 credits of composition (Composition 1-2-3). Composition 1-2-3 cannot be taken separately. Students whose training in composition is inadequate may be required to take 9 credits of composition (Composition 4-5-6).

Students beginning the course in 1926-27 will register according to the following schedule. Students who have already completed one or more quarters of the course should consult a Freshman English adviser before registering.

† The entire course must be completed before credit is received for any quarter.
§ Courses 6 and 8, or either 6 or 8 and one other course numbered above 5.

No.	Title		Hour	Day	Bldg.	Instructor
Af-Bw-Cs	Freshman English					
	(15 cred.; all; no prereq.)					
		Lect.	II	M	OLAud	
		Rec.	I	TThFS	*	
			II	TThFS	*	
		Lect.	IV	T	OLAud	
		Rec.	III	MWFS	*	
			IV	MWFS	*	
		Lect.	II	M	OLAud	
			or			
			IV	T	OLAud	
		Rec.	V	MTWF	*	
			VI	MTThF	*	
			VII	MTThF	*	
1w-2s (with Eng. 2w-3s)						
	Freshman Composition					
	(2 cred. per qtr.; all; no prereq. Cannot be taken separately)					
		Lect.	II	M		
			or			
			IV	T	OLAud	
		Rec.	II	TThFS	*	
			IV	MWFS	*	
			VI	MTWF	*	
3f (with Eng. 1f)						
	Freshman Composition					
	(See 1w-2s)					
		Lect.	II	M or		
			IV	T	OLAud	
		Rec.	II	TThFS		
			IV	MWFS		
			VI	MTThF		
4f-5w-6s	Composition for Technical Students		I	MWF	311F	
	(9 cred.; all; no prereq.)		II	MWF	311F	
			III (Chemists only)	MWF	225C, 315C	
			I	TThS	311F	
4w-5s-(6su)	Composition for Technical Students		II	TThS	311F	
	(9 cred.; all; no prereq.)					
11f-12w†¶	Description; Narration					
	(6 cred.; soph., jr., sr.; prereq., A-B-C, or 4-5-6)					
	Sec. 1		II	MWF	304F	Mr. Hillhouse, Mrs. del Plaine
	2		IV	MWF	305F	Mr. Nichols
	3		VII	MWF	305F	Mrs. Phelan
	4		II	TThS	304F	Miss Gable
	5		III	TThS	304F	Miss Lambert

* Assigned at the time of registration.

† The entire course must be completed before credit is received for any quarter.

¶ A student registering for either 11-12 or 18-19 must bring with him a written memorandum from his instructor in Freshman English specifying which course in sophomore composition he should elect. No student may receive credit for both 11-12 and 18-19.

No.	Title	Hour	Day	Bldg.	Instructor
11w-12s†¶	Description; Narration ..... (See 11f-12w)				
	Sec. 1	II	MWF	306F	Mr. Sutcliffe
	2	II	TThS	306F	Ar
	3	VI	MWF	306F	Miss Gable
18f-19w†¶	Types of Writing ..... (6 cred.; soph., jr., sr., prereq., A-B-C or 4-5-6)				
	Sec. 1	III	MWF	304F	Mrs. del Plaine
	2	V	MWF	303F	Mr. Loveland
	3	VII	MWF	306F	Ar
18w-19s†¶	Types of Writing ..... (See 18f-19w)				
	Sec. 1	III	MWF	306F	Mrs. Phelan
	2	VII	MWF	304F	Mr. Hessler
20f*	Informal Exposition ..... (3 cred.; soph., jr., sr.; prereq., 11-12 or 18-19)				
	Sec. 1	III	MWF	204F	Mrs. Phelan
	2	V	MWF	305F	Mr. Hessler
20s*	Informal Exposition ..... (See 20f)				
	Sec. 1	II	MWF	304F	Mrs. del Plaine
	2	IV	MWF	305F	Mr. Nichols
	3	VI	MWF	304F	Ar
	4	VII	MWF	305F	Mrs. Phelan
	5	II	TThS	304F	Miss Gable
	6	III	TThS	306F	Miss Lambert
31w	Technical Writing	Consult College of Engineering bulletin			
63-64-65	*Studies in Structure and Style* .. (6 cred.; jr., sr.; prereq., 11-12 or 18-19, and 20)	*Not offered in 1926-27*			
67f-68w†	Imitative Writing ..... (6 cred.; jr., sr., not open to sophomores; prereq.. average of B in two quarters‡ of either 11-12, 20 or 18-19, 20)	IV	MWF	304F	Mrs. Phelan
69s	Short Story-Writing ..... (4 cred.; jr., sr., not open to sophomores; prereq., average of B in two quarters‡ of either 11-12, 20 or 18-19, 20)	IV	MTWF	304F	Mrs. Phelan
100w-101s	Versification ..... (6 cred.; jr., sr., grad.; prereq., 11-12 or 18-19, 20; with or after 9 cred. Eng. Poetry)	IV	TS and Ar	302F	Mr. Nichols

* Prerequisite for all advanced courses in writing, for major sequences, except for those students who receive an average of B in 11-12 or 18-19, and for the teacher's certificate in English.

† The entire course must be completed before credit is received for any quarter.

‡ The student who gets an average of B in 11-12 or 18-19 need not take Course 20.

¶ A student registering for either 11-12 or 18-19 must bring with him a written memorandum from his instructor in Freshman English specifying which course in sophomore composition he should elect. No student may receive credit for both 11-12 and 18-19.

No.	Title	Hour	Day	Bldg.	Instructor
111f-112w-113s	Essay Writing ..... (9 cred.; jr., sr., grad.; prereq., 11-12 or 18-19, and 20)	III	MWF	304F	Mr. Sutcliffe
115-116-117	*Dramatic Technique* ..... (9 cred.; jr., sr., grad.; prereq., 11-12 or 18-19, 20; with or after Eng. 129)	*Not offered in 1926-27*			
119f-120w-121s	Seminary in Writing ..... (9 cred.; sr., grad.; prereq., 9 cred. sr. col. courses, and permission of instructor)	VI, VII	Th	304F	Mr. Thomas

PUBLIC SPEAKING

Major Adviser

Professor Rarig.

Major Sequences

Prerequisites: 41-42-43 or 45-46. Physiology 4 is recommended for Sequence C.

A. Courses 81-82-83; either 55-56-57 or 101-102 and 105; 121-122; Philosophy 103 or 104; English 109-110 or 150.

B. Courses 91-92-93; either 55-56-57 or 101-102 and 105 or 107; 121-122; Architecture 81; English 129 or 136; six additional credits approved by the student's major adviser in the departments of Psychology, Education,‡ Philosophy, Political Science, or Sociology.

C. Courses 55-56-57; 61; 81-82-83; 121-122; Psychology 114-115.

No.	Title	Hour	Day	Bldg.	Instructor
41f-42w-43s†	Public Speaking ..... (9 cred.; soph., jr., sr.; prereq., Fr. Eng. or Comp. 4-5-6)				
	Lect.	I	F	OLAud	Mr. Rarig and others
	Sec. 1	I	MW	308F	
	2	II	MW	308F	
	3	III	TTh	308F	
	4	VII	MW	19Mu	
	5	I	TTh	3F	
	6	II	TTh	308F	
	7	II	MW	301F (fall, winter) 19Mu (spring)	
		III	MW	19Mu	
41w-42s-(43f)†	Public Speaking ..... (See 41f-42w-43s)				
	Lect.	VI	Th	OLAud	
	Sec. 1	I	MF	19Mu	
	2	VI	MF	19Mu	
(41w-42s)-43f†	Public Speaking ..... (See 41f-42w-43s)				
	Lect.	VI	Th	OLAud	
	Sec. 1	II	MF	19Mu	

† The entire course must be completed before credit is received for any quarter.

‡ Students majoring in Public Speaking may register for courses in the College of Education by petition.

( ) Numbers in parentheses do not refer to the year 1926-27. See Course Numbering, page 20.

No.	Title	Hour	Day	Bldg.	Instructor
45f-46w†	Public Speaking ..... (10 cred.; soph., jr., sr.; prereq., Fr. Eng. or Comp. 4-5-6)				
	Lect.	I	F	OLAud	Mr. Rarig and others
	Sec. 1	IV	MTWS	3F	
	2	VII	MTWTh	308F	
	3	VIII	MTWTh	308F	
45s-(46f)†	Public Speaking ..... (See 45f-46w)				
	Lect.	VI	Th	301F	
	Sec. 1	IV	MTWS	3F	
	2	VI	MTWF	125F	
	3	VII	MTWF	308F	
(45s)-46f†	Public Speaking ..... (See 45f-46w)				
	Lect.	VI	Th	OLAud	
	Sec. 1	IV	MTWS	204F	
	2	VI	MTWF	308F	
45w-46s†	Public Speaking ..... (See 45f-46w)				
	Lect.	VI	Th	OLAud	
	Rec.	VI	MTWF	308F	
51s	Advanced Public Speaking ..... (3 cred.; jr., sr.; prereq., 41-42-43 or 45-46)	II	MWF	5F	Mr. Morse
55f-56w-57s	Arg. and Debating ..... (9 cred.; jr., sr.; prereq., 41-42-43 or 45-46)	VII VII, VIII	T Th	301F	Mr. Morse
61s	Speech Correction ..... (4 cred.; jr., sr.; prereq., 41-42-43 or 45-46; Psy. 1-2)	VI	MTThF	101F	Mr. Holmes
81f-82w-83s	Interpretative Reading ..... (9 cred.; jr., sr.; prereq., 41-42-43 or 44-45)				
	Sec. 1	IV	MWF	308F	Mr. Rarig
	2	I	TThS	308F	Ar
91f-92w-93s	Play Production ..... (9 cred.; jr., sr.; prereq., 81-82-83, Eng. 8)	VIII	MWF	19Mu	Mr. Raines
97f,w	Adv. Debate and Oratory ..... (3 cred.; jr., sr.; prereq.§)	Ar	Ar	308F	Mr. Rarig, Mr. Morse
101f-102w†	Advanced Speech Composition .. (6 cred.; jr., sr., grad.; prereq., 41-42-43 or 45-46)	III	MWF	308F	Mr. Rarig
105	*Theory of Reading and Acting* .. (3 cred.; jr., sr., grad.; prereq., 41-42-43 or 45-46)	*Not offered in 1926-27*			
107s	Seminar in Great Orators ..... (3 cred.; jr., sr., grad.; prereq., 41-42-43 or 45-46, Psy. 1-2, and 10 cred. in hist., soc.. or phil.)	III	MWF	308F	Mr. Rarig
121f-122w†	Advanced Speech Problems ... (6 cred.; jr., sr., grad.; prereq., 41-42-43 or 45-46; Psy. 1-2)	III	TThS	19Mu	Mr. Rarig, Mr. Morse

† The entire course must be completed before credit is received for any quarter.
§ Open to intercollegiate debaters and orators.

GEOGRAPHY

Major Adviser

Associate Professor Davis.

Major Sequence

Prerequisites: Course 1 or 33 or 51, Geology 1-2 or 1-3 or 8 or 29, and Economics 6-7. Twenty-nine credits from Geography 52, 61, 62, 71, 91, 101, 135, 141, 152-153-154; Economics 172, 85, 108; Geology 73; Botany 131. At least 20 credits must be in geography.

Modification of this sequence will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

No.	Title	Hour	Day	Bldg.	Instructor
1f	Introd. to Human Geography .. (5 cred.; 3rd qtr. fr., soph.; not open to jr., sr.; no prereq.)	II	MWThFS	103OL	Mr. Davis
1w	Introd. to Human Geography .. (See 1f)	II	MTThFS	103OL	Mr. Davis
1s	Introd. to Human Geography .. (See 1f)	II	MTThFS	103OL	Mr. Davis
2w	Introd. to Regional Geography (5 cred.; 3rd qtr. fr., soph.; not open to jr., sr.; prereq., 1 or 33)	VI	MTWThF	103OL	Mr. Hartshorne
33w*	Climatology ..... (3 cred.; soph., jr., sr.; no prereq.)	I	TThF	103OL	Mr. Davis
51w‡	Human Geography ..... (5 cred.; jr.. sr.; 10 cred. in econ. or soc., or 15 cred in hist.)	III	MTThFS	103OL	Mr. Davis
52s§	Regional Geography of the World (5 cred.; jr., sr.; prereq. 51 or 33 or 1 and 10 cred. in econ. or soc.)	III	MTThFS	103OL	Mr. Davis
61f	Geography of Commercial Production ..... (5 cred.; jr., sr.; prereq., 10 cred. in econ. or geog.)	IV	MTWFS	103OL	Mr. Hartshorne
61w	Geography of Commercial Production ..... (See 61f)	IV	MTWFS	103OL	Mr. Hartshorne
61s	Geography of Commercial Production ..... (See 61f)	IV	MTWFS	103OL	Mr. Hartshorne
62s	Trade Routes and Trade Centers (3 cred.; jr., sr.; prereq., 61)	VI	MWF	103OL	Mr. Hartshorne
71f	Geography of North America .. (4 cred.; jr., sr.; prereq., 1 or 51, or 61, or 20 cred. in soc. sci. to include at least one course in geog.)	I	MWThF	103OL	Mr. Davis

* Not open to those who have had Course 1 or Course 51.
‡ Not open to those who have had Course 1.
§ Not open to those who have had Course 2.

No.	Title	Hour	Day	Bldg.	Instructor
91f	Cartography ..... (3 cred.; jr., sr.; prereq., 10 cred. in senior college work in geog., geol., hist., or other subject in which the use of maps is necessary)	VI	MWF	103OL	Mr. Hartshorne
101	*Geography of Europe*	*Not offered in 1926-27*			
135s	Geography of Minnesota ..... (3 cred.; jr., sr.; prereq., 12 cred., or 20 cred. in soc. sci. incl. at least 8 cred. in geog. Limited to 15. Permission of instructor necessary)	I	TThF	103OL	Mr. Davis
141	*Field Course in Geography*	*Not offered in 1926-27*			
151f-152w-153s†	Seminar in Geography ..... (3 cred.; prereq., 20 cred.)	VII	Th	103OL	Mr. Davis, Mr. Hartshorne
201f,w,s	Research Problems in Geography	Ar	Ar		Mr. Davis

GEOLOGY AND MINERALOGY

Major Advisers

Professors Emmons (economic geology), Stauffer (general geology and paleontology), and Grout (mineralogy and petrography).

Major Sequences

No major sequence in geology should be undertaken without some course in chemistry. If not taken in high school, chemistry must be begun at the University in the fall or winter. Students majoring in geology are also advised to take courses in drafting and surveying. (See College of Engineering bulletin.) Course 23 should be taken as early as possible. One field trip is required of all students majoring in geology.

Sequence A. For general geology, federal and state surveys, etc. Courses 91-92-93, 111, 112, 144-145 or 124-125, 85, 151-152-153.

Sequence B. For petroleum geologist. Courses 91-92-93, 101, 105, 112, 137, 144-145 or 124-125, 151-152-153.

Sequence C. For mining geologist and mineralographer. Courses 111, 112, 113, 137, 124-125, 144-145, 85, 166-167.

Sequence D. For paleontologist. Courses 91-92-93, 105-106, 107-108-109, 150, 151-152-153.

Sequence E. For mineralogist. Courses 61, 105, 106, 111, 131-132-133, 137, 166-167, 85 or 150.

Sequence F. For petrographer. Courses 105, 106, 111, 112 or 124-125, 131-132-133, 140-141, 85 or 150.

Modification of these sequences will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

† The entire course must be completed before credit is received for any quarter.

No.	Title		Hour	Day	Bldg.	Instructor
1f-2w*†	General Geology (Dynamic and Historical) ..... (10 cred.; all; prereq., any course in chemistry in high school or college)					
	Sec. 1	Lect.	I	TWThF	210P	Mr. Thiel
		Lab.	I-II	M or S	112P	
	2	Lect.	VII	MTWTh	110P	Mr. Shenon
		Lab.	VI-VII	F	112P	
1f-3w*†	General Geology (Dynamic and Economic) ..... (10 cred.; all; prereq., any course in chemistry in high school or college)					
		Lect.	III	MWFS	110P	Mr. Emmons
		Lab.	III-IV	T	112P	
		or	VI-VII	Th		
1w-2s*†	General Geology (Dynamic and Historical) ..... (See 1f-2w)					
		Lect.	IV	TWFS	110P	Mr. Bauernschmidt
		Lab.	III-IV	M	112P	
		or	VI-VII	T		
1w-3s*†	General Geology (Dynamic and Economic) ..... (See 1f-3w)					
		Lect.	II	WThFS	200aP	Mr. Allison
		Lab.	I-II	T	112P	
1s-(2f)*†	General Geology (Dynamic and Historical) ..... (See 1f-2w)					
		Lect.	III	MTThF	110P	Mr. Emmons
		Lab.	III-IV	W	112P	
(1s)-2f*†	General Geology (Dynamic and Historical) ..... (See 1f-2w)					
		Lect.	III	MTWTh	104P	Mr. Bauernschmidt
		Lab.	II-III	F	112P	
1s-(3w)†	General Geology (Dynamic and Economic) ..... (See 1f-3w)		Hours, days, rooms, as for 1s-(2f)			
4s	Geology of Minnesota ..... (5 cred.; all; prereq., 1)		IV	MTWFS	110P	Mr. Thiel
8f,w,s‡	Introductory Geology ..... (5 cred.; all; no prerequisites)		II	MWThFS	110P	Mr. Thiel
11f	Elements of Paleontology ..... (5 cred.; all; prereq., 1)		II	MWThFS	105P	Mr. Stauffer

* For a three-quarter sequence, Course 2 may be followed by Course 3 or 4 or 11, and Course 3 by Course 2.

† The entire course must be completed before credit is received for any quarter.

( ) Numbers in parentheses do not refer to the year 1926-27. See Course Numbering, page 20.

‡ Does not satisfy the junior college requirement for science. May be followed by Course 2 or 4 with instructor's permission.

No.	Title		Hour	Day	Bldg.	Instructor
15s¶	Minerals and Rocks ..... (1 cred.; jr., sr.; prereq., 1 or 29)		Ar	Ar	100P	Mr. Gruner
23w-24s-(25f)†	Elements of Mineralogy ..... (10 cred.; soph., jr., sr.; prereq., course in chem.)					
	(Winter)	Lect.	II	WF	110P	Mr. Gruner
		Lab.	III	WF	100P	
	(For other sections, see Mines bulletin)					
	(Spring)	Lect.	II	MWF		Mr. Gruner
		Rec.	IX	T		
	Sec. 1	Lab.	VII, VIII	M		
			VI, VII	T		
	2		III, IV	M		
			VII, VIII	F		
(23w-24s)-25f†	Elements of Mineralogy ..... (See 23w-24s-(25f))					
		Lect.	III	MWF		Mr. Gruner
		Rec.	VIII	F		
	Sec. 1	Lab.	VI, VII	MW		
	2		VII, VIII	T		
			VI, VII	F		
27s¶	Outlines of Mineralogy ..... (1 cred.; jr., sr.; no prereq.)		Ar	Ar	100P	Mr. Gruner
29f§	General Physiography ..... (5 cred.; soph., jr., sr.; no prereq.)		III	MTThFS	200aP	Mr. Allison
61f	Blowpipe Analysis ..... (3 cred.; jr., sr.; prereq., 25)		Consult Mines program			Mr. Gruner
65f	Crystallography ..... 7 and Inorg. Chem. 6-7-8 or 9-10)		Ar	Ar	100P	Mr. Gruner
67w	Mineralogy of Chemical Materials (3 cred.; jr., sr.; prereq., Chem., 5 cred.)		Consult Chemistry program			Mr. Gruner
73f	Economic Geology ..... (3 cred.; jr., sr.; prereq., 24)		VI	MWF	110P	Mr. Schwartz
85s	Field Work in Northern Minnesota ..... (4 cred.; jr., sr.; prereq., 2, 3, or 11)		Ar	Ar	Ar	Mr. Gruner, Mr. Thiel
91f-92w-93s	Index Fossils of North America (9 cred.; jr., sr.; prereq., 2, 3, or 11)					
		Lect.	I	F	105P	Mr. Stauffer
		Lab.	VI, VII	MW	105P	Mr. Stauffer
101f	Sedimentation ..... (3 cred.; jr., sr., grad.; prereq., 23-24)		Ar	Ar	Ar	Mr. Allison

† The entire course must be completed before credit is received for any quarter.
¶ Does not count for a senior college course. Not open to sophomores.
( ) Numbers in parentheses do not refer to the year 1926-27. See Course Numbering, page 20.
§ Does not satisfy the junior college requirement for science.

No.	Title		Hour	Day	Bldg.	Instructor
105f	Rock Study ..... (3 cred.; jr., sr., grad.; prereq., 24)					
		Lect.	VI	TTh	110P	Mr. Grout
	Sec. 1	Lab.	VII, VIII	T	200P	
	2		VII, VIII	Th	200P	
106w	Petrography ..... (3 cred.; jr., sr., grad.; prereq., 105)		VII, VIII	MF	200P	Mr. Grout
107f-108w-109s	Paleontologic Practice ..... (9 cred.; jr., sr., grad.; prereq., 91-92-93)		Ar	Ar	105P	Mr. Stauffer
111f	Ore Deposits ..... (3 cred.; sr., grad.; prereq., 2, 3, or 11, and 105)		I	TThS	110P	Mr. Emmons
112w	Geology of Petroleum ..... (3 cred.; sr., grad.; prereq., 111)		I	TThS	110P	Mr. Emmons
113s	Prob. in Ore Deposits ..... (3 cred.; sr., grad.; prereq., 112)		VI-IX	Th	104P	Mr. Emmons
124w-125s	Struct. and Metamorphic Geol. .. (6 cred.; jr., sr., grad.; prereq., 2, 3, or 11, and 105)		VI	MWF	200aP	Mr. Schwartz
127f	Geol. of Lake Sup. Region .... (3 cred.; jr., sr., grad.; prereq., 124-125)		Ar	Ar	Ar	Mr. Thiel
131f-132w-133s	Adv. Petrology ..... (9 cred.; jr., sr., grad.; prereq., 106)					
		Lect.	III	TThS	200P	Mr. Grout
		Lab.	Ar	F	200P	
137w	Testing Econ. Minerals ..... (3 cred.; jr., sr., grad.; prereq., 2, 3, or 11, and 105)					
		Lect.	VI	T	200P	Mr. Grout
		Lab.	VIII, IX	MW	200P	Mr. Thiel
140w-141s	Applied Petrography ..... (6 cred.; jr., sr., grad.; prereq., 131)					
		Lect.	II	F	200P	Mr. Grout
		Lab.	I, II	MW		
144w-145s	Inter. of Geologic Maps ..... (6 cred.; jr., sr., grad.; prereq., 2, 3, or 11, and 124)		VII-IX	TTh	104P	Mr. Allison
149s	Methods of Field Geology ..... (1 cred.; jr., sr., grad.; to be taken with 150; prereq., 2, 23-24-25, 106, 124-125)		Ar	Ar	Ar	Mr. Schwartz
150s	Field Geol. (Black Hills) ..... (Cred. ar.; jr., sr., grad.; see members of department)		Ar	Ar	Ar	Mr. Emmons, Mr. Schwartz
151f-152w-153s	Adv. General Geology ..... (9 cred.; jr., sr., grad.; prereq., 2, 3, or 11)		III	MWF	200aP	Mr. Stauffer
166w-167s	Mineralography ..... (6 cred.; sr., grad.; prereq., 111, 131)		Ar	Ar	103P	Mr. Schwartz

GERMAN

Major Advisers

Professor Schlenker; Associate Professor Kroesch.

Major Sequence

Courses 50-51-52; any two quarters of 62, 63, 64; any two quarters of 65, 66, and 67; 18 additional credits from courses numbered above 50.

Modifications of this sequence will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

Sequence of Courses

For academic students.—Without entrance German, 1, 2, 3, 4, 62 or 63, other courses numbered 50 or above. With one year entrance German, 2, 3, 4, 62 or 63, other courses numbered 50 or above. With two years entrance German, 7, 8, 62 or 63, other courses numbered 50 or above. With four years entrance German, 62 or 63, other courses numbered 50 or above.

For pre-medical students.—Without entrance German, 1, 2, 3, 4, 31-32. With one year entrance German, 2, 3, 4, 31-32. With two years entrance German, 15, 31-32. With more than two years entrance German, 31-32.

For chemists.—Without entrance German, 24-25-26, 27, 28-29. With two years entrance German, 27 or 4, 28-29. With more than two years entrance German, 28-29.

No.	Title	Hour	Day	Bldg.	Instructor
1f*	Beginning A				
	(5 cred.; all; no prereq.)				
	Sec. 1	I	TWThFS	207F	Ar
	2	I	TWThFS	209F	Ar
	3	I	TWThFS	209½F	Ar
	4	I	TWThFS	321F	Ar
	5	III	MTThFS	213F	Ar
	6	III	MTThFS	212F	Ar
	7	IV	MTWFS	207F	Ar
	8	IV	MTWFS	212F	Ar
	9	IV	MTWFS	209F	Ar
	10	VI	MTWThF	207F	Ar
	11	VI	MTWThF	209F	Ar
	12	VI	MTWThF	209½F	Ar
1w*	Beginning A				
	(See 1f)				
	Sec. 1	II	MWThFS	209F	Ar
	2	VII	MTWThF	207F	Ar
1s*	Beginning A				
	(See 1f)				
	Sec. 1	II	MWThFS	212F	Ar
	2	VI	MTWThF	5F	Ar
2f*	Beginning B				
	(5 cred.; all; prereq., 1 or one yr. prep. German)				
	Sec. 1	II	MWThFS	207F	Ar
	2	VII	MTWThF	209½F	Ar

* Credit is usually not given for more than one beginning language. See paragraph 2, page 6.

No.	Title	Hour	Day	Bldg.	Instructor
2w*	Beginning B				
	(See 2f)				
	Sec. 1	I	TWThFS	207F	Ar
	2	I	TWThFS	209F	Ar
	3	I	TWThFS	209½F	Ar
	4	I	TWThFS	321F	Ar
	5	III	MTThFS	213F	Ar
	6	III	MTThFS	212F	Ar
	7	IV	MTWFS	207F	Ar
	8	IV	MTWFS	212F	Ar
	9	IV	MTWFS	209F	Ar
	10	VI	MTWThF	207F	Ar
	11	VI	MTWThF	209F	Ar
	12	VI	MTWThF	209½F	Ar
2s*	Beginning B				
	(See 2f)				
	Sec. 1	II	MWThFS	209F	Ar
	2	VII V	MTThF W	207F	Ar
3f	Beginning C				
	(5 cred.; all; prereq., 2)				
	Sec. 1	III	MTThFS	209F	Ar
	2	VII	MTWThF	209F	Ar
3w	Beginning C				
	(See 3f)				
	Sec. 1	II	MWThFS	207F	Ar
	2	VII	MTWThF	209½F	Ar
3s	Beginning C				
	(See 3f)				
	Sec. 1	I	TWThFS	207F	Ar
	2	I	TWThFS	209F	Ar
	3	I	TWThFS	209½F	Ar
	4	I	TWThFS	321F	Ar
	5	III	MTThFS	213F	Ar
	6	III	MTThFS	212F	Ar
	7	IV	MTWFS	207F	Ar
	8	IV	MTWFS	212F	Ar
	9	IV	MTWFS	209F	Ar
	10	VI	MTWThF	207F	Ar
	11	VI	MTWThF	209F	Ar
	12	VI	MTWThF	209½F	Ar
4f	Rapid Reading				
	(5 cred.; all; prereq., 3)				
	Sec. 1	II	MWThFS	209F	Ar
	2	II	MWThFS	212F	Ar
	3	III	MTThFS	102F	Ar
	4	IV	MTWFS	316F	Ar
	5	VII	MTWThF	207F	Ar
4w	Rapid Reading				
	(See 4f)				
	Sec. 1	III	MTThFS	209F	Ar
	2	VII	MTWThF	209F	Ar

* Credit is usually not given for more than one beginning language. See paragraph 2, page 6.

No.	Title	Hour	Day	Bldg.	Instructor
4s	Rapid Reading ..... (See 4f)				
	Sec. 1	II	MWThFS	207F	Ar
	2	VII V	MTThF W	209½F	Ar
7f	Prose and Poetry ..... (5 cred.; all; prereq., 2 yrs. prep. German)	III	MTThFS	207F	Ar
8w	Adv. Prose and Poetry ..... (5 cred.; all; prereq., 7)	III	MTThFS	207F	Ar
15f	Narr. Prose for Pre-Medics .... (4 cred.; pre-med.; prereq., 2 yrs. prep. German)	I	MTWTh	212F	Ar
24f-25w-26s†	Begin. for Chemists ..... (12 cred.; chemists, miners; no prereq.)	IV	MTWF	209½F	Ar
27f	Narr. Prose for Chemists ..... (3 cred.; chemists, miners; prereq., 26 or 2 yrs. prep. German)	II	MWF	209½F	Ar
28w-29s†	Chemical German ..... (6 cred.; chemists, miners; prereq., 27 or 4)	II	MWF	209½F	Ar
31w-32s†	Medical German ..... (6 cred.; pre-med.; prereq., 4 or 15)				
	Sec. 1	I	MWF	212F	Ar
	2	I	MWF	109F	Ar
	3	I	TThS	212F	Ar
(31s)-32f†	Medical German ..... (See 31f-32w)	I	TThS	107F	Ar
31s-(32f)†	Medical German	I	MWF	217F	Ar
50f-51w-52s†	Composition ..... (6 cred.; jr., sr.; prereq., 4 or 4 yrs. prep. German)	IV	TS	213F	Mr. Schlenker
56f-57w†	Essay Writing ..... (6 cred.; jr., sr.; prereq., 52)	III	MWF	209½F	Mr. Kroesch
62w¶	Nineteenth-Century Prose ..... (5 cred.; jr., sr.; prereq., 4 or 8, or 4 yrs. prep. German)	II	MWThFS	212F	Mr. Lussky
62s¶	Nineteenth-Century Prose ..... (See 62w)	III	MTThFS	209F	Ar
63f¶	Modern Drama ..... (3 cred.; jr., sr.; prereq., 4 or 8)	IV	MWF	217F	Mr. Lussky
64w	Classic Drama ..... (3 cred.; jr., sr.; prereq., 62 or 63)	IV	MWF	217F	Mr. Lussky
65s	Survey through Reformation ... (3 cred.; jr., sr.; prereq., 3 cred. above 60)	III	TThS	209½F	Mr. Kroesch
66f	Eighteenth-Century Survey ..... (3 cred.; jr., sr.; prereq, 3 cred. above 60)	III	TThS	209½F	Mr. Burkhard

† The entire course must be completed before credit is received for any quarter.
( ) Numbers in parentheses do not refer to the year 1926-27. See Course Numbering, page 20.
¶ Students may not receive credit for both 62 and 63.

No.	Title	Hour	Day	Bldg.	Instructor
67w	Nineteenth-Century Survey ... (3 cred.; jr., sr.; prereq., 3 cred. above 60)	III	TThS	209½F	Mr. Burkhard
77s	Faust I ..... (3 cred.; jr., sr.; prereq., 62 or 64 or 6 cred. above 60)	IV	MWF	302F	Mr. Schlenker
100-101-102†	*Middle High German* ..... (9 cred.; sr., grad.; prereq., 65 and 11 cred. above 60)	*Not offered in 1926-27*			
108s	Phonetics ..... (3 cred.; sr., grad.; prereq., 9 senior college cred. in mod. lang.)	III	MWF	209½F	Mr. Kroesch
109f-110w-111s†	Hist. of German Language .... (9 cred.; sr., grad.; prereq., see statement under Comp. Phil.)	Ar	Ar	Ar	Mr. Klaeber
115f-116w-117s†	Middle High German Literature (9 cred.; sr., grad.; prereq., 65 and 11 credits above 60)	VII, VIII, IX	W	314Lib	Mr. Kroesch
140-141-142†	*Early New High German Literature, 1500-1700* ..... (9 cred.; sr., grad.; prereq., 67 and 11 cred. above 60)	*Not offered in 1926-27*			
150f-151w-152s†	Novelle ..... (9 cred.; sr., grad.; prereq., 67 and 11 cred. above 60)	VII, VIII, IX	T	315Lib	Mr. Burkhard
153-154-155†	*Studies in German Literature of the Nineteenth Century—Austrian Drama* ..... (9 cred.; sr., grad.; prereq., 67 and 11 cred. above 60)	*Not offered in 1926-27*			
160-161-162	*Lyric Poetry* ..... (9 cred.; sr., grad.; prereq., 66 or 67 and 11 cred. above 60)	*Not offered in 1926-27*			
163f-164w-165s†	German and English Literary Relations, 16th, 17th, 18th centuries ..... (9 cred.; sr., grad.; prereq., 65 or 67 and 11 cred. above 60)	VII, VIII, IX	M	301Lib	Mr. Davies
225f-226w-227s†	Lit. Problems (Drama of Fifteenth Century) ..... (9 cred.; grad., sr. with completed major sequence)	VII, VIII, IX	Th	301Lib	Mr. Schlenker

GREEK

Major Adviser

Professor Savage.

Major Sequence

Prerequisite: Courses 14, 15, and 16 or their equivalent.

Courses 51, 52, 53, 105, 106 or 107, 108 or 109; and Latin 51, 52, 53, or History 133, 134, 135.

† The entire course must be complete before credit is received for any quarter.

Modifications of this sequence will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w†-3s	Beginning Greek ..... (15 cred.; all; no prereq.)	IV	MTWFS	114F	Mr. Savage Miss Strong
14f	History: Xenophon ..... (3 cred.; all; prereq., 1-2-3)	III	TThS	108F	Miss Strong
15w	History: Herodotus ..... (3 cred.; all; prereq., 1-2-3)	III	TThS	108F	Mr. Savage
16s	Epic Poetry: Homer ..... (3 cred.; all; prereq., 14 or 15)	III	TThS	108F	Miss Strong
17f,w	Greek Sources (Everyday Greek) (2 cred.; soph., jr., sr.; prereq., 1 yr. of any foreign language)	VIII	TTh	114F	Mr. Savage, Miss Strong
17s	Greek Sources (Everyday Greek) (See 17f,w)	I	TTh	114F	Miss Strong
51f	Philosophy ..... (3 cred.; jr., sr.; prereq., any two of 14, 15, and 16)	Ar	Ar	112F	Mr. Savage
52w	Oratory ..... (3 cred.; jr., sr.; prereq., any two of 14, 15, and 16)	Ar	Ar	112F	Mr. Savage
53s	Dramatic Poetry ..... (3 cred.; jr., sr,; prereq., 51 or 52)	Ar	Ar	112F	Mr. Savage
105f	Lyric Poetry ..... (3 cred.; sr., grad.; prereq., 53)	Ar	Ar	112F	Mr. Savage
106w*	Advanced Drama ..... (3 cred.; sr., grad.; prereq., 53 or 105)	Ar	Ar	112F	Mr. Savage
107w*	Advanced Prose ..... (3 cred.; sr., grad.; prereq., 51-52, or 51-53, or 52-53)	Ar	Ar	112F	Mr. Savage
108s§	Advanced Epic Poetry ..... (3 cred.; sr., grad.; prereq., 105 or 106)	Ar	Ar	112F	Mr. Savage
109s§	New Testament ..... (3 cred.; jr., sr., grad.; prereq., 51 and 52)	Ar	Ar	112F	Mr. Savage
	Courses for Which No Knowledge of Greek Is Required				
42s¶	Greek Sculpture ..... (2 cred.; jr., sr.; no prereq.)	VII	TTh	114F	Mr. Savage
43f¶‡	Greek Drama ..... (2 cred.; jr., sr.; no prereq.)	VII	TTh	114F	Mr. Savage
44w¶‡	Greek Literature and Life ..... (2 cred.; jr., sr.; no prereq.)	VII	TTh	114F	Mr. Savage
44s¶‡	Greek Literature and Life ..... (See 44w)	I	WF	114F	Mr. Savage
45f¶	Greek Mythology ..... (2 cred.; jr., sr.; no prereq.)	I	WF	114F	Mr. Savage
45w¶	Greek Mythology ..... (See 45f)	I	WF	114F	Mr. Savage

* Courses 106 and 107 are offered alternately.
† The entire course must be completed before credit is received for any quarter.
§ Courses 108 and 109 are offered alternately.
‡ Students may not get credit for both Courses 43 and 44 except by special permission.
¶ Not a senior college course. Not open to sophomores.

HISTORY

Major Advisers

Professors Buck, Gras, Krey, Shippee, and White.

General statement.—A student electing a major sequence in history will take a minimum of twenty-five (25) credits in junior college courses in history and political science and a minimum of thirty (30) credits in senior college courses in history distributed as indicated below.

Students electing a major sequence in history will be expected to have taken History 1-2 or 2-3 or 4-5, also History 7-8 and Political Science 1.

Students who enter from other institutions, or who for acceptable reasons have not met these requirements, may be permitted by their advisers to make up during the junior year not more than 15 credits from the above courses.

Major Sequences

During the junior year the student majoring in history will take: (A) one of the following: 82-83-84, 103, 105, 119, 120, 128, 134, 135, 113-114-115, 116-117-118, 148-149; and (B) if Course 1-2 or 2-3 has not been taken either History 101-102, or 106-107-108, or 131-132; if Course 4-5 has not been taken, either 109 or 121.

During the senior year the student will elect ten credits from courses numbered 151 to 200.

During the junior and senior years, the student will elect additional courses in history from those numbered above 51 sufficient to make a total of at least 30 credits.

Modifications of these sequences will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

NOTE.—The following courses in Political Science carry credit also in this department: 136-137, Far Eastern Government and Politics; 138-139, Far Eastern Diplomacy.

No.	Title	Hour	Day	Bldg.	Instructor
1f*	Modern World, 1648-1795 ..... (5 cred.; all; no prereq.)				
	Lect.	II	TThS	OLAud	Mr. Ford, Mr. Harding
	Sec. 1	I	MW	311½F	
	2	I	MW	111OL	
	3	I	MW	305F	
	4	I	MW	306F	
	5	I	MW	303F	
	6	II	MW	109F	
	7	II	MW	311½F	
	8	II	MW	305F	
	9	II	MW	213F	
	10	II	MW	125F	
	11	II	MW	111OL	
	12	III	MW	114F	
	13	III	TTh	311F	
	14	III	TTh	311½F	
	15	V	MW	111OL	
	16	V	MW	112OL	
	17	VII	MW	221OL	
	18	VII	TTh	112OL	
	19	VIII	MW	305F	
	20	VIII	MW	112OL	

* To receive credit for Course 1, a student must complete both 1 and 2.

No.	Title	Hour	Day	Bldg.	Instructor
2w*	Modern World, 1795-1871 ..... (5 cred.; all; no prereq.)				
	Lect.	II	TThS	OLAud	Mr. Ford, Mr. Harding
	Sections as in 1f				
3s	Modern World, 1871 to Present (5 cred.; all; prereq., 2)				
	Lect.	II	TThS	OLAud	Mr. Ford, Mr. Harding
	Sections as in 1f				
4f-5w†	England, 1066 to Present ..... (10 cred.; all; no prereq.)				
	Lect.	VII	MW	OLAud	Mr. White
	Sec. 1	I	TThS	112OL	
	2 (pre-legal)	I	TThS	109F	
	3	II	TThS	209OL	
	4 (pre-legal)	II	TThS	107F	
	5	III	TThS	201F	
	6 (pre-legal)	III	TThS	305F	
	7 (pre-legal)	VI	TThF	110F	
	8	VII	TThF	6F	
	9	VII	TThF	113F	
	10 (pre-legal)	VII	TThF	15F	
4s-(5w)†	England, 1066 to Present ..... (See 4f-5w)	III	MTThFS	211OL	Mr. White
7f-8w†	American History ..... (10 cred.; soph., jr., sr.; no prereq.)				
	Sec. 1	I	TWThFS	209OL	Mr. Shippee, Mr. Stephenson
	2	VII	MTWThF	209OL	
9s	Recent American History ..... (5 cred.; soph., jr., sr.; prereq., 10 cred. in hist. or pol. sci.)				
	Sec. 1	I	TWThFS	209OL	Mr. Shippee, Mr. Stephenson
	2	VII	MTWThF	209OL	
11f-12w-13s†	Medieval History ..... (10 cred.; 3d qtr. fr., soph., jr., sr.; prereq., 10 cred. except for mus. and int. dec.)				
	Lect.	IV	MW	221OL	Miss Thompson
	Sec. 1	IV (fall, winter)	F	221OL	
		IV (spring)	F and Ar	221OL	
	2	IV (fall, winter)	S	221OL	
		IV (spring)	S and Ar	221OL	
16s	Europe in the Middle Ages .... (5 cred.; all; prereq., 10 cred. in hist. if taken by fr.)	II	MWThFS	221OL	Mr. Krey
33s	English Legal Institutions ..... (5 cred.; 3d qtr. fr., soph., jr., sr.; prereq., Hist. 4-5)	II	MWThFS	112OL	Mr. White
80	*Introduction to Economic History* (3 cred.; jr., sr.; prereq., 15 cred. in hist. or 10 cred. in econ. or sociol.)	*Not offered in 1926-27*			

* To receive credit for Course 1, a student must complete both 1 and 2. To receive credit for Course 2, a student must complete either 1 and 2 or 2 and 3, but students are strongly advised to begin with History 1.

† The entire course must be completed before credit is received for any quarter.

( ) Numbers in parentheses do not refer to the year 1926-27. See Course Numbering, page 20.

No.	Title	Hour	Day	Bldg.	Instructor
81	*Introduction to Economic History* (3 cred.; jr., sr.; prereq., 15 cred. in hist. or 10 cred. in econ. or sociol.)	*Not offered in 1926-27*			
82f	Economic History of the United States: Colonial Period ..... (3 cred.; jr., sr.; prereq., 15 cred. in hist. or 10 cred. in econ., pol. sci., or sociol.)	III	TThS	111OL	Mr. Gras
83w	Economic History of the United States: Early National Period (See 82)	III	TThS	111OL	Mr. Gras
84s	Economic History of the United States since 1860 ..... (See 82)	III	TThS	111OL	Mr. Gras
101-102	*French Revolution: Napoleonic Era* ..... (6 cred.; jr., sr., grad.; prereq., 15 cred. in hist. or 20 cred. in soc. sci. incl. 10 cred. in hist.)	*Not offered in 1926-27*			
103f	Pol. Hist.: Greece ..... (5 cred.; jr., sr., grad.; prereq., 20 cred. or major in Greek or Latin)	IV	MTWFS	112OL	
104s	Near East: Modern ..... (5 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist.)	IV	MTWFS	112OL	
105w	History of Rome ..... (5 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist.)	IV	MTWFS	112OL	
106f-107w-108s§	Europe, 1815-1914 ..... (9 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci.)	VII	MWF	111OL	Mr. Steefel
109s	Modern England ..... (5 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist.)	IV	MTWFS	111OL	Mr. Harding
111w	European Background of American Immigration ..... (4 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist.)	VI	TWThF	111OL	Mr. Stephenson
112s	American Immigration ..... (4 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist.)	VI	TWThF	111OL	Mr. Stephenson
113f-114w-115s	Econ. Hist. of Europe since 1750 (9 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci.)	II	TThS	111OL	Mr. Gras
116-117-118	*Econ. Hist. of Europe, 1300-1750* (9 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci.)	*Not offered in 1926-27*			

§ With the permission of the instructor, a student may enter the second or third quarter.

No.	Title	Hour	Day	Bldg.	Instructor
119s	Renaissance and Reformation ... (5 cred.; jr., sr., grad.; prereq., 15 cred.)	III	MTThFS	112OL	Mr. Krey
120f	Medieval Civilization ..... (5 cred.; jr., sr., grad.; prereq., 15 cred.)	III	MTThFS	112OL	Mr. Krey
121w	English Backgrounds and American Colonization ..... (5 cred.; jr., sr., grad.; prereq., 20 cred. in hist. or pol. sci.)	II	MWThFS	112OL	Mr. White
123s	Introduction to the History of Russia ..... (4 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. Hist. 1-2 or 16)	II	MWF	303F	Mr. Steefel
124f	European Expansion ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in hist. incl. 1-2, or 106-107-108)	II	MWF	211OL	Mr. Steefel
125f-126w†	American Diplomatic History ... (6 cred.; jr., sr., grad.; prereq., 20 cred. in hist. and pol. sci. or 15 in hist. or pol. sci.)	III	MWF	221OL	Mr. Shippee
127w	Feudal Institutions ..... (5 cred.; jr., sr., grad.; prereq., 15 cred.)	III	MTThFS	112OL	Mr. Krey
128	*Rise of Nationalism in Europe* .. (5 cred.; jr., sr., grad.; prereq., 15 cred.)	*Not offered in 1926-27*			
131f-132w	France under Louis XIV and Louis XV ..... (6 cred.; jr., sr., grad.; prereq., 15 cred. in hist. or 20 in soc. sci. incl. 10 in hist.)	I	TThS	111OL	Mr. Harding
133s	Near East: Old Orient ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist.)	Ar	Ar	Ar	
134s	Ancient Civilization: Greece ... (3 cred.; jr., sr., grad.; prereq., 20 cred. incl. 103 or equiv. or major in Greek or Latin and consent of instr.)	Ar	Ar	Ar	
135s	Ancient Civilization: Rome .... (3 cred.; jr., sr., grad.; prereq., 134 or consent of instructor; 20 cred. incl. 105 or equiv., or major in Greek or Latin and consent of instr.)	Ar	Ar	Ar	
136f-137w	Far Eastern Government and Politics	See Political Science program			
138-139†	*Far Eastern Diplomacy*	*Not offered in 1926-27*			
141	*West in Amer. Hist. to 1815* .. (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist. incl. 7-8)	*Not offered in 1926-27*			

† The entire course must be completed before credit is received for any quarter.

No.	Title	Hour	Day	Bldg.	Instructor
142	*West in Amer. Hist. 1815-1865* (3 cred.; jr., sr., grad.; prereq., see 141)	*Not offered in 1926-27*			
143w	American Political Parties .... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist. incl. 7-8 or equiv.)	II	MWF	221OL	Mr. Stephenson
144f-145w†	History of Minnesota ..... (6 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. 7-8 or consent of instr.)	II	TThS	221OL	Mr. Buck
146-147†	*Constitutional Hist. of U. S.* ... (6 cred.; jr., sr., grad.; prereq., 15 cred. in hist. or 10 cred. in hist. and 10 in soc. sci. incl. Pol. Sci. 1)	*Not offered in 1926-27*			
148f-149w†	English Colonies in America ... (6 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. 10 in hist., or 15 cred. in hist.)	I	MWF	112OL	Mr. Harding
152	*Select Topics, West to 1815* ... (5 cred.; sr., grad.; prereq., 20 cred. incl. 7-8 or equiv.)	*Not offered in 1926-27*			
153	*Topics, West since 1865* ..... (5 cred.; sr., grad.; prereq., 20 cred. incl. 7-8)	*Not offered in 1926-27*			
154s	Topics, Minnesota ..... (5 cred.; sr., grad.; prereq., 20 cred. incl. 7-8)	VIII, IX	TTh	328Lib	Mr. Buck
155	*United States, 1850-1865* ..... (5 cred.; sr., grad.; prereq., 20 cred. incl. 7-8)	*Not offered in 1926-27*			
156f	U. S. Reconstruction ..... (5 cred.; sr., grad.; prereq., 20 cred. incl. 7-8)	VIII, IX	WF	328Lib	Mr. Shippee
157f-158w	Topics, Nineteenth Century .... (10 cred.; sr., grad.; prereq., 20 cred. incl. 106-107-108, 101-102, or 129-130; equiv. of Hist. 2-3 and French or German)	VIII, IX	TTh	339Lib	Mr. Steefel
162f	Beginnings of Parliament ..... (5 cred.; sr., grad.; prereq., 20 cred., knowledge high school Latin)	VIII, IX	TTh	328Lib	Mr. White
164w	Studies in Crusades ..... (5 cred.; sr., grad.; prereq., 20 cred., knowledge high school Latin)	VIII, IX	TTh	Ar	Mr. Krey
166f	Topics, Hist. of Immigration .. (5 cred.; sr., grad.; prereq., 20 cred., consent of instr.)	VIII, IX	TTh	Ar	Mr. Stephenson
168s	Topics, American Foreign Relations ..... (5 cred.; sr., grad.; prereq., 20 cred. in hist. incl. 9, or 20 cred. in pol. sci.)	IX, X	TTh		Mr. Shippee

† The entire course must be completed before credit is received for any quarter.

No.	Title	Hour	Day	Bldg.	Instructor
169	*Econ. Hist. of U. S. since 1865* (3 cred.; sr., grad.; prereq., 20 cred. in hist. or econ.)	*Not offered in 1926-27*			
183s	Stuart Period ..... (5 cred.; sr., grad.; prereq., 20 cred. incl. 4-5)	VIII, IX	MW	328Lib	Mr. Willson

HOME ECONOMICS

COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

NOTE.—Only courses with 15 credits prerequisite will count as senior college courses.

Junior College Courses

No.	Title	Hour	Day	Bldg.	Instructor
3s	Textiles ..... (5 cred.; all; no prereq.) (Limited to 24)	I, II	MTWThF	311,307HE	Miss Weller
4f,s	Textiles (Ed., S. L. & A.) ..... (3 cred.; not open to students in H. E.; no prereq.) (Limited to 24)	VI, VII	MWF	311,307HE	Miss Weller, Miss Eppel
11f,s	Garment Making ..... (3 cred.; all; no prereq.)				
	Sec. 1	I, II	MWF	304HE	Miss Gorham, Miss Sell
	(Limited to 24 each) 2	I, II	TThS	304HE	Miss Gorham, Miss Sell
	3	VI, VII, VIII	TTh	304HE	Miss Gorham, Miss Eppel
11w	Garment Making				
	(See 11f) Sec. 1	I, II	TThS	304HE	Miss Gorham
	2	VI, VII, VIII	TTh	304HE	Miss Gorham
13f,s	Dressmaking ..... (5 cred.; all; prereq., 3, 11, 50, 51, home pract. in garment making) (Limited to 24 students)	I, II	MTWThF	305HE(f) 114HE(s)	Miss Gorham
		III, IV	MTWFS	304HE	Miss Little
21f	Foods and Cookery ..... (5 cred.; soph., jr., sr.; prereq., organ. chem.*)	I, II	MTWThF	209HE	Miss Olson
21w,s	Foods and Cookery				
	(See 21f) Sec. 1	VI, VII	MTWThF	209HE	Miss Olson
	(Limited to 20 each) 2	III, IV	MTWFS	209HE	Miss Kolshorn
22f,w	Food Economics ..... (5 cred.; soph., jr., sr.; prereq., 21 or 26)	III, IV	MTWFS	203,207HE	Miss Kolshorn
22s	Food Economics				
	(See 22f) Sec. 1	III, IV	MTWFS	203,207HE	Miss Kolshorn
	(Limited to 20 each) 2	VI, VII	MTWThF	203,207HE	Miss Child, Miss Kolshorn
50f	Color and Design I ..... (3 cred.; no prereq.)				
	Sec. 1	I-II	MWF	401HE	
	2	I-II	TThS	401HE	Miss L. Stoddard

* Course 21 may be taken parallel with 4.

No.	Title		Hour	Day	Bldg.	Instructor
50w	Color and Design I					
	(See 50f)	Sec. 1	I-II	MWF	401HE	
		2	I-II	TThS	401HE	
50s	Color and Design I					
	(See 50f)	Sec. 1	I-II	TThS	402HE	
		2	I-II	TThS	112HE	Miss L. Stoddard
52f	Art History and Appreciation .. (3 cred.; 3d qtr. soph., jr., sr.; prereq., 50, 51)					
		Sec. 1	VIII	MWF	313HE	Miss V. Goldstein
		2	III	TThS	313HE	Miss V. Goldstein
52w	Art History and Appreciation .. (See 52f)		VIII	MWF	313HE	Miss V. Goldstein
52s	Art History and Appreciation ..					
	(See 52f)	Sec. 1	II	MWF	313HE	Miss V. Goldstein
		2	VIII	MWF	313HE	Miss V. Goldstein
53f	Advanced Design ..... (3 cred.; soph., jr., sr.; prereq., 50-51 or 56)					
		Sec. 1	III, IV	MWF	402HE	Miss H. Goldstein
		2	VI, VII	MWF	402HE	Miss H. Goldstein
53w	Advanced Design					
	(See 53f)	Sec. 1	VI, VII	MWF	402HE	Miss V. Goldstein
	(Limited to 20)	2	VI, VII, VIII	TTh	402HE	Miss V. Goldstein
53s	Advanced Design					
	(See 53f)	Sec. 1	III, IV	MWF	402HE	Miss V. Goldstein
		2	VI, VII	MWF	402HE	Miss H. Goldstein
56f	Application of Color and Design (3 cred.; no prereq.)		VI, VII, VIII	TTh	402HE	Miss V. Goldstein
70f	Food Preparation ..... (3 cred.; ‡; prereq., 10 cred. in a laboratory science) (Limited to 20)		VI, VII	MWF	209HE	Miss Osbeck

Senior College Courses

17f,w	Advanced Clothing Construction (3 cred.; jr., sr.; prereq., 13, 53) (Limited to 24)		III, IV	MWF	305HE	Miss C. Brown, Miss Gorham
17s	Advanced Clothing Construction (See 17f,w)					
		Sec. 1	III, IV	MWF	305HE	Miss C. Brown, Miss Gorham
		2	I, II	TThS	305HE	Miss Gorham
71w	Elementary Dietetics ..... (3 cred.; jr., sr.‡; prereq., 70)		VI, VII	MWF	207,313HE	Miss Osbeck
72s	Special Problems in Home Management ..... (3 cred.; jr., sr.‡; prereq., H. E. 71, Econ. 6-7 prereq. or parallel)		VI	MWF	103,106HE	Miss Osbeck
123f,w	Clothing Economics ..... (2 cred.; jr., sr.; prereq., 13, Econ. 6-7)		III	TTh	203,313HE	Miss Weller

‡ Open to sophomores only in their third quarter. Not open to students in Home Economics except by special permission of the chief of the division.

No.	Title		Hour	Day	Bldg.	Instructor
131f	Home Management: House Planning and Equipment ..... (5 cred.; sr.; prereq., 52, 53) (Limited to 20)		III, IV	MTWFS	401HE	Miss Morse
131w	Home Management: House Planning and Equipment ..... (See 131f)		VI, VII	MTWThF	401HE	Miss Morse
131s	Home Management: House Planning and Equipment ..... (See 131f)	Sec. 1	I, II	MTWThF	401HE	Miss Morse
		2	VI, VII	MTWThF	401HE	Miss Morse

HUMAN ANATOMY

MEDICAL SCHOOL

For Course 2, Elementary Anatomy, primarily for nurses, see Nursing School program.

Students in this college may elect other courses in human anatomy (see Medical School program) only by arrangement with the head of the Department of Anatomy.

HUMAN PHYSIOLOGY

MEDICAL SCHOOL

Major Advisers

Professors Scott and McClendon.

Major Sequences

Sequence A. Physiology. 100-101; 103; 104; 6 credits in courses numbered 113 to 140, or Animal Biology, 109-110.

Sequence B. Physiologic Chemistry. 100-101; 103; 104; 6 credits in courses numbered 138 to 164, or suitable courses in agricultural biochemistry approved by the major adviser.

Modifications of these sequences will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

No.	Title		Hour	Day	Bldg.	Instructor
4w,s,su	Human Physiology ..... (5 cred.; all; prereq., 1 qtr. biol., 1 qtr. chem.)					
		Lect.	IV	MTWFS	315MH	Dr. Greisheimer and others
		Lab.	I, II, III	Th		
57f	Physiol. Chemistry ..... (4 cred.; jr., sr.; prereq., An. Biol. 1-2 or 5-6-7; Inorg. Chem. 1-2-3 or 4-5)		I	TThS	310MH	Mr. Pettibone and others
	Div. A	Lab.	II, III, IV	T		
	B		VI, VII, VIII	W		
58w,su-59s,su	Human Physiology ..... (8 cred.; jr., sr.; prereq., An. Biol. 1-2, or 5-6-7; Inorg. Chem. 1-2-3 or 4-5)		I	TThS	301MH	Dr. Lyon, Mr. Visscher, and others
	Div. A	Lab.	II, III, IV	T		
	B	Lab.	VI, VII, VIII	W		

No.	Title	Hour	Day	Bldg.	Instructor
100w-101s, 100su-101su*	Physiol. Chemistry ..... (12 cred.; jr., sr.; prereq., biol., org. chem., and physics)	IV	MWF	301MH	Mr. McClendon, Mr. Pettibone, and others
	Div. A Lab.	I, II, III	TTh		
	B Lab.	I, II, III	FS		
103f,su*	Physiology of Muscles, etc. .... (9 cred.; jr., sr.; prereq., an. biol. and org. chem.)	IV	MTWF	301MH	Mr. Scott, Dr. Greisheimer, Mr. Visscher, and others
		VI-VIII	MWF		
104w,su*	Physiol. of Nervous System, etc. (7 cred.; jr., sr.; prereq., an. biol. and org. chem.)	IV	MWFS	301MH	Dr. Lyon, Mr. Scott, and others
	Div. A	VI-VIII	M		
	B	VI-VIII	F		

For other courses see Medical School bulletin and programs.

JOURNALISM

The program of courses in Journalism for the year 1926-27 will be published later.

LATIN

Major Advisers

Professor Pike.

Major Sequence

Courses 51 or 71, 52 or 62, 53 or 63, and one of the following combinations: (a) 121, 122, 123, and 131, 132, 133; (b) 121, 122, 123 and Greek 51, 52, 53 or History 133, 134, 135 or History 103, 104, 105; (c) 131, 132, 133 and Greek 51, 52, 53 or History 133, 134, 135 or History 103, 104, 105. (Prerequisites: any two of 21, 22, and 23.)

Modification of this sequence will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

Students entering with one year of Latin will take 3, or 2 and 3. Students entering with two years of Latin will take any two of 11, 12, and 13 in their first year and any two of 21, 22, 23 in their second year. Students entering with three years of Latin will take any two of 21, 22, 23. Students entering with no Latin will take 1-2 and 3 in their first year; any two of 11, 12, and 13 in their second year; and any two of 21, 22, and 23 in their third year.

Junior College Courses

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w†§	Beginning Latin ..... (10 cred.; all; no prereq.)				
	Sec. 1	IV	MTWFS	109F	Mrs. Babcock
	2	VI	MTWThF	109F	Miss Lundstrom

* Students may register for lectures without laboratory.

† The entire course must be completed before credit is received for any quarter.

§ Credit is usually not given for more than one beginnig language. See paragraph 2, page 6.

No.	Title	Hour	Day	Bldg.	Instructor
3s	Caesar ..... (5 cred.; all; prereq., 1-2 or 1 yr. Latin)				
	Sec. 1	IV	MTWFS	109F	Miss Lundstrom
	2	VI	MTWThF	109F	Miss Lundstrom
11f	Virgil I and II ..... (5 cred.; all; prereq., 1-2, 3, or 2 yrs. Latin)				
	Sec. 1	III	MTThFS	109F	Mrs. Babcock
	2	VI	MTWThF	107F	Mrs. Babcock
	3	VII	MTWThF	110F	Miss Lundstrom
12w	Virgil III and IV ..... (5 cred.; all; prereq., 1-2, 3, or 2 yrs. Latin)				
	Sec. 1	III	MTThFS	109F	Mrs. Babcock
	2	VI	MTWThF	107F	Mrs. Babcock
	3	VII	MTWThF	110F	Miss Lundstrom
13s	Ovid ..... (5 cred.; all; prereq., 1-2, 3, or 2 yrs. Latin)	III	MTThFS	109F	Mrs. Babcock
21f	Selections ..... (5 cred.; all; prereq., any two of 11, 12, 13, or 3 or 4 yrs. of Latin)	IV	MTWFS	107F	Mr. Pike
22w	Selections and Survey ..... (5 cred.; all; prereq., any two of 11, 12, 13, or 3 or 4 yrs. of Latin)	IV	MTWFS	107F	Mr. Pike
23s	Plautus and Terence ..... (5 cred.; all; prereq., any two of 11, 12, 13, or 3 or 4 yrs. of Latin)	IV	MTWFS	107F	Mrs. Babcock

Students entering winter quarter.—Students with one year of Latin may elect 2w. Students with two years of Latin may elect 12w. Students with three or four years of Latin may elect 22w.

Students entering spring quarter.—Students with one year of Latin may elect 3s. Students with two years of Latin may elect 13s. Students with three or four years of Latin may elect 23s.

Senior College Courses

51f	Pliny's Letters ..... (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	III	MWF	107F	Mr. Pike
52	*Horace's Satires and Epistles* ... (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	*Not offered in 1926-27*			
53	*Suetonius, Selected Lives* ..... (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	*Not offered in 1926-27*			
62w	Horace's Odes and Epodes ..... (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	III	MWF	107F	Mr. Pike

No.	Title	Hour	Day	Bldg.	Instructor
63	*Apuleius* ..... (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	*Not offered in 1926-27*			
71	*Cicero's De Amicitia and De Senectute* ..... (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	*Not offered in 1926-27*			
73s	Advanced Grammar and Composition* ..... (3 cred.; jr., sr.; prereq., 51 and 52, or 71 and 62)	III	MWF	107F	Mr. Pike
121	*Advanced Virgil* ..... (3 cred.; jr., sr., grad.; prereq., any one of 51, 52, 53, or equiv.)	*Not offered in 1926-27*			
122w	Cicero's Letters ..... (3 cred.; jr., sr., grad.; prereq., any one of 51, 52, 53, or equiv.)	II	MWF	107F	Mr. Pike
123s	Medieval Latin ..... (3 cred.; jr., sr., grad.; prereq., any one of 51, 52, 53, or equiv.)	II	MWF	107F	Mr. Pike
131f	Juvenal ..... (3 cred.; jr., sr., grad.; prereq., any one of 51, 52, 53, or equiv.)	II	MWF	107F	Mr. Pike
132	*Seneca's Epistles* ..... (3 cred.; jr., sr., grad.; prereq., any one of 51, 52, 53, or equiv.)	*Not offered in 1926-27*			
133	*Vulgar Latin* ..... (3 cred.; jr., sr., grad.; prereq., any one of 51, 52, 53, or equiv.)	*Not offered in 1926-27*			
201-202-203	*Grad. Seminar: Tacitus* ..... (9 cred.)	*Not offered in 1926-27*			
211f-212w-213s	Grad. Seminar: Lucretius ..... (9 cred.)	VIII-IX	F	112Lib	Mr. Pike
221-222-223	*Graduate Seminar: Cicero's Phil. Works* ..... (9 cred.)	*Not offered in 1926-27*			
231f-232w-233s	Graduate Seminar	Ar	Ar	Ar	Mr. Pike

Courses for Which No Knowledge of Latin Is Required

43‡	*Roman Literature* ..... (3 cred.; jr., sr.‡; no prereq.)	*Not offered in 1926-27*			

* Required of students who expect a teaching recommendation.
‡ Not a senior college course. Not open to sophomores.

LIBRARY METHODS

No.	Title	Hour	Day	Bldg.	Instructor
1f,w,s§	Use of Books and Libraries .... (2 cred.; fr., soph. only; no prereq.)				
	Sec. 1	II	MW	5Lib	Miss Firkins
	2	IV	MW	5Lib	Mr. Russell
	3	VI	MW	5Lib	Mr. Walter
101f-102w	Bibliographic Seminar ..... (4 cred.; sr., grad.; prereq., foreign language*)	II	TTh	5Lib	Mr. Walter

NOTE.—For courses in hospital library service, consult special bulletin.

MATHEMATICS

Major Advisers

Professor Jackson; Associate Professors Brink, Hart, and Underhill.

Major Sequence

Courses 50, 51, 52, 62-63, 71; and either 102-103-104; or 106 and 107-108; or 118-119-120; or 121-122-123; or 10 credits of Physics 101-103-105. (Prerequisite: Mathematics 30.)

Modifications of this sequence will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

Junior College Courses

No.	Title	Hour	Day	Bldg.	Instructor
3f	Higher Algebra (pre-med. students only) ..... (4 cred.; pre-med. only; prereq., 1 yr. elem. alg.)	VII	MTThF	105F	Ar
3w	Higher Algebra (pre-med. students only) ..... (See 3f)	VII	MTThF	104F	Ar
4f	Algebra and Trigonometry (pre-med. students only) ..... (4 cred.; pre-med. only; prereq., 3 or 5, or prep. higher alg.)	VIII	MTThF	105F	Ar
4w	Algebra and Trigonometry (pre-med. students only) ..... (See 4f)	VII	MTThF	105F	Ar
4s	Algebra and Trigonometry (pre-med. students only) ..... (See 4f)	VII	MTThF	104F	Ar
5f	Higher Algebra ..... (5 cred.; all; prereq., 1 yr. elem. alg.)				
	Sec. 1	II	MWThFS	105F	Ar
	2	VI	MTWThF	104F	Ar

§ For students in the College of Science, Literature, and the Arts. Others must obtain a special card from the junior college office.

* Enough of one foreign language to meet the Group B requirements for admission to the Senior College, and 9 additional credits in the same or another foreign language.

No.	Title	Hour	Day	Bldg.	Instructor
5w	Higher Algebra ..... (See 5f)				
	Sec. 1	I	TWThFS	104F	Ar
	2	VI	MTWThF	105F	Ar
5s	Higher Algebra ..... (See 5f)	I	TWThFS	102F	Ar
6f¶	Trigonometry ..... (5 cred.; all; prereq., 5 or prep. higher algebra)	IV	MTWFS	104F	Mr. Brink
6w¶	Trigonometry ..... (See 6f)	VI	MTWThF	104F	Ar
6s¶	Trigonometry ..... (See 6f)	I	TWThFS	104F	Ar
7f¶	College Algebra ..... (5 cred.; all; prereq., 6)	IV	MTWFS	105F	Mr. Hart
7w¶	College Algebra ..... (See 7f)	IV	MTWFS	104F	Mr. Brink
7s¶	College Algebra ..... (See 7f)	VI	MTWThF	104F	Ar
8f¶	Commerce Algebra ..... (5 cred.; pre-bus. students; prereq., 5 or prep. high. alg.)	I	TWThFS	104F	Ar
8w¶	Commerce Algebra ..... (See 8f)	II	MWThFS	105F	Ar
8s¶	Commerce Algebra ..... (See 8f)	VI	MTWThF	105F	Ar
20f	Mathematics of Investment .... (5 cred.; all; prereq., 8, or 6 and 7)	VI	MTWThF	105F	Mr. Hart
20w	Mathematics of Investment .... (See 20f)	I	TWThFS	105F	Mr. Hart
20s	Mathematics of Investment .... (See 20f)	II	MWThFS	105F	Mr. Hart
30f	Analytical Geometry ..... (5 cred.; all; prereq., 6 and 7)	III	MTThFS	104F	Mr. Brink
30w	Analytical Geometry ..... (See 30f)	IV	MTWFS	105F	Mr. Underhill
30s	Analytical Geometry ..... (See 30f)	IV	MTWFS	104F	Mr. Brink
	Senior College Courses				
50f§	Calculus I ..... (5 cred.; jr., sr.; prereq., 30)	III	MTThFS	105F	Mr. Jackson
50w§	Calculus I ..... (See 50f)	III	MTThFS	104F	Ar
50s§	Calculus I ..... (See 50f)	IV	MTWFS	105F	Ar
51w§	Calculus II ..... (5 cred.; jr., sr.; prereq., 50)	III	MTThFS	105F	Mr. Jackson

¶ Courses 6 and 8 involve some duplication of material, and no student may take both without special permission. No student may receive credit for both of Courses 7 and 8. Pre-business students who elect mathematics to meet the requirement of 10 credits in mathematics or laboratory science, should take 5 and 8 if they have not had high school higher algebra, and 8 and 20 if they have had high school higher algebra.

§ Courses 50, 51, and 52 are open without petition to sophomores who have an average of C in the prerequisite courses and in all of their previous work.

No.	Title	Hour	Day	Bldg.	Instructor
51s§	Calculus II ..... (See 51w)	III	MTThFS	104F	Ar
52f§	Calculus III ..... (5 cred.; jr., sr.; prereq., 51)	II	MWThFS	101F	Mr. Underhill
52s§	Calculus III ..... (See 52f)	III	MTThFS	105F	Mr. Jackson
60s	Synthetic Metric Geometry ..... (3 cred.; jr., sr.; prereq., 50)	I	MWF	108F	Miss Gibbens
62w-63s	Theory of Equations ..... (6 cred.; jr., sr.; prereq., 50)	VII	MWF	101F	Mr. Bussey
70	*Hist. of Elem. Math.* ..... (3 cred.; jr., sr.; prereq., 30)	*Not offered in 1926-27*			
71	*Solid Analytical Geometry* ..... (3 cred.; jr., sr.; prereq., 50)	*Not offered in 1926-27*			
102f-103w-104s	Adv. Analytic and Synthetic Geometry ..... (9 cred.; jr., sr., grad.; prereq., 50)	Ar	Ar	Ar	Miss Gibbens
106f	Differential Equations ..... (3 cred.; jr., sr., grad.; prereq., 51)	III	MWF	108F	Mr. Underhill
107w-108s	Advanced Calculus ..... (6 cred.; jr., sr., grad.; prereq., 52)	III	MWF	108F	Mr. Hart
115-116-117	*Differential Geometry* ..... (9 cred.; jr., sr., grad.; prereq., 50-51)	*Not offered in 1926-27*			
118-119-120	*Vector Analysis* ..... (9 cred.; jr., sr., grad.; prereq., 50-51)	*Not offered in 1926-27*			
121f-122w-123s	Math. Theory of Statistics ..... (9 cred.; jr., sr., grad.; prereq., 50-51)	Ar	Ar	Ar	Mr. Jackson
140w‡	Method of Least Squares ..... (3 cred.; jr., sr., grad.; prereq., Math. 51)	See Astronomy program			
206f-207w-208s	Theory of Functions ..... (9 cred.; sr., grad.; prereq., 106, 107-108)	Ar	Ar	Ar	Mr. Brink

NOTE.—Some of the courses listed in the Graduate School bulletin are open to properly qualified juniors and seniors. For more information consult the chairman of the Department of Mathematics.

MECHANICAL ENGINEERING

COLLEGE OF ENGINEERING AND ARCHITECTURE

No.	Title	Hour	Day	Bldg.	Instructor
11f,w,s, 12f,w,s, 13f,w,s	Elem. Shop Practice ..... (2 cred. per qtr.¶; pre-dent. only; no prereq.)	VII, VIII, IX*	MW	ME	Mr. Shipley and others

* Students having conflicts with this program may register with one of the engineering or chemistry sections, with permission from Professor Shipley.

‡ Identical with Astronomy 140.

¶ Does not carry credit except for pre-dental students.

§ Courses 50, 51, and 52 are open without petition to sophomores who have an average of C in the prerequisite courses and in all of their previous work.

MILITARY SCIENCE AND TACTICS

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w	First Year Basic Course				
	(No cred.; fr.; no prereq.)				
	Sec. 1	II	MWF	A	Ar
	2	III	MWF	A	Ar
	3	VI	MWF	A	Ar
	4	VIII	MWF	A	Ar
3s	First Year Basic Course	VII,VIII,IX	T or W	A	Ar
	(No cred.; fr.; prereq., 1-2)				
4f-5w	Second Year Basic Course				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	II	MWF	A	Ar
	2	III	MWF	A	Ar
	3	VI	MWF	A	Ar
	4	VIII	MWF	A	Ar
6s	Second Year Basic Course	VII,VIII,IX	T or W	A	Ar
	(No cred.; soph.; prereq., 4-5)				
51f-52w	First Year Advanced Course ...	II	MWF	A	Ar
	(Total of five hours selected from	III	MWF	A	Ar
	the following)	VI	MWF	A	Ar
	(Cred.;‖ jr.; prereq., 4-5, 6)	VIII	MWF	A	Ar
		I, II	TThS	A	Ar
		III, IV	TS	A	Ar
		VI, VII	TTh	A	Ar
		VIII, IX	TTh	A	Ar
53s	First Year Advanced Course ...	VII,VIII,IX	T or W	A	Ar
	(Cred.;‖ jr.; prereq., 51-52)	IV	TS	A	Ar
54f-55w	Second Year Advanced Course ..	II	MWF	A	Ar
	(Total of five hours selected from	III	MWF	A	Ar
	the following)	VI	MWF	A	Ar
	(Cred.;‖ sr.; prereq.,51-52, 53)	VIII	MWF	A	Ar
		I, II	TThS	A	Ar
		III, IV	TS	A	Ar
		VI, VII	TTh	A	Ar
		VIII, IX	TTh	A	Ar
56s	Second Year Advanced Course ..	VII,VIII,IX	T or W	A	Ar
	(Cred.;‖ sr.; prereq., 54-55)	IV	TS	A	Ar

MUSIC

NOTE.—Courses in music are not open to freshmen and sophomores except those working for a major in music. But under certain conditions, freshmen and sophomores are allowed to take practical music in the General Extension Division. See General Regulations, sec. 5.

Students may enter courses in practical music any quarter.

To secure the degree of bachelor of arts with a major in music, a student must fulfill the requirements of both the Junior and Senior Colleges as stated on page 6 to 8 securing 144 credits in courses other than practical music (piano, voice, etc.). During the first two years he will register for English A-B-C, foreign language, History 11-12-13, and Psychology 1-2 and 4-5 or 7, and the following courses in music: 1-2-3,

‖ For the amount of credit given for the work of the Advanced R.O.T.C., see pages 13 and 14.

4-5-6, 7-8-9. He will take practical music under the direction of an adviser during the entire course.§

For the requirements for the degree of bachelor of music, see the special pamphlet.

Major Advisers

Professors Scott and Killeen; Associate Professor Ferguson.

Major Sequences

A. Courses 103-104-105, 106-107-108, 109-110-111, 112-113-114, 121-122-123.
B. Courses 106-107-108, 100-101-102, 109-110-111, 112-113-114, 124-125-126.
C. Courses 106-107-108, 109-110-111, 112-113-114, 86-87-88, 89-90-91.

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w-3s†	Harmony ..... (9 cred.; fr. mu.; no prereq.)				
	Sec. 1	II	MWF	Mu	Mr. Scott
	2	VI	MWF	Mu	Mr. Scott
1w-2s-(3su)†	Harmony ..... (See 1f-2w-3s)	III	MWF	Mu	Miss Reeves
4f-5w-6s†	Counterpoint ..... (6 cred.; soph. mu.; prereq., 1-2-3)	III	TTh	Mu	Mr. Ferguson
7f-8w-9s†	Ear Training ..... (Cred.;* fr., soph. mu.; no prereq.)	VI	TTh	Mu	Ar
7w-8s†	Ear Training ..... (See 7f-8w-9s)	VII	MTh	Mu	Ar
10f-11w-12s	First Year Organ ..... (6 or 12 cred.; fr. mu.)	Ar	Ar	Mu	Ar
13f-14w-15s	Second Year Organ ..... (6 or 12 cred.; soph. mu.; prereq., 10-11-12)	Ar	Ar	Mu	Ar
16f-17w-18s	First Year Pianoforte ..... (6 or 12 cred.; fr. mu.)	Ar	Ar	Mu	Ar
19f-20w-21s	Second Year Pianoforte ..... (6 or 12 cred.; soph. mu.; prereq., 16-17-18)	Ar	Ar	Mu	Ar
22f-23w-24s	First Year Violin ..... (6 or 12 cred.; fr. mu.)	Ar	Ar	Mu	Ar
25f-26w-27s	Second Year Violin ..... (6 or 12 cred.; soph. mu.; prereq., 22-23-24)	Ar	Ar	Mu	Ar
28f-29w-30s	First Year Vocal Training ..... (6 or 12 cred.; fr. mu.)	Ar	Ar	Mu	Ar

* Course 7-8-9 carries 3 credits for freshmen; none for sophomores.

† The entire course must be completed before credit is received for any quarter.

( ) Numbers in parentheses do not refer to the year 1926-27. See Course Numbering, page 20.

§ Entrance requirements, according to instrument selected, are:

Piano: Czerny's *School of Velocity* and the easier Haydn and Mozart sonatas (or equivalent).

Voice: Good natural equipment and 2 years of piano.

Violin: First ten studies from Kayser *Etudes* (or equivalent).

A student wishing to register in the music course must first pass an examination in practical music before a committee of the faculty of the Music Department. This applies also to academic juniors and seniors who wish to elect courses in practical music.

No.	Title	Hour	Day	Bldg.	Instructor
31f-32w-33s	Second Year Vocal Training ... (6 or 12 cred.; soph. mu.; prereq., 28-29-30)	Ar	Ar	Mu	Ar
34f-35w-36s	First Year of Other Orchestral Instrum nts ..... (6 or 12 cred.; fr. mu.)	Ar	Ar	Mu	Ar
37f-38w-39s	Second Year of Other Orchestral Instruments ..... (6 or 12 cred.; soph. mu.; prereq., 37-38-39)	Ar	Ar	Mu	Ar
40f-41w-42s	Orchestra	7:30 p.m.	W	Mu	Mr. Pepinsky
	String Section ..... (3 cred.; jr., sr.)	IX	T	Mu	Ar
43f-44w-45s	University Chorus‡ ..... (3 cred.; fr. and soph. mu., acad. jr., sr.)	7 p.m.	T	Mu	Mr. Killeen
86f-87w-88s	Normal Piano ..... (6 cred.; jr.; prereq., 2 yrs. piano)	VII	MWF	Mu	Miss Reeves
89f-90w-91s	Adv. Normal Piano ..... (6 cred.; sr.; prereq., 86-87-88)	VIII	MWF	Mu	Miss Reeves
92f-93w-94s	Principles of Vocal Technique (3 cred.; all; no prereq.)	III	W	Mu	Mr. Killeen
100f-101w-102s	Composition-Orchestration ..... (6 cred.; jr., sr.; prereq., 1-2-3, 4-5-6)	Ar	Ar	Mu	Mr. Ferguson
103f-104w-105s	Analysis ..... (3 cred.; jr., sr.; prereq., 1-2-3, 4-5-6)	III	T	Mu	Mr. Pepinsky
106f-107w-108s†	History of Music ..... (9 cred.; jr., sr.; prereq., 1-2-3)	II	MWF	Mu	Mr. Ferguson
109f-110w-111s†	Bach and Beethoven ..... (9 cred.; sr.; prereq., 106-107-108)	VII, VIII	TTh	Mu	Mr. Ferguson
112f-113w-114s	Ensemble ..... (6 cred.; jr.)				
	Sec. 1	II	TTh	Mu	Mr. Pepinsky
	2 (For voice students)	VII	TTh	Mu	Miss Hull
121f-122w-123s	Romantic Movement ..... (6 cred.; jr., sr.; prereq., 106-107-108)	VII	WF	Mu	MissKendall
124f-125w-126s	Advanced Harmony ..... (6 cred.; jr.; prereq., 4-5-6)	Ar	Ar	Mu	Mr. Scott

NOTE.—For more advanced courses in Music, consult special bulletin.

ORIENTATION

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w†	Orientation	III	MTThFS	301F	
	(10 cred.; entering freshmen only; no prereq.)	VI	MTWThF	301F	
1w-2s†	Orientation ..... (See 1f-2w)	III	MTThFS	209OL	

† The entire course must be completed before credit is received for any quarter.
‡ Does not carry credit for academic freshmen and sophomores.

PHILOSOPHY

Major Adviser

Professor Swenson.

Major Sequence

From 27 to 36 credits in senior college courses, including Courses 100-101-102 or 124; 135-136 or 151-152; 141-142 or 147-148.

Modifications of this sequence will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

No.	Title	Hour	Day	Bldg.	Instructor
1f	Problems of Philosophy ..... (5 cred.; soph., jr., sr.; no prereq.)				
	Sec. 1	I	TWThFS	125F	Mr. Dubs
	2	II	MWThFS	321F	Ar
	3	VII	MTWThF	322F	Mr. Dubs
1w	Problems of Philosophy ..... (See 1f)				
	Sec. 1	III	MTThFS	321F	Mr. Swenson
	2	VII	MTWThF	322F	Mr. Dubs
1s	Problems of Philosophy ..... (See 1f)				
	Sec. 1	IV	MTWFS	321F	Mr. Dubs
	2	VI	MTWThF	321F	Ar
2f	Logic ..... (5 cred.; soph., jr., sr.; no prereq.)				
	Sec. 1	III	MTThFS	321F	Mr. Swenson
	2	IV	MTWFS	321F	Ar
2w	Logic ..... (See 2f)				
	Sec. 1	IV	MTWFS	321F	Mr. Dubs
	2	VII	MTWThF	321F	Ar
2s	Logic ..... (See 2f)				
	Sec. 1	II	MWThFS	321F	Ar
	2	III	MTThFS	321F	Mr. Swenson
	3	VII	MTWThF	321F	Mr. Dubs
3f	Ethics ..... (5 cred.; soph., jr., sr.; no prereq.)	IV	MTWFS	322F	Ar
3w	Ethics ..... (See 3f)	I	TWThFS	107F	Ar
3s	Ethics ..... (See 3f)	I	TWThFS	322F	Mr. Wilde
10	*Science and Religion* ..... (2 cred.; soph., jr., sr.; prereq., 10 cred. in phil. or a science)	*Not offered in 1926-27*			
50w	Ancient and Medieval Philosophy (5 cred.; jr., sr.; prereq., 10 cred. or 15 cred. in phil. and soc. sci.)	IV	MTWFS	322F	Mr. Wilde
51s	Modern Philosophy ..... (5 cred.; jr., sr.; prereq., 10 cred. or 15 cred. in phil. and soc. sci.)	IV	MTWFS	322F	Mr. Wilde

No.	Title	Hour	Day	Bldg.	Instructor
100f	History of Religions ..... (3 cred.; jr., sr., grad.; prereq., 10 cred.)	II	TThS	322F	Mr. Dubs
101w	Psychology of Religion ..... (3 cred.; jr., sr., grad.; prereq., 10 cred.)	II	TThS	322F	Mr. Dubs
102s	Philosophy of Religion ..... (3 cred.; jr., sr., grad.; prereq., 10 cred.)	II	TThS	322F	Mr. Swenson
103	*Esthetics* ..... (3 cred.; jr., sr., grad.; prereq., 10 cred.)	*Not offered in 1926-27*			
104s	History of Esthetic Theory ..... (3 cred.; jr., sr., grad.; prereq., 10 cred.)	II	MWF	322F	Mr. Swenson
108-109	*History of Ethics* ..... (6 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 10 cred. in phil.)	*Not offered in 1926-27*			
120	*Scandinavian Philosophy* ..... (3 cred.; jr., sr., grad.; prereq., 10 cred.)	*Not offered in 1926-27*			
124f	Political and Social Ethics ..... (5 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 10 cred. in phil.)	I	TWThFS	322F	Mr. Wilde
129w	Modern Political Thought ..... (5 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 10 cred. in phil.)	I	TWThFS	322F	Mr. Wilde
135f-136w	Philosophy of Plato ..... (6 cred.; jr., sr., grad.; prereq., 10 cred.)	VIII	MWF	339Lib	Mr. Swenson
141-142	*Metaphysics* ..... (6 cred.; jr., sr., grad.; prereq., 10 cred. in phil. incl. 2)	*Not offered in 1926-27*			
147f-148w	Advanced Logic ..... (6 cred.; jr., sr., grad.; prereq., 10 cred. in phil. incl. 2)	II	MWF	322F	Mr. Swenson
151-152	*Modern Idealism* ..... (6 cred.; sr., grad.; prereq., 15 cred. in phil.)	*Not offered in 1926-27*			
161f-162w-163s	Seminar in Philosophy ..... (9 cred.; sr., grad.; prereq., 20 cred. in phil. and consent of instructor)	Ar	Ar	Ar	Mr. Wilde, Mr. Swenson

PHYSICAL EDUCATION FOR MEN

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.

Courses 1-2-3 and 4* are prescribed for all freshmen and must be taken in the first year of residence. Those students taking the required course in physical education, who cannot swim, must make a reasonable effort, as determined by the department, to

* Course 3 in Preventive Medicine may be substituted for Course 4 in Physical Education.

pass the swimming and life saving requirements, and will be assigned special hours for instruction.

For a special four-year professional course in physical education and athletic coaching, see bulletin of the College of Education. Students interested in this course should consult Professor Keller before registering.

No.	Title	Hour	Day	Bldg.	Instructor
1f,2w,3s	Freshman Physical Education ..				
	(No cred.; fr.; no prereq.)				
	Sec. 1	II	TTh	A	
	2	III	TTh	A	
	3	VI	TTh(f,w) MTh(s)	A	
	4	VII	TTh(f,w) MTh(s)	A	
	5	VIII	TTh(f,w) MTh(s)	A	
4f	Freshman Hygiene				
	(No cred.; fr.; A-H inclusive; no prereq.)				
	Sec. 1	II	T	301F	Dr. Cooke
	2	IV	T	301F	
	3	II	F	301F	
4w	Freshman Hygiene				
	(See 4f; fr.; I-R inclusive)				
	Sec. 1	IV	T	301F	Dr. Cooke
	2	II	F	301F	
	3	IV	S	301F	
4s	Freshman Hygiene				
	(See 4f; fr.; S-Z inclusive)				
	Sec. 1	III	M	301F	Dr. Cooke
	2	IV	T	301F	
	3	II	F	301F	
7f,8w,9s	Advanced Leaders				
	(3 cr.; soph., jr., sr.; prereq., 1-2-3)				
	Sec. 1	IV	T	A	
		II	TTh		
	2	IV	T	A	
		III	TTh		
	3	IV	T	A	
		VI	TTh		
	4	IV	T	A	
		VII	TTh		
	5	IV	T	A	
		VIII	TTh		
	6	II	MWF	A	
	7	III	MWF	A	
	8	IV	MWF	A	
13f,14w,15s	Corrective Work				
	(No cred.; by petition only)				
	Sec. 1	II	TTh	S	Mr. Iverson
	2	III	TTh		
	3	IV	TS		
16f,17w,18s	Drill Substitution				
	(No cred.; by petition only)				
	Sec. 1	II	MWF	S	Mr. Iverson
	2	III	MWF		
	3	IV	MWF		

PHYSICAL EDUCATION FOR WOMEN

This department aims to promote the physical efficiency of the women students. It gives physical examinations and advice to all on entrance, plans systematically to keep in close touch with them during their first two years of residence; conducts yearly consultations with, and examines when necessary, all upper class students; gives courses in hygiene; organizes neuromuscular activity leading toward organic strength, nervous stability, conscious motor control, correct bodily mechanics, skill in handling the body and in physical recreation, and the development of that valuable social quality known as good sportsmanship; co-operates 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.

Work in this department is required of all newly entering students (see Courses 1-2-3 and 4), and of all sophomores, who are permitted as free a choice among the sophomore courses as their physical condition permits (see "sophomore" courses; students who cannot swim must register for Course 22-23 during sophomore year). Physical examinations or consultations are required annually of all students.

Six credits toward graduation can be gained by taking courses in exercise (Courses 43-44-45, 66-67-68, 69-70-71).

For a special four-year professional course designed to prepare graduates for the responsible direction of physical education activities, see bulletin of the College of Education. Students desiring to enter the course should consult with the head of this department. They should be without organic disease or serious functional disorder, should have a keen sense of rhythm, and should possess qualities of personality which will win the co-operation of others.

Statement of fees.—Elementary physical training, $2.50 a quarter. All other exercise courses, including swimming, but excluding Courses 30 and 36, $2.00 a quarter. Maximum fee paid by a student in physical education, $3.50 a quarter.

No.	Title	Hour	Day	Bldg.	Instructor
1f 2w-3s*	Elem. Physical Training ..... (No cred.; required of all students; no prereq.)				
	Sec. 1	III	MWF	3, 151, 153WGm	Ar
	2	IV	MWF	3, 151, 153WGm	Ar
	3	VI	MWF	3, 151, 153WGm	Ar
	4	VIII	MWF	3, 151, 153WGm	Ar
	5	III	TThS	3, 151, 153WGm	Ar
4f	Preliminary Hygiene ..... (No cred.; required of all students; no prereq.)				
	Sec. 1	I	M	201WGm	Dr. Norris
	2	II	T	201WGm	
	3	III	W	201WGm	
	4	IV	M	201WGm	
	5	VI	T	201WGm	
4w	Preliminary Hygiene ..... (See 4f)	III	W	201WGm	Miss Anderson
4s	Preliminary Hygiene ..... (See 4f)	II	T	201WGm	Miss Anderson

* The third quarter is open to students who have not taken the preceding quarters. The winter quarter is not open to students who have not had the fall quarter.

No.	Title	Hour	Day	Bldg.	Instructor
7f-8w*	Sophomore Physical Training ..	IV	TS	153WGm	Miss Conger
	(No cred.; soph.; prereq., 1-2-3)				
9s	Archery	III	MF	Ar	Ar
	(No cred.; soph.; prereq., 1-2-3)				
10f-11w-12s‡	Sophomore Orthopedic Gymnastics	IV	TS	3WGm	Dr. Tolg
	(No cred.; soph.; prereq., 1-2-3)				
10f-11w‡	Sophomore Orthopedic Gymnastics				
	(See 10-11-12)				
	Sec. 1	VI	TTh	3WGm	Miss Denny
	2	III	MW	3WGm	Miss Denny
13f-14w-15s	Sophomore Interpretive Dancing	VI	TTh	151WGm	Miss Baker
	(No cred.; soph.; prereq., 1-2-3)				
13f-14w*	Sophomore Interpretive Dancing	III	MW	151WGm	Miss Bockstruck
	(See 13f-14w-15s)				
13s	Sophomore Interpretive Dancing	III	MW	151WGm	Miss Bockstruck
	(See 13f-14w-15s)				
16f-17w	Sophomore Games and Folk Dancing	I	TTh	151WGm	Ar
	(No cred.; soph.; prereq., 1-2-3)				
18s	Tennis				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	VII	WF	151WGm	
	2	I	TTh	151WGm	
	3	IV	TS	151WGm	
	4	VIII	TTh	151WGm	
19f	Sophomore Hockey				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	VII	WF	151WGm	
	2	V	TTh	151WGm	
	3	VIII	TTh	151WGm	
20w	Sophomore Basket-Ball				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	VII	WF	151WGm	
	2	V	TTh	151WGm	
	3	VIII	TTh	151WGm	
21s	Sophomore Baseball				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	VII	WF	151WGm	
	2	V	TTh	151WGm	
	3	VIII	TTh	151WGm	
22f,s-23w§*	Sophomore Elem. Swimming				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	IV (11:30)	MW	51WGm	Miss Conger
	2	IV (12:00)	MW	51WGm	Miss Conger
	3	VII	MW	51WGm	Miss Clayton
	4	II	TTh	51WGm	Miss Clayton
	5	IV	TS	51WGm	Miss Clayton
	6	VII	TTh	51WGm	Miss Conger
	7	VIII (3:30)	TTh	51WGm	Miss Clayton
	8	VIII (4:00)	TTh	51WGm	Miss Clayton
	9	III	MW	51WGm	Miss Clayton

* The winter quarter is not open to students who have not had the fall quarter.

‡ Students may enter course in any quarter.

§ No student may register for more than two quarters of swimming without permission. Course 22 is never closed for senior registration.

No.	Title	Hour	Day	Bldg.	Instructor
25f,s-26w§*	Sophomore Intermediate Swimming ..... (No cred.; soph.; prereq., 1-2-3, elementary swimming test)				
	Sec. 1	VIII½ (4:00)	MW	51WGm	Miss Conger
	2	III	ThS	51WGm	Miss Conger
28f,s-29w§*	Sophomore Advanced Swimming (No cred.; soph., jr., sr.; prereq., 1-2-3, intermediate swimming test)	VIII (3:30)	MW	51WGm	Miss Conger
31f,s	Sophomore Life Saving and Water Sports ..... (No cred.; soph., jr., sr.; prereq., 1-2-3 and adv. swimming test)	IX	MW	Ar	Ar
43-44-45†	*Play and Playground* ..... (3 cred.; jr., sr.; prereq., 6 qtrs.)	*Not offered in 1926-27*			
66f-67w-68s†	Interpretive Dancing ..... (3 cred.; jr., sr.; prereq., 6 qtrs.)	VII	TThF	153WGm	Miss Baker
69f-70w-71s†	Advanced Interpretive Dancing (3 cred.; jr., sr.; prereq., 13-14-15 or 66-67-68)	IV	MTS	151WGm	Miss Baker
	Courses for Which No Registration Is Required				
31f,w,s	Life Saving	IX	MW	51WGm	Miss Conger
32f,w,s	General Swimming ..... (No cred.; all; no prereq.)	IX	TThF	51WGm	
33-34-35*	Hockey, Basket-Ball, and Baseball ..... (No cred.; fr., jr., sr.; prereq., permission of director)	IX	MTWTh	151WGm	Miss Clayton, Miss Hazelton, Miss Lane

PHYSICS

Major Advisers

Professors Erikson, Miller, Tate, and Zeleny.

Major Sequence

Courses 101-103-105, plus 6 additional credits, and Mathematics 50, 51, and 52.

Modifications of this sequence will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

Courses 3, 4, 23, 24, 33, 34, 43, 44 comprise a general course in physics extending through four quarters. Those who intend to teach physics in secondary schools are advised to take Courses 52, 104, 124, 134, 144 in addition to the above general courses. Those who enter the field of industrial research are advised to take all the intermediate courses in addition to the general course.

* The winter quarter is not open to students who have not had the fall quarter.

† The entire course must be completed before credit is received for any quarter.

§ No student may register for more than two quarters of swimming without permission.

Introductory Courses

No.	Title		Hour	Day	Bldg.	Instructor
3f	Elem. of Mechanics and Sound .. (3 cred.; all; prereq., Math. 4, or 6)					
		Lect.	VIII	MWF	30Ph	Mr. Erikson
		Quiz.	II	Th	305E	
			or			
			IX	Th	100C	
3w	Elem. of Mechanics and Sound (See 3f)	Lect.	VIII	MWF	30Ph	Mr. Erikson
		Quiz.	IX	F	30Ph	
3s	Elem. of Mechanics and Sound (See 3f)	Lect.	III	TThS	30Ph	Mr. Erikson
		Quiz.	IX*	F	305E	
4f,w,s	Elem. of Mechanics Lab. ..... (1 cred.; all; prereq., 3 or reg. in 3)					
	Sec. 1		VI, VII§	T	16Ph	Mr. Erikson
	2		VIII, IX§	T	16Ph	and assistants
	3		I, II§	Th	16Ph	
	4		VIII, IX§	Th	16Ph	
9s‡	Acoustics ..... (3 cred.; all; no prereq.)		VIII	MWF	30Ph	Mr. Buchta
23f	Heat ..... (3 cred.; all; prereq., 3)					
		Lect.	III	TThS	30Ph	Mr. Miller
		Quiz.	IX	Th	100C	Mr. Miller
23w	Heat (For schedule of hours, see Physics 23w, Engineering program)					
24f	Heat Laboratory ..... (1 cred.; all; prereq., 4, 23, or reg. in 23)					
	Sec. 1		VI, VII	M	23Ph	Mr. Miller
	2		VIII, IX	M	23Ph	and assistants
	3		VI, VII	T	23Ph	
	4		VIII, IX	T	23Ph	
24w	Heat Laboratory ..... (See 24f)					
	Sec. 1		VI, VII	T	23Ph	Mr. Miller
	2		VIII, IX	T	23Ph	and assistants
	3		I, II	Th	23Ph	
	4		VIII, IX	Th	23Ph	
33f,s	Optics ..... (3 cred.; all; prereq., 3)					
		Lect.	I	TThS	30Ph	Mr. Valasek
		Quiz.	IX	F	30Ph	Mr. Valasek
34f,s	Optics Laboratory ..... (1 cred.; all; prereq., 4 and 33 or 35 or reg. in 33 or 35)					
	Sec. 1		VI, VII	Th	23Ph	Mr. Valasek
	2		VI, VII	F	23Ph	Mr. Valasek

* Students who take Inorganic Chemistry 10s laboratory at VIII, IX, MWF should try to arrange with Professor Erikson for another quiz hour.

‡ Does not count as part of the pre-medical requirement in physics.

§ Students who cannot enter one of the four sections listed should register for the course at "hours to be arranged" and report to Professor Erikson.

No.	Title		Hour	Day	Bldg.	Instructor
35w	Optics					
	(2 cred.; all; prereq., 3)					
		Lect.	VI	TTh	30Ph	Mr. Valasek
		Quiz.	IX (winter)	T	30Ph	
			VIII (spring)	Th	30Ph	
43w	Electricity					
	(3 cred.; all; prereq., 3)					
		Lect.	III	TThS	30Ph	Mr. Zeleny
		Quiz.	IX	Th	100C	Mr. Zeleny
43s	Electricity (For schedule of hours, see Physics 43s, Engineering program)					
44w	Electricity Laboratory					
	(1 cred.; all; prereq., 4, 43 or reg. in 43)					
	Sec. 1		VI, VII	T	31Ph	Mr. Zeleny
	2		VIII, IX	T	31Ph	and assistants
	3		VI, VII	W	31Ph	
44s	Electricity Laboratory					
	(See 44w)					
	Sec. 1		VI, VII	T	31Ph	Mr. Zeleny
	2		VIII, IX	T	31Ph	and assistants
	3		I, II	Th	31Ph	
	4		VIII, IX	Th	31Ph	
	Intermediate Courses					
52f	Laboratory Arts					
	(3 cred.; jr., sr., prereq., 16 cred.)					
	Sec. 1		VI, VII, VIII	MW	2Ph	Mr. Buchta
	2		VI, VII, VIII	TTh	2Ph	Mr. Buchta
101f-103w-105s	Theoretical Physics		IV	MTWFS	2Ph	Mr. Tate
	(15 cred.; jr., sr., grad.; prereq., 12 cred. in phys., Math. 51)					
104w	Precision Mechanics					
	(3 cred.; jr., sr., grad.; prereq., 12 cred. and Math. 51)					
	Sec. 1		VI, VII, VIII	MW	2Ph	Mr. Buchta
	2		VI, VII, VIII	TTh	2Ph	Mr. Buchta
114f-116w-118s	Elem. Phys. Investigation		Ar	Ar	1Ph	Ar
	(3 cred.; jr., sr., grad.; prereq., 104, Math. 51)					
115f-117w-119s	Problem Course		Ar	Ar	20Ph	Mr. Buchta
	(3 cred.; jr., sr., grad.; prereq., 12 cred., Math. 51)					
124s	Pyrometry and Heat		VI-IX	MW	23Ph	Mr. Miller
	(3 cred.; jr., sr., grad.; prereq., 23 and 24)					
134f,s	Applied Optics		Ar	Ar	3Ph	Mr. Valasek
	(3 cred.; jr., sr., grad.; prereq., 33 and 34)					
144f	Elect. Measurements		See 144f, Engineering program			Mr. Zeleny
	(3 cred.; jr., sr., grad.; prereq., 43 and 44)					
146w	Elect. Meas. of Precision		Ar	Ar	12Ph	Mr. Zeleny
	(3 cred.; by permission from instructor; prereq., 144)					
148w	Radioactivity		Ar	Ar	15Ph	Mr. Erikson
	(3 cred.; jr., sr., grad.; prereq., 43, 44)					
150s	Conduction through Gases		Ar	Ar	Ar	Mr. Erikson
	(3 cred.; jr., sr., grad.; prereq., 144)					

POLITICAL SCIENCE

Major Advisers

Professors Allin, Young, Anderson, and Quigley; Associate Professors Gaus and Lambie; Assistant Professor Kumm.

Major Sequences

Prerequisites: 10 credits in history or economics and 15 credits in political science. In addition to the beginning courses in history or economics the student is urged to take one or more of the following courses: History 33, English Legal Institutions; Economics 6-7, Principles of Economics; Economics 25-26, Principles of Accounting; Psychology 1-2, General Psychology; Sociology 45, Social Statistics.

The student majoring in political science must take at least 12 credits from the courses listed in Group A, below; at least 6 credits each from the courses listed in Groups B and C; and a sufficient number of additional credits from the groups A, B, C, and D to make up a total of 33 credits.

Group A. Political Science 102; 111-112, 113; 131-132, 141; 145; 151-152; 155; 157; 158; 159.

Group B. Political Science 130; 136-137; 161; 166-167; 181; 187; 190.

Group C. Political Science 105; 121-122; 123; 124; 125-126; 127; 138-139.

Group D. Political Science 51-52-53; History 109; 124; 143; 146-147; Economics 106; 154; 162; 176; 191-192, 193; Sociology 140, 141; Civil Engineering 53; Psychology 60, 140. With the consent of the major adviser, a senior of suitable preparation may be permitted to offer one of the seminar courses as part of his major sequence under Group D.

Minor Sequences

Nine credits in senior college courses exclusive of Courses 51-52-53.

BUREAU FOR RESEARCH IN GOVERNMENT

This bureau is organized to conduct and direct special investigations into practical political and administrative problems, national, state, and local. Mr. Anderson will act as director, but all members of the staff will take part in the work of the bureau. Advanced and graduate students are strongly urged to take advantage of its facilities.

SPECIAL TRAINING COURSE

Diplomatic and Consular Service.—A special program will be arranged for students who intend to enter this field of work. Consult Mr. Allin or Mr. Quigley.

NOTE.—The following additional courses in other departments may carry credit also in this department:

Economics 62, Social Insurance; 105, History of Economic Ideas.

History 104, Near East, Modern; 106-107-108, Europe 1815-1914; 82-83-84, Economic History of the United States; 113-114-115; Economic History of Europe; 153, The West in American Politics since 1865.

Philosophy 124, Political and Social Ethics.

Geography 62, Trade Routes and Trade Centers.

Introductory Courses

No.	Title	Hour	Day	Bldg.	Instructor
1f,w,s	American Government ..... (5 cred.; soph., jr., sr., and fr. with 10 cred. in hist. or econ.; no prereq.)				
	Lect.	IV	WF	OLAud	Mr. Young
	Sec. 1	I	TThS	114F (fall, spring) 125F (spring)	
	2	III	TThS	221OL (fall, winter) 15F (spring)	
	3	VI	MWF	111OL (fall) 321F (winter) 112OL (spring)	
	4	VII	MWF	112OL	
2f,w,s	State Government ..... (5 cred.; soph., jr., sr.; prereq., 1)				
	Lect.	VI	MWF	211OL	Mr. Lambie
	Sec. 1	VI	TTh	211OL	
	2	VII	TTh	111OL	
	3	Ar	Ar	Ar	
3f,w,s	Comparative European Government ..... (5 cred.; soph., jr., sr., prereq., 1)	IV	MWF	211OL	Mr. Gaus, Mr. Harrison
	Sec. 1	III	TTh	302F	
	2	IV	TS	5F	
11f,w,s	Municipal Government ..... (5 cred.; soph., jr., sr.; prereq., 1)	I	TThS	211OL	Mr. Anderson
	Sec. 1	I	WF	211OL	
	2	I	WF	6F	
	3	II	WF	6F	
15f,w,s	Introduction to Political Science (5 cred.; soph., jr., sr.; prereq., 1)	III	MWF	111OL	Mr. Hall
	Sec. 1	III	TTh	6F	
	2	III	TTh	110F	
25f,w,s	World Politics ..... (5 cred.; soph., jr., sr.; prereq., 1 or 10 cred. in hist.)	VI	MTW	209OL	Mr. Quigley
	Sec. 1	VI	ThF	209OL	
	2	VII	ThF	221OL	
	3	III	ThS	15F (fall) 3F (winter, spring)	

Advanced Courses

No.	Title	Hour	Day	Bldg.	Instructor
51f-52w-53s*†	Business Law ..... (9 cred.; jr., sr.; prereq., 10 cred. in pol. sci. or 10 cred. in econ., or 5 cred. in each)			OLAud	Mr. Young
	Lect.	II	WF	OLAud	
	Sec. 1	I	M	110F	
	2	II	M	110F	
	3	IV	M	Ar	
	4	VI	M	217F (fall) 111OL (winter, spring)	
	5	I	T	204B (fall, winter) 217F (spring)	
	6	II	T	217F	
	7	III	T	316F	
	8	IV	T	201F	
102s	Political Parties ..... (3 cred.; jr., sr., grad.; prereq., 15 cred.)	VI	MWF	110F	Mr. Gaus
105s	Colonization ..... (3 cred.; jr., sr., grad.; prereq., 15 cred. or 20 cred. in soc. sci.)	I	MWF	221OL	Mr. Harrison
111w-112s†	Municipal Powers and Functions (6 cred.; jr., sr., grad.; prereq., 18 cred. incl. 11)	III	TThS	201F(spring) 211OL (winter)	Mr. Anderson
113	*Municipal Problems* ..... (3 cred.; jr., sr., grad.; prereq., 18 cred. incl. 11)	*Not offered in 1926-27*			
121f-122w†	International Law ..... (6 cred.; sr., grad.; prereq., 20 cred. in soc. sci.)	IV	MWF	209OL	Mr. Allin
123s	International Organization ..... (3 cred.; sr., grad.; prereq., same as for 121-122)	IV	MWF	209OL	Mr. Quigley
124	*Problems of International Law* .. (3 cred.; sr., grad.; prereq., 121-122)	*Not offered in 1926-27*			
125f-126w†	American Diplomatic History .. (6 cred.; jr., sr., grad.; prereq., 20 cred. in hist. and pol. sci. or 15 cred. in hist. *or* pol. sci.)	III	MWF	221OL	Mr. Shippee
127	*American Foreign Relations* .... (3 cred.; jr., sr., grad.; prereq., 20 cred. in hist. and pol. sci. or 15 cred. in hist. *or* pol. sci.)	*Not offered in 1926-27*			
130f	Introduction to Administration .. (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci., incl. 10 cred. in pol. sci.)	II	MWF	209OL	Mr. Gaus
131w-132s†	Principles of Public Administration ..... (6 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci., incl. 10 cred. in pol. sci.)	II	MWF	209OL	Mr. Lambie

* Cannot be counted for a minor sequence.

† The entire course must be completed before credit is received for any quarter.

No.	Title	Hour	Day	Bldg.	Instructor
136f-137w†	Far Eastern Government and Politics ..... (6 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci.)	VII	MWF	114F	Mr. Quigley
138-139†	*Far Eastern Diplomacy* ..... (6 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. Course 25, or 10 cred. in pol. sci. and Hist. 1-2 or 2-3)	*Not offered in 1926-27*			
141f	Problems in State Government and Constitutional Law ..... (3 cred.; jr., sr., grad.; prereq., 15 cred.)	VI	MWF	221OL	Mr. Kumm
145w	Legislative Power and Methods (3 cred.; jr., sr., grad.; prereq., 15 cred.)	II	TThS	211OL	Mr. Young
151w-152s†	Constitutional Law ..... (6 cred.; jr., sr., grad.; prereq., 15 cred. incl. 1 senior college course)	VI	MWF	221OL	Mr. Kumm
155s	Administrative Law ..... (3 cred.; jr., sr., grad.; prereq., 15 cred.)	I	TThS	221OL	Mr. Kumm
157f	Police Power ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci.)	II	TThS	211OL	Mr. Young
158s	Government and Business ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci.)	II	TThS	211OL	Mr. Young
159w	Law of Public Utilities ..... (3 cred.; jr., sr., grad.; prereq., 15 cred. in pol. sci. or Econ. 155)	I	TThS	221OL	Mr. Kumm
161s	Comparative Federal Government (3 cred.; sr., grad.; prereq., 20 cred.)	II	TThS	209OL	Mr. Allin
166w-167s†	Government and Politics of the British Empire ..... (6 cred.; jr., sr., grad.; prereq., 15 cred. or Hist. 109)	II	MWF	211OL	Mr. Allin
181w	Modern Political Thought ..... (5 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 10 cred. in phil.)	I	TWThFS	322F	Ar
187w	Problems of Democracy ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci.)	VI	MWF	205F	Mr. Gaus
190	Jurisprudence ..... (2 cred.; grad. and sr. of suitable preparation)	*	*		Mr. Rottschaefer

PREVENTIVE MEDICINE AND PUBLIC HEALTH

MEDICAL SCHOOL

NOTE.—Students desiring to major in this department are advised to consult the special bulletin, obtainable at the office of the registrar.

* Consult the bulletin of the Law School.

† The entire course must be completed before credit is received for any quarter.

No.	Title	Hour	Day	Bldg.	Instructor
2f	First Aid ..... (1 cred.; no prereq.) (Limited to 20 women)	VI, VII	F	§	Miss Fisher
2w	First Aid ..... (See 2f) (Limited to 20 women)	VI, VII	F	§	Miss Fisher
3f,w,s‡	Personal Hygiene and Elementary Sanitation ..... (2 cred.; fr., soph.; no prereq.) (Limited to 80 men)	IV	TS	101bMH	Dr. Lees, Dr. Cady
50f,w	Public and Personal Health ... (3 cred.; jr., sr.; prereq., An. Biol. 1-2 and Psy. 1-2)	V	MWF	101bMH	Dr. O'Brien
52f,w,s	Health Care of the Family .... (3 cred.; jr., sr.; prereq., Bact. 51, Physiol. 4) (Lab. sections limited to 20)				
	Lect.	I	S	213HE	Dr. Mayer
	Sec. 1 Lab.	VI, VII	TTh	§	Miss Fisher
	2	VI, VII (fall, spring)	MF	§	Miss Fisher
		VI, VII (winter)	TTh	§	Miss Fisher
53f,s	Elements of Preventive Medicine (3 cred.; jr., sr.; prereq., Psy. 1-2, Bact. 51 or equiv.)	II	MWF	101bMH	Dr. Diehl, Dr. Lees
58w	Maternal and Child Hygiene ... (2 cred.; jr., sr.; prereq., 50 or 52 or 53)	Ar	Ar	101bMH	Dr. Boynton, Dr. Adair, and others
59w	Social Hygiene ..... (1 cred.; jr., sr.; prereq., 50 or 52 or 53)	Ar	S	101bMH	Ar
60w	The Tuberculosis Problem ..... (2 cred.; jr., sr.; prereq.,50 or 52 or 53)	IV	TS	101bMH	Dr. Myers
61w	Mental Hygiene ..... (1 cred.; jr., sr.; prereq., 50 or 52 or 53, Psy. 1-2)	Ar	Ar	101bMH	Dr. Hamilton and others
62f,w	Principles of Public Health Nursing ..... (3 cred.; jr., sr.; for public health nurses)	II	TThS	101bMH	Miss Butzerin
63w,s	Special Fields in Public Health Nursing ..... (3 cred.; jr., sr.; public health nurses; prereq., 62 or equivalent)	Ar	Ar	101bMH	Miss Butzerin
64f,w,s	Field Practice in Infant Welfare Nursing ..... (3 cred.; jr., sr.; prereq., 58 and 62)	Ar	Ar	Ar	Miss Butzerin, Miss Peck
65f,w,s	Field Practice in School Nursing (2 cred.; jr., sr.; prereq., 62)	Ar	Ar	Ar	Miss Butzerin
66f,w,s	Field Practice in County Nursing (2 cred.; jr., sr.; prereq., 62)	Ar	Ar	Ar	Miss Butzerin

‡ Students who take this Course 3 need not take the required Physical Education Course 4.
§ Woman's Hall, University Farm.

No.	Title	Hour	Day	Bldg.	Instructor
67f,w,s	Field Practice in a Tuberculosis Sanatorium ..... (2 cred.; jr., sr.; prereq., 60 and 62)	Ar	Ar	Ar	Dr. Mariette
68f,w,s	Field Practice in Visiting Nursing ..... (5 cred.; jr., sr.; prereq., 62)	Ar	Ar	Ar	Miss Butzerin
73w	Occupational Hygiene and Disease ..... (2 cred.; jr., sr.; prereq., 53)	IV	MW	101bMH	Dr. Myers
80w,su	Educational Hygiene ..... (3 cred.; jr., sr.; prereq., 50 or 52 or 53)	II	MWF	101bMH	Dr. Diehl
102f,w,s	Sanitation ..... (Cred. ar.; jr., sr., grad.; prereq., Bact. 101; Anal. Chem. 1-2 or 7; Org. Chem. 7 or 53; Phys. 24, 34, 44)	Ar	Ar	*	Mr. Whittaker, Dr. Archibald, Mr. Childs
103s	Public Health Bacteriology .... (3 cred. or ar.; jr., sr., grad.; prereq., Bact. 101, 116)	VII, VIII or ar	MWF or ar	*	Miss Wade
105f,w,s	Vital Statistics ..... (Cred. ar.; jr., sr., grad.; prereq., 53 and Soc. 45, and open to grad. med. stud.)	Ar	Ar	*	Dr. Chesley
106f,w,s	Public Health Administration .. (Cred. ar.; jr., sr., grad.; prereq., 53 or 101)	Ar	Ar	Ar	Dr. Chesley, Dr. Diehl
107s	Sanitary Surveys ..... (2 cred.; jr., sr., grad.; prereq., 53 or 100)	Ar	Ar	Ar	Dr. Myers

PSYCHOLOGY

Major Advisers

Professors Elliott and Paterson; Assistant Professor Bills.

Major Sequences

Prerequisites: For Sequences A and C, 1-2 or 1-6 and 4-5 or 7. Course 3 is recommended. For Sequence B, 9 credits in psychology.

A. General psychology. Courses 101-102; 125-126; 108; 109 and 12 additional credits in senior college courses, excepting 56.

B. Human and animal behavior. Courses 114-115; 121-122-123; 144-145 and either 125-126 or Animal Biology 109-110, or Animal Biology 108 and 183.

C. Differential psychology. Courses 101-102; 125-126; 144-145; either 124 and 140 or Animal Biology 183; Educational Psychology 134-135.

Modification of these sequences will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

Minor Sequences

Nine credits in senior college courses exclusive of 56.

* State Board of Health.

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w†	General Psychology ..... (6 cred.; soph., jr., sr.; no prereq.)				
	Lect.	I	MW	OLAud	
	Rec. (one hour)	I	Th or F or S	Psy	
		II	Th or F or S	Psy	
		VII	Th or F	Psy	
		VIII	Th or F	Psy	
1f-6w†	General Psychology for Business Students ..... (6 cred.; bus. and pre-bus., soph., jr., sr.; no prereq.)				
	Lect.	III	MW	OLAud	
	Rec. (one hour)	III	Th or F or S	Psy	
		IV	F or S	Psy	
1w-2s†	General Psychology ..... (See 1f-2w. Registration limited. Written permission must be obtained from junior college office)	Ar	Ar	Ar	
1s,2s	General Psychology ..... (6 cred.; see 1f-2w. Registration limited. Written permission must be obtained from junior college office)	Ar	Ar	Ar	
3s	Psychology Applied to Daily Life (3 cred.; soph., jr., sr.; prereq., 1-2 or 1-6)				
	Lect.	II	MW	301F	Mr. Paterson and others
	Rec. (one hour)	I	F	Psy	
		II	Th or F	Psy	
4f-5w†	Introd. Lab. Psychology ..... (4 cred.; soph., jr., sr.; with or after 1-2, or 1-6) (Sections limited to 40)				
	Sec. 1	I, II	TTh	211Psy	Mr. Bills and others
	2 (For pre-leg. stud.)	III, IV	TS	211Psy	
	3	VI,VII	TTh	211Psy	
	4	VIII, IX	TTh	211Psy	
	5	III, IV	MW	211Psy	
7s	Introd. Lab. Psychology ..... (See 4f-5w) (Identical with 4f-5w combined)				
	Sec. 1	VI, VII	MTThF	211Psy	Mr. Bills and others
	2	III, IV	MTWF	211Psy	
9s	Animal Behavior ..... (3 cred.; soph., jr., sr.; prereq., 1-2 or 1-6)	III	MWF	109Psy	
15s	Psychology of Sensation ..... (3 cred.; soph., jr., sr.; prereq., 1-2 or 1-6)	II	TThS	Psy	
56w*	Psychology of Advertising ..... (3 cred.; jr., sr.; prereq., 1-2 or 1-6, and Prin. of Econ.)	VII	MWF	301F	Mr. Paterson

* Cannot be counted for a minor sequence.
† The entire course must be completed before credit is received for any quarter.

No.	Title	Hour	Day	Bldg.	Instructor
60f	Psychology in Personnel Work .. (3 cred.; jr., sr.; prereq., 1-2 or 1-6, and Prin. of Econ. or 10 cred. in pol. sci.)	VII	MWF	115Psy	Mr. Paterson
101f-102w†-103s	Experimental Psychology ..... (6 or 9 cred.; jr., sr., grad.; prereq., 1-2, and 4-5 or 7 or 8 cred. in physics)	VII VIII	MWF WF	116Psy	Mr. Bills
108f	Systematic Psychology ..... (3 cred.; jr., sr., grad.; prereq., 1; 2 or 6; 4-5 or 7)	III	TThS	109Psy	Miss Heidbreder
109w	Readings in Psychology ..... (3 cred.; jr., sr., grad.; prereq., 1; 2 or 6; 4-5 or 7, or An. Biol. 1-2)	III	TThS	109Psy	Miss Heidbreder
114-115†	*Human Behavior* ..... (6 cred.; jr., sr., grad.; prereq., 1; 2 or 6; 4-5 or 7, or Biol. 1-2)	*Not offered in 1926-27*			
121f-122w†-123s	Neuro-Psychology ..... (6 or 9 cred.; jr., sr., grad.; prereq., 1; 2 or 6; 114-115 or 144-145 or by permission)	VII, VIII	MWF	109Psy	Mr. Lashley
124f	Psychology of Learning ..... (3 cred.; jr., sr., grad.; prereq., 1; 2 or 6; 4-5 or 7)	IV	MWF	109Psy	Mr. Lashley
125f-126w†-127s	Psy. of Individual Differences .. (6 or 9 cred.; jr., sr., grad.; prereq., 1; 2 or 6; 4-5 or 7, or Ed. Psy. 116-117)	II	MWF	109Psy	Mr. Woodrow
130s	Vocational Psychology ..... (2 cred.; jr., sr., grad.; prereq., 1-2 or 1-6, 4 additional cred. in psy., ed., or a soc. sci.)	IX, X	F	Psy	Mr. Paterson
140s	Social Psychology ..... (3 cred.; jr., sr., grad.; prereq., 1; 2 or 6; 4-5 or 7 or Biol. 1-2 or 10 cred. in a soc. sci.)	III	TThS	109Psy	Mr. Bird
144w-145s†	Abnormal Psychology ..... (6 cred.; jr., sr., grad.; prereq., 1; 2 or 6; 4-5 or 7, or Biol. 1-2 or 10 cred. in a soc. sci.)	IV	MWF	115Psy	Mr. Lashley

ROMANCE LANGUAGES

Major Advisers

Professors Olmsted, Searles, and LeCompte; Associate Professors Barton, Phelps, and Sirich; Assistant Professors Clefton and Fichter.

Major Sequences

FRENCH

One course in conversation and composition (except French 20).

One century course, and in addition credits chosen from courses numbered 50 or above to make a minimum of 27 credits.

† Two quarters must be completed before credit is received for any quarter.

ITALIAN

Courses 71; 72; 73; 74; 159-160 or 161-162; 164; and at least 2 additional credits chosen from the following: English 140, 146-147, 148-149; French 121-122-123, 153; Greek 108; History 105, 119, 120, 135; Italian 159-160; 161-162; Latin 43, 123.

SPANISH

One course in conversation and composition (except Spanish 20).

One literary course, and in addition enough credits chosen from courses numbered 50 or above to make a minimum of 27 credits.

MIXED (French, Italian, and Spanish)

One course in conversation and composition (except French 20 or Spanish 20).

One literary course above 50, and in addition enough credits chosen from courses in any of the three languages numbered 50 or above to make a minimum of 27 credits.

Modifications of these sequences will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

Courses in French or Spanish conversation.—May be taken only when accompanied by the corresponding courses in composition. No credit will be given for work done in a course in conversation unless the course in composition is passed also. Courses in composition may be taken separately.

Prerequisites for teachers' courses.—In addition to Course 21-22-23 or Course 24-25 (or Spanish equivalent, Course 65-66-67 or Course 68-69) one conversation-composition course and one literary course.

Admission to advanced courses.—No student will be allowed to elect courses more advanced than intermediate French or Spanish, who has not received an average grade of C in the intermediate courses.

Freshmen entering with three years of high school French may take Course 20 or 4. If they take additional work in the department, they will elect Course 24-25. In like manner, students entering with three years' high school Spanish may register for Spanish 20 or 4, and if they take additional work in the department, for Spanish 68-69.

Pre-medical students may satisfy the language requirement of the Medical School by completing any two quarters of French 8-9-10, or, if they have completed French 3 or equivalent with an average of C, by passing a special reading examination. Such examinations will be given the first Saturday of the winter and spring quarters, the third day after the Science, Literature, and the Arts finals in June, and the Friday preceding the opening of the University in September.

FRENCH

No.	Title	Hour	Day	Bldg.	Instructor
(1s)-2f†*	Beginning French	I	TWThFS	202F	Ar
	(See 1f-2w)	VI	MTWThF	213F	Ar
1f-2w†*	Beginning French	I	TWThFS	213F	Ar
	(10 cred.; all; no prereq.)	II	MWThFS	227F	Ar
		IV	MTWFS	227F	Ar
		VI	MTWThF	226F	Ar
		VII	MTWThF	202F	Ar

* Credit is usually not given for more than one beginning language. See paragraph 2, page 6.
† The entire course must be completed before credit is received for any quarter.
( ) Numbers in parentheses do not refer to the year 1926-27. See Course Numbering, page 20.

No.	Title	Hour	Day	Bldg.	Instructor
1w-2s†‖	Beginning French	IV	MTWFS	202F	Ar
	(See 1f-2w)	VI	MTWThF	202F	Ar
1s-(2f)†‖	Beginning French	I	TWThFS	227F	Ar
	(See 1f-2w)	IV	MTWFS	102F	Ar
(3s)-4f	Intermediate French	II	MWThFS	306F	Ar
	(See 3f-4w)	IV	MTWFS	124F	Ar
		VI	MTWThF	202F	Ar
3f-4w	Intermediate French	I	TWThFS	124F	Ar
	(10 cred.; all; prereq., 1-2, or 2	III	MTThFS	226F	Ar
	yrs. high school French)	VII	MTWThF	213F	Ar
3w-4s	Intermediate French	I	TWThFS	202F	Ar
	(See 3f-4w)	VI	MTWThF	213F	Ar
3s-(4f)	Intermediate French	I	TWThFS	213F	Ar
	(See 3f-4w)	II	MWThFS	227F	Ar
		IV	MTWFS	227F	Ar
		VI	MTWThF	226F	Ar
		VII	MTWThF	202F	Ar
8f-9w-10s§	Scientific French (pre-medic.) ..	I	MWF	3F	Ar
	(9 cred.; pre-med.; prereq., 3 or equiv.)				
20f‡	Oral and Written French	III	MTThFS	303F	Ar
	(5 cred.; all; prereq., 4 or 3	VII	MTWThF	227F	Ar
	yrs. high school French)				
20s‡	Oral and Written French	I	TWThFS	15F	Ar
	(See 20f)	III	MTThFS	226F	Ar
		VII	MTWThF	213F	Ar
21f-22w-23s†	Survey of French Lit.	II	TThS	209½F	Mr. Sirich
	(9 cred.; all; prereq., 3-4 or 20	III	TThS	227F	Mr. Barton
	or 4 yrs. high school French)	VII	MWF	107F	Mr. Searles
24w-25s†	Survey of French Lit.	III	MTThFS	303F	Miss Phelps
	(10 cred.; all; prereq., 3-4 or 20	VII	MTWThF	303F	Miss Nissen
	or 4 yrs. high school French)				
49f,w,s	French Pronunciation	VIII	MWF	207F	Mr. Morand
	(3 cred.; all; prereq., 3-4 or 4				
	yrs. high school French)				
50f-51w-52s†	French Conversation¶	III	MW	201F	Ar
	(3 cred.; jr., sr.*; prereq., 3-4)	VI	MW	302F	Ar
53f-54w-55s†	French Composition	III	F	201F	Ar
	(3 cred.; jr., sr.*; prereq., 3-4)	VI	F	302F	Ar
56f-57w-58s†	Adv. French Conversation¶	II	MW	113F	Ar
	(3 cred.; jr., sr.*; prereq., 20	III	MW	113F	Ar
	or 50-51-52)	VI	MW	108F	Ar
59f-60w-61s†	Adv. French Composition	II	F	113F	Ar
	(3 cred.; jr., sr.*; prereq., 20,	III	F	113F	Ar
	or 53-54-55)	VI	F	108F	Ar
62w	Practical French Phonetics	VIII	MWF	203F	Mr. Ditchy
	(3 cred.; jr., sr.*; prereq., 20,				
	or 50-51-52 and 53-54-55)				

* Open without petition to sophomores who have an average of C in all their previous work and in the prerequisite courses.

† The entire course must be completed before credit is received for any quarter.

‡ See departmental requirements, note on freshmen entering with three years' high school French (or Spanish). No student may receive credit for both Course 20 and Courses 50-51-52 and 53-54-55.

§ Students may enter any quarter.

¶ Courses in conversation may be taken only when accompanied by the corresponding courses in composition. Courses in composition may be taken separately. No student may receive credit for both Course 20 and Courses 50-51-52 and 53-54-55.

‖ Credit is usually not given for more than one beginning language. See paragraph 2, page 6.

No.	Title	Hour	Day	Bldg.	Instructor
80f-81w-82s†	French Lit.: 19th Century ..... (9 cred.; jr., sr.*; prereq., 21-22-23 or 24-25)	IV VII	MWF MWF	201F 206F	Mr. Barton Mr. Clefton
100s	French Oral Diction ..... (4 cred.; jr., sr., grad.; prereq., 62)	VIII	MTWF	203F	Miss Guinotte
103f-104w-105s†	French Syntax and Comp. ..... (3 cred.; jr., sr., grad.; prereq., 59-60-61)	VI	F	203F	Mr. Barton
115f-116w-117s†	French Lit.: 17th Century ..... (9 cred.; jr., sr., grad.; prereq., 21-22-23, or 24-25)	III	MWF	227F	Mr. Searles
118f-119w-120s†	French Lit.: 18th Century ..... (9 cred.; jr., sr., grad.; prereq., 21-22-23, or 24-25)	III	TThS	114F	Mr. Sirich
121-122-123†	*French Lit.: 16th Century* .... (9 cred.; jr., sr., grad.; prereq., 80-81-82, or 115-116-117 or 118-119-120)	*Not offered in 1926-27*			
141s	Realistic Novel: 19th Century .. (4 cred.; jr., sr., grad.; prereq., 80-81-82 or 115-116-117, or 118-119-120)	VII	MTWF	203F	Mr. Morand
150f-151w-152s†	French Dramatic Lit. ..... (6 cred.; jr., sr., grad.; prereq., 21-22-23 or 24-25)	III	TTh	217F	Mr. Olmsted
153s	French Lyric Poetry ..... (4 cred.; jr., sr., grad.; prereq., 20-21-22 or 24-25)	VI	MTWTh	212F	Mr. Searles
156w	Molière ..... (4 cred.; jr., sr., grad.; prereq., 21-22-23 or 24-25)	IV	MTWF	316F	Mr. Searles
157w	Contemporary French Novel ... (4 cred.; jr., sr., grad.; prereq., 21-22-23 or 24-25)	VI	MTWTh	217F	Mr. Ditchy
171f-172w-173s†	History of French Language .. (3 cred.; jr., sr., grad.; prereq., 59-60-61)	VIII	Th	203F	Mr. Sirich
174f-175w-176s	Lectures in French ..... (6 cred.; jr., sr., grad.; prereq., 50-51-52, 53-54-55 (or 20); and 80-81-82)	IX	TTh	201F	Mr. Morand
	ITALIAN				
1f-2w†	Beginning Italian ..... (10 cred.; all; no prereq.)	II	MWThFS	203F	Miss Phelps
3s-(4f)	Intermediate Italian ..... (10 cred.; all; prereq., 1-2)	II	MWThFS	203F	Miss Nissen
71w	Modern Poetry (Leopardi, Carducci) ..... (4 cred.; jr., sr.*; prereq., 3-4‡)	III	MWThF	203F	Miss Phelps

* Open without permission to sophomores with an average of C in all their previous work and in the prerequisite courses.

† The entire course must be completed before credit is received for either quarter.

‡ For students beginning Italian in the Senior College, 1-2 and permission of instructor.

( ) Numbers in parentheses do not refer to the year 1926-27.

No.	Title	Hour	Day	Bldg.	Instructor
72	*Modern Drama (Giacosa, Bracco, Pirandello)* ..... (4 cred.; jr., sr.*; prereq., 3-4‡)	*Not offered in 1926-27*			
73s	Boccaccio ..... (4 cred.; jr., sr.*; prereq., 3-4‡)	III	MWThF	203F	Miss Phelps
74	*Petrarch* ..... (4 cred.; jr., sr.*; prereq., 3-4‡)	*Not offered in 1926-27*			
159f-160w†	Dante ..... (6 cred.; jr., sr., grad.; prereq., one course above 50)	IV	MWF	203F	Miss Phelps
161-162	*The Sixteenth Century* ..... (6 cred.; jr., sr., grad.; prereq., one course above 50)	*Not offered in 1926-27*			
164s	Dante (in English) ..... (3 cred.; jr., sr., grad.; prereq., French 21-22-23 or 24-25, or 4 cred. in Eng. besides Fr. Eng.)	IV	MWF	213F	Miss Phelps
	SPANISH				
(1s)-2f†‖	Beginning Spanish ..... (See 1f-2w)	III	MTThFS	322F	Ar
		VII	MTWThF	201F	Ar
1f-2w†‖	Beginning Spanish ..... (10 cred.; all; no prereq.)	I	TWThFS	226F	Ar
		IV	MTWFS	226F	Ar
		VI	MTWThF	201F	Ar
1w-2s†‖	Beginning Spanish ..... (See 1f-2w)	VII	MTWThF(w)	227F	Ar
		VII	MTThF(s)		
		V	W(s)		
1s-(2f)†‖	Beginning Spanish ..... (See 1f-2w)	II	MWThFS	201F	Ar
		VI	MTWThF	107F	Ar
(3s)-4f	Intermediate Spanish ..... (See 3f-4w)	II	MWThFS	202F	Ar
		IV	MTWFS	202F	Ar
		VI	MTWThF	227F	Ar
3f-4w	Intermediate Spanish ..... (10 cred.; all; prereq., 1-2 or 2 yrs. high school Spanish)	II	MWThFS	201F	Ar
		III	MTThFS	202F	Ar
		VI	MTWThF	102F	Ar
3w-4s	Intermediate Spanish ..... (See 3f-4w)	III	MTThFS	322F	Ar
		VII	MTWThF	201F	Ar
3s-(4f)	Intermediate Spanish ..... (See 3f-4w)	I	TWThFS	226F	Ar
		IV	MTWFS	226F	Ar
		VI	MTWThF	201F	Ar
20s§	Oral and Written Spanish ..... (5 cred.; all; prereq., 4, or 3 yrs. high school Spanish)	III	MTThFS	202F	Ar
30	Spanish Commercial Correspondence ..... (3 cred.; all; prereq., 3)	VII	MWF	205F	Ar
50f-51w-52s†	Spanish Conversation¶ ..... (3 cred.; jr., sr.*; prereq., 3-4)	II	MW	302F	Mr. Arjona

* Open without permission to sophomores with an average of C in all their previous work and in the prerequisite courses.

† The entire course must be completed before credit is received for any quarter.

‡ For students beginning Italian in the Senior College, 1-2 and permission of instructor.

§ See departmental requirements, note on freshman entering with three years' high school French (or Spanish). No student may receive credit for both Course 20 and Courses 50-51-52 and 53-54-55.

( ) Numbers in parentheses do not refer to the year 1926-27. See Course Numbering, page 20.

¶ Courses in conversation may be taken only when accompanied by the corresponding courses in composition. Courses in composition may be taken separately.

‖ Credit is usually not given for more than one beginning language. See paragraph 2, page 6.

No.	Title	Hour	Day	Bldg.	Instructor
53f-54w-55s†	Spanish Composition ..... (3 cred.; jr., sr.*; prereq., 3-4)	II	F	302F	Mr. Arjona
56f-57w-58s†	Adv. Spanish Conversation¶ .... (3 cred.; jr., sr.*; prereq., 20 or 50-51-52)	VI	MW	203F	Mr. Fichter
59f-60w-61s†	Adv. Spanish Composition ..... (3 cred.; jr., sr.*; prereq., 20 or 53-54-55)	VI	F	217F (fall, winter) 212F (spring)	Mr. Fichter
62	*Practical Spanish Phonetics* .... (3 cred.; jr., sr.*; prereq., 65-66-67, and 20, or 50-51-52 and 53-54-55)	*Not offered in 1926-27*			
65f-66w-67s†	Survey of Spanish Lit. ..... (9 cred.; jr., sr.*; prereq., 3-4)	II	TThS	302F	Mr. Fichter
68w-69s†	Survey of Spanish Lit. ..... (10 cred.; jr., sr.*; prereq., 3-4)	VI	MTWThF	227F	Mr. Arjona
83-84-85†	*Spanish American Lit.* ..... (6 cred.; jr., sr.*; prereq., 65-66-67 or 68-69 or 20 or 50-51-52 and 53-54-55)	*Not offered in 1926-27*			
100	*Spanish Oral Diction* ..... (4 cred.; jr., sr., grad.; prereq., 56-57-58)	*Not offered in 1926-27*			
103-104-105†	*Spanish Syntax* ..... (3 cred.; jr., sr., grad.; prereq., 59-60-61)	*Not offered in 1926-27*			
110s-111w-112s†	Spanish Lit.: 19th Century .... (9 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	IV	MWF	108F	Mr. Fichter
115f-116w-117s†	Spanish Lit.: 17th Century .... (6 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	IV	TS	217F	Mr. Krappe
141	*Spanish Novel* ..... (4 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	*Not offered in 1926-27*			
150w-151s	Spanish Dramatic Lit. ..... (4 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	III	MW	204F	Mr. Olmsted
156-157-158	*Spanish Lit.: 16th Century* ..... (6 cred.; jr., sr., grad.; prereq., 65-66-67 or 68-69)	*Not offered in 1926-27*			
159s	Cervantes ..... (4 cred.; jr., sr., grad.; prereq., 65-66-67 or 68-69)	III	TThFS	305F	Mr. Fichter
174f-175w-176s	Lectures in Spanish ..... (6 cred.; jr., sr., grad.; prereq., 20 (or 50-51-52 and 53-54-55) and 65-66-67)	IX	TTh	202F	Mr. Arjona

SCANDINAVIAN

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w‡	Beginning Norwegian ..... (10 cred.; all; no prereq.)	I	TWThFS	206F	Mr. Bothne

* Open without petition to sophomores who have an average of C in all their previous work and in the prerequisite courses.

† The entire course must be completed before credit is received for either quarter.

‡ Credit is usually not given for more than one beginning language. See paragraph 2, page 6.

¶ Courses in conversation may be taken only when accompanied by the corresponding courses in composition. Courses in composition may be taken separately.

No.	Title	Hour	Day	Bldg.	Instructor
3s	Intermediate Norwegian ..... (5 cred.; all; prereq., 1-2, or 1 yr. high school)	I	TWThFS	206F	Mr. Bothne
4f-5w	Adv. Norwegian (Survey) ..... (10 cred.; soph., jr., sr.; prereq., 1-2-3 or 2 yrs. high school)	III	MTThFS	206F	Mr. Bothne
7f-8w*	Beginning Swedish ..... (10 cred.; all; no prereq.)	II	MWThFS	206F	Mr. Stomberg
9s	Intermediate Swedish ..... (5 cred.; all; prereq., 7-8 or 1 yr. high school)	II	MWThFS	206F	Mr. Stomberg
10f-11w	Adv. Swedish ..... (10 cred.; soph., jr., sr.; prereq., 7-8-9 or 2 yrs. high school)	I	TWThFS	110F	Mr. Stomberg
12s	Ancient and Medieval Scandinavian History ..... (5 cred.; soph., jr., sr.; prereq., 10-11, or 4-5, or Hist. 1-2)	I	TWThFS	110F	Mr. Stomberg
45s	Scandinavian Mythology ..... (3 cred.; jr., sr.;§ prereq., none)	IV	MWF	206F	Mr. Stomberg
101f-102w-103s	Modern Norwegian Lit. ..... (9 cred.; jr., sr., grad.; prereq., 4-5)	II	TThS	110F	Mr. Bothne
104f-105w	Mod. Scand. History ..... (6 cred.; jr., sr., grad.; prereq., 10-11-12, or 4-5, or 15 cred. in hist.)	IV	MWF	206F	Mr. Stomberg
107f-108w-109s	Modern Swedish Lit. ..... (9 cred.; jr., sr., grad.; prereq., 10-11-12)	VI	MWF	206F	Mr. Stomberg
110	*Ibsen* ..... (3 cred.; sr., grad.; prereq., 101-102-103)	*Not offered in 1926-27*			
111f-112w-113s	Old Norse (Icelandic) ..... (6 cred.; sr., grad.; prereq., consent of instructor)	II	WF	110F	Mr. Bothne
114f	Strindberg ..... (3 cred.; sr., grad.; prereq., 107-108-109)	Ar	Ar	Ar	Mr. Stomberg
116	*History of Scandinavian Languages* ..... (3 cred.; sr., grad.; prereq., 101-102-103 or 107-108-109 or 117 or 111)	*Not offered in 1926-27*			
117s	Earlier Norwegian Lit. ..... (5 cred.; jr., sr., grad.; prereq., 4-5)	III	MTThFS	206F	Mr. Bothne
130-131-132	*Danish Lit. of the 19th Century* (9 cred.; jr., sr., grad.; prereq., 4-5)	*Not offered in 1926-27*			
134-135	*The Landsmaal Movement* ..... (6 cred.; sr., grad.; prereq., 101-102-103, or 130-131-132)	*Not offered in 1926-27*			
136	*Björnson* ..... (3 cred.; sr., grad.; prereq., 101-102-103, or 130-131-132)	*Not offered in 1926-27*			

* Credit is usually not given for more than one beginning language. See paragraph 2, page 6.
§ Does not count as a senior college course. Not open to sophomores.

SOCIOLOGY AND SOCIAL WORK

Major Advisers

Professors Chapin and Sorokin; Associate Professor Elmer; Lecturer Colcord.

Major Sequences

Prerequisites: A total of 25 credits from among the following departments: Sociology, Animal Biology, Economics, Education, History, Philosophy, Political Science, and Psychology. Students who are deficient in prerequisites may be required to make up their deficiencies in junior college courses.

Sequence A. General sociology. Courses 51, 52, 53; 55 or 60; 110 or 114 or 128 or 134; (100, 101) or (100, 102); 119 or 130 or 132; 120 or 141; 70 or 121 or 122.

Sequence B. Social theory. Courses 51 or 53; 100, 101, 102, 119, 120, 121, 140, 141.

Sequence C. Rural sociology. Courses 51, 52, 53, 60; 100 or 119; 101 or 102 or 120; 110, 112, 114, 115.

Modification of these sequences will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

Preparation for professional social work is provided in the Training Course for Social and Civic Work, described on pages 9 and 10 of this bulletin.

No.	Title	Hour	Day	Bldg.	Instructor
1f	Introd. to Sociology ..... (5 cred.; soph., jr., sr., and 3d qtr. fr.; no prereq.)				
	Sec. 1	I	TWThFS	25F	Mr. Chapin
	2	III	MTThFS	5F	
	3	IV	MTWFS	25F	
	4	VI	MTWThF	25F	
	5	VII	MTWThF	5F	
	6 (University Farm, 3 cred.)	IV	MWF	*	
1w	Introd. to Sociology ..... (See 1f)				
	Sec. 1	I	TWThFS	25F	Mr. Chapin
	2	III	MTThFS	5F	
	3	IV	MTWFS	25F	
	4	VI	MTWThF	25F	
	5	VII	MTWThF	5F	
	6 (University Farm, 3 cred.)	IV	MWF	*	
1s	Introd. to Sociology ..... (See 1f)				
	Sec. 1	I	TWThFS	25F	Mr. Chapin
	2	II	MWThFS	3F	
	3	III	MTThFS	5F	
	4	IV	MTWFS	25F	
	5	VI	MTWThF	25F	
	6	VII	MTWThF	5F	
	7	VII	MTWThF	25F	
	8 (University Farm, 3 cred.)	IV	MWF	*	

* Consult the bulletin of the College of Agriculture, Forestry, and Home Economics.

No.	Title	Hour	Day	Bldg.	Instructor
6f,w,s	Modern Social Reform Movements ..... (3 cred.; soph., jr., sr.; prereq. 1)				
	Sec. 1	II	TThS	5F	Mr. Clarke
	2	IV	MWF	5F	
	3	VI	MWF	6F	
14f,w	Rural Sociology ..... (3 cred.; soph., jr., sr.; prereq., 1)				
	Sec. 1	III	TThS	107F	Mr. Zimmerman
	2	V	MWF	25F	
	3	VI	MWF	3F	
	4 (University Farm)	IV	TThS	*	
14s	Rural Sociology ..... (See 14f,w)				
	Sec. 1	III	TThS	107F	Mr. Zimmerman
	2	V	MWF	25F	
	3	VI	MWF	3F	
45f,w	Social Statistics ..... (5 cred.; soph., jr., sr.; prereq., 1)	VII	MTWThF	25F	Mr. Chapin
51f,w,s	The Occurrence of the Socially Inadequate ..... (3 cred.; jr., sr.; prereq., 10 cred. in soc. or Soc. 1 and 10 cred. in soc. sci. or psy.)	I	MWF	5F	Miss Wheeler
52f,w,s	Elem. Case Work ..... (3 cred.; jr., sr.; prereq., 51, 90, or simultaneously)	I	TThS	5F	Miss Colcord
53f,w,s	Elem. of Criminology ..... (3 cred.; jr., sr.; prereq., same as for 51)	III	MWF	3F	Mr. Elmer
55w	Housing Problems ..... (3 cred.; jr., sr.; prereq., same as for 51)	I	MWF	15F	Miss Salsberry
60f,w	Child Welfare ..... (3 cred.; jr., sr.; prereq., 51 and 52)	IX	MWF	25F	Mrs. Doyle
70w	Group Work in the Community (3 cred.; jr., sr.; prereq., 51)	VIII, IX	T	5F	Miss Mead, Mrs. Mudgett
90f,w,s-91f,w,s-92f,w,s	Elementary Field Work ..... (6 cred.; jr., sr.; prereq., 51 for 90; 52 for 91)				
	(Fall)				
	Sec. 1	I, II, III	MW		Mrs. Mudgett
	2	I, II, III	WF		
	3	VI, VII, VIII	MW		
	4	VI, VII, VIII	WF		
	5	VI, VII, VIII	Th		
	(Winter)				
	Sec. 1	II, III, IV	MW		Mrs. Mudgett
	2	II, III, IV	WF		
	3	VI, VII, VIII	MW		
	4	VI, VII, VIII	WF		
	5	VI, VII, VIII	TTh		

* Consult the bulletin of the College of Agriculture, Forestry, and Home Economics.

No.	Title	Hour	Day	Bldg.	Instructor
	(Spring)				
	Sec. 1	VI, VII, VIII	MW		Mrs. Mudgett
	2	VI, VII, VIII	WF		
	3	II, III, IV	TTh		
	4	VI, VII, VIII	TTh		
100f	Social Psychology ..... (3 cred.; primarily for sociology students; jr., sr., grad.; prereq., Soc. 1, Psy. 1-2, and 11 cred. in soc. sci., ed., phil., and psy.)	II	TThS	25F	Mr. Chapin
101w	Social Organization ..... (3 cred.; jr., sr., grad.; prereq., 4 courses in soc., or Soc. 1 and 15 cred. in soc. sci., ed., phil., or psy.)	II	TThS	25F	Mr. Sorokin
102s	Social Control ..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	II	MWF	15F	Ar
103s	Sociology of Conflict ..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	II	MWF	25F	Mr. Clarke
110w	Community Organization and Social Work in Small Towns and Country ..... (2 cred.; jr., sr., grad.; prereq., same as for 101)	VIII, IX	Th	5F	Mr. Elmer
112f	The Rural Social Survey ..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	VIII	MWF	25F	Mr. Elmer
114s	Rural Social Institutions ..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	III	MWF	*	Mr. Lundquist
115	*The Rural Church As a Social Institution* ..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	*Not offered in 1926-27*			
119f	The Family ..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	III	TThS	3F	Mr. Clarke
120f	Social Progress ..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	II	MWF	15F	Ar
121w	Advanced Statistical Methods .. (3 cred.; jr., sr., grad.; prereq., 4 courses in soc., including 45 or its equivalent)	VII	MWF	108F	Mr. Chapin
122w-123s	Methods of Social Investigation (6 cred.; jr., sr., grad.; prereq., same as for 101 but including 45 or its equivalent for 123)	VIII	MWF	3F	Mr. Elmer
126-127	*Settlement and Community Center Work* ..... (4 cred.; sr., grad.; prereq., consent of director)	*Not offered in 1926-27*			

* Consult the bulletin of the College of Agriculture, Forestry, and Home Economics.

No.	Title	Hour	Day	Bldg.	Instructor
128s	Principles of Administration Applied to Social Work ..... (2 cred.; jr., sr., grad.; prereq., same as for 101)	VIII, IX	Th	5F	Mr. Bradley
130s	Advanced Case Work ..... (2 cred.; sr., grad.; prereq., same as for 101 incl. 51 and 52)	VIII, IX	T	3F	Miss Colcord
132	*Juvenile Courts and Probation* .. (2 cred.; jr., sr., grad.; prereq., 51, 52, 53)	*Not offered in 1926-27*			
133f	Social Case Work in Health Problems ..... (3 cred.; jr., sr., grad.; prereq., 52, 90, and Prev. Med. 50, or 53, or simultoneously)	VI, VII ar	M and ar	9F	Mrs. Young
134s	Legal Protection of the Child .. (3 cred.; jr., sr., grad.; prereq., same as for 101 incl. 60)	I	MWF	113F	Mr. Waite
135s	Field Practice in Legal Protection of the Child ..... (2 cred.; jr., sr., grad.; prereq., open to students taking 134)	Ar	Ar	Ar	Mrs. Mudgett
138w-139s	Mental Case Work ..... (6 cred.; jr., sr., grad.; prereq., 52, 90, and Psy. 144-145, or Prev. Med. 61, or simultaneously)	VI, VII	M and ar	9F	Mrs. Young
140w	History of Social Theory ..... (3 cred.; jr., sr., grad.; pr req., same as for 101)	II	MWF	25F	Mr. Sorokin
141s	Contemp. Social Theory ..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	II	TThS	25F	Mr. Sorokin
152	*Seminar: Problems of Institutional Administration* ..... (2 cred.; sr., grad.; prereq., consent of director)	*Not offered in 1926-27*			
153f,w,s-154f,w,s-155f,w,s	Advanced Field Work ..... (3 cred. per qtr.; jr., sr., grad.; prereq., 90 and 91)	Ar	Ar	Ar	Mrs. Mudgett
158w	The Sociology of Revolution .... (3 cred.; jr., sr., grad.; prereq., same as for 101)	III	MWF	211OL	Mr. Sorokin
187f-188w-189s	Seminar in Ed. Sociology ..... (6 cred.; jr., sr., grad.; prereq., same as for 101, including 1 and 6)	I, II	S	9F	Mr. Finney

COURSES IN OTHER COLLEGES

These courses are open to election by seniors. See Part I, General Information, section 44.

COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

The following divisions of this college offer courses to students in the College of Science, Literature, and the Arts who can meet the prerequisites:

Agricultural Biochemistry
Agricultural Economics
Agricultural Engineering
Agronomy and Farm Management
Animal Husbandry
Bee Culture
Dairy Husbandry
Entomology and Economic Zoology
Forestry
Home Economics
Horticulture
Plant Pathology and Botany
Poultry Husbandry
Soils
Veterinary Medicine

Descriptions of the courses will be found in the bulletin of the College of Agriculture, Forestry, and Home Economics.

SCHOOL OF BUSINESS

Students in the College of Science, Literature, and the Arts are limited to courses in economics announced in this bulletin.

LAW SCHOOL

First Quarter	*Second Quarter*	*Third Quarter*
†Contracts (3)	†Contracts (3)	†Contracts (3)
†Property (3)	†Property (3)	†Property (3)
†Torts (3)	†Torts (3)	†Torts (3)

SCHOOL OF MINES

1w	Assaying
2w	Assay Laboratory
3f	General Metallurgy
4w	Metallurgy of Pig Iron
5s	Metallurgy of Wrought Iron and Steel
106f	Metallurgy of the Base Metals
107w	Continuation of Course 106f
108s	Metallurgy of the Precious Metals
153f,154w,155s	Metallography
160f,161w,162s	Metallography for Chemists

† The entire course must be completed before credit is received for any quarter.

I. GENERAL REGULATIONS

32. *Senior examinations.*—The grade of a senior about to graduate will be determined by an instructor without special final examination, provided that the student's work in the course is C or above, one week previous to the date upon which senior grades are due, and provided that, at the beginning of his last quarter, the student had an average of at least one honor point per credit hour. Otherwise, the student will be given a special final examination.

II. DESCRIPTION OF COURSES

ANIMAL BIOLOGY

25. Introductory Histology. A brief course on the structure of the cell, tissues, and organs. Lectures, laboratory.

ANTHROPOLOGY

56. Primitive Science. The beginnings of science in early culture. Primitive ideas of cosmogony, cosmology, nature, and man.

106. Prehistoric Man. Known facts about prehistoric man, physically, culturally, and in relation to geographic and animal environment.

ARCHITECTURE

84-85-86. Modeling. An elementary course in clay modeling. Ornament, heads, and animals from casts and from life.

87-88-89. Hand Print Processes. Making and printing wood engravings, etchings, dry-points, and lithographs.

90-91-92. Illustration. Design of illustration as applied to the printed page. Magazine illustration, posters, and books.

ART EDUCATION

1. Art Appreciation. An orientation course. Purpose: increase in enjoyment of the arts of painting, sculpture, and architecture through attention to the principles governing the artist's expression and the means which he employs. Stereopticon lectures and museum study.

BOTANY

134. Research Methods in Ecology. A study of the methods used in the investigation of problems dealing with vegetation and environment and the relations between them.

CHEMISTRY

NOTE.—Courses in chemistry are now listed under five headings: Inorganic Chemistry, Analytical Chemistry, Organic Chemistry, Physical Chemistry, and Technological Chemistry. See program for changes in numbers.

CHILD WELFARE

50-51. Nursery School Methods. Materials and methods utilized in the training of small children as individulas and in groups. Special attention will be paid to the home. The Nursery School will be used for illustration and observation.

52-53-54. Nursery School Technique. The technique and practice of Nursery School instruction and management. The student will be expected to spend considerable time in the Nursery School.

60. The Nursery School and Parental Education Movement. Orienting the student with reference to development of Nursery School and movement for parental education. Other movements—kindergarten, Montessori school, and physical and mental hygiene movement in relation to the pre-school period.

130. The Development of the Young Child. An advanced course dealing with the development of the pre-school child from the anatomical, physiological, psychological, educational, and social points of view. Lectures, readings in the experimental literature, and reports.

170. Parental Education in Child Care and Training. A consideration of the content and methods used in courses and study groups for parents in the care and training of young children. Lectures, discussions, and reports.

173-174. Technique and Practice of Parental Education. Field work in the technique of organizing and conducting parental study groups and courses for the study of the young child.

190-191. Mental Examination of Pre-School Children. A study of the methods used in testing young children together with practice in such testing.

ECONOMICS

141. Monetary and Banking Policy. Advanced course in money and banking. Public policies relative to the banking organization, efficiency and safety of financial operations, stabilization of the price level, prevention of undue financial concentration, subsidizing certain economic groups.

172. Economics of Transportation. Formerly 72.

174. Transportation Problems. Formerly 74.

187. Market Prices. A realistic study of the manner in which individuals determine their buying and selling prices. Factors which influence demand for specific commodities. Uniformity of prices and the economic significance of f.o.b., delivered, and other methods of pricing.

ENGLISH

COURSES IN ENGLISH

41. Browning and Tennyson. Most of the time will be spent on Browning.

61. American Pronunciation. Changed from Present Day English. A study of the sounds of present day English, with particular reference to American usage.

63. American Usage. A study of the forms and syntax of present day English, with particular reference to American English.

COURSES IN PUBLIC SPEAKING

51. Advanced Public Speaking. Formerly 59.
61. Speech Correction. An introduction to the correction of speech disorders. Speech defects as symptoms of maladjustment and organic malformations. Case histories. The vocal mechanism. Examination of the literature of the field.
107. Seminar in Great Orators. A critical study of the great English and American orators. One historical period each year. For 1926-27 the English orators of the French Revolutionary period.
121-122. Advanced Speech Problems. Factors determining the behavior of speakers and audiences.

GEOGRAPHY

151-152-153. Current Literature in Geography. A survey of current literature with reports and discussions on assigned topics.

HISTORY

123. Introduction to the History of Russia. Survey of the history of the Russian people and the development of the Russian state. As far as time permits, attention will be paid to foreign affairs and to the development of Poland. Reading knowledge of French and German desired.

PHYSICS

3, 4, 23, 24, 33, 34, 43, 44, 124, 134, 144. Formerly 2, 3, 21, 22, 31, 32, 41, 42, 122, 132, 142, respectively.
52. Laboratory Arts. Formerly 102.

PSYCHOLOGY

140. Social Psychology. Formerly 127.

ROMANCE LANGUAGES

ITALIAN

3-4. Intermediate Italian.
71. Modern Poetry (Leopardi, Carducci).
72. Modern Drama (Giacosa, Bracco, Pirandello).
73. Boccaccio.
74. Petrarch.

SPANISH

30. Formerly 73-74-75.
110-111-112. Formerly 80-81-82.

INDEX

The Roman numerals I and II in this index refer to Parts I and II of this bulletin.

The Bulletin *of the* University *of* Minnesota

The College of Science, Literature, and the Arts

Part II

Announcement of Program for the Year 1926-1927

Vol. XXIX No. 21 May 3 1926

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

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FRESHMAN WEEK

Every student entering any department of the University for the first time as a freshman in the fall of 1926 is required to be here throughout the week before the opening of classes. Every new freshman must present himself at the registrar's office either Friday, September 17, Saturday, September 18, or Monday, September 20, to begin the process of registration. Those coming later than 5:00 p.m. Monday, September 20, will be subject to the usual penalty for late registration. See Penalty Fees, page 50 of the bulletin of general information.

During the week September 21 to 25, in addition to carrying out their registration, freshmen will meet for lectures on such subjects as how to study, the use of the library, important university and college regulations, and will visit the library, the scientific laboratories, and other points of interest to them in connection with their choice of studies and of their future occupations.

During this week there will be the usual physical examinations and psychological tests and such other examinations as will enable the faculty to place the students in classes for which they are best fitted.

The general purpose of the Freshman Week is to help the student to make a good start on his work and to adjust himself to the new and perplexing conditions of university life.

NOTICE THAT ATTENDANCE THROUGHOUT FRESHMAN WEEK IS A REQUIREMENT

It is recommended that as many as possible present themselves for registration on Friday, September 17, in order to avoid the inconvenience and delay incident to the congestion on the last day.

1926

JULY

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

AUGUST

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

SEPTEMBER

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

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

NOVEMBER

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

..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..
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1927

JANUARY

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

FEBRUARY

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

MARCH

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

APRIL

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

MAY

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
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UNIVERSITY CALENDAR

1926-27

1926

Fall Quarter

September	16	Thursday	Payment of fees closes, except for new students
September	16-18		Entrance examinations (for removal of entrance deficiencies)
September	17-20		Registration of all new students entering the freshman class
September	20-24		Examinations for removal of conditions
			Registration period [1]
September	21-25		Freshman week
September	24	Friday	Payment of fees for new students closes
September	24-25		Necessary changes in registration
September	27	Monday	Fall quarter classes begin, 8:30[2] a.m.
October	21	Thursday	Senate meeting, 4:30 p.m.
November	2	Tuesday	General Election Day; a holiday
November	11	Thursday	Armistice Day; a holiday
November	20	Saturday	Homecoming Day
November	25	Thursday	Thanksgiving Day; a holiday
December	2	Thursday	State Day Convocation
December	15-18		Final examination period
December	16	Thursday	Commencement Convocation
			Senate meeting, 4:30 p.m.
December	18	Saturday	Fall quarter ends, Christmas vacation begins, 5:20 p.m.
December	22	Wednesday	Payment of fees closes for all students in residence fall quarter[3]

Winter Quarter

December	27-29		Entrance examinations
December	30-31		Registration days for new students[1]
			Necessary changes in registration

[1] Registration subsequent to the date specified will necessitate the approval of the assistant dean for students' work. See also penalty fees for late registration, General Information, section 13.

No student will be allowed to register in the University after one week from the beginning of the quarter excepting in unusual cases wherein special circumstances shall justify the assistant dean for students' work in permitting registration at a later date.

[2] First hour classes begin at 8:00 in the Medical School and at 8:15 at University Farm.

[3] New students must pay fees on dates announced for registration.

1927			
January	3	Monday	Christmas vacation ends, winter quarter classes begin, 8:30[2] a.m.
February	12	Saturday	Lincoln's Birthday; a holiday
February	17	Thursday	Charter Day Convocation Senate meeting, 4:30 p.m.
February	22	Tuesday	Washington's Birthday; a holiday
March	16-19		Final examination period
March	17	Thursday	Payment of fees closes for all students in residence winter quarter[3]
March	19	Saturday	Winter quarter ends, spring vacation begins, 5:20 p.m.

Spring Quarter

March	21-23		Entrance examinations
March	25-26		Registration days for new students[1] Necessary changes in registration
March	28	Monday	Spring vacation ends, spring quarter classes begin, 8:30[2] a.m.
April	15	Friday	Good Friday; a holiday
May	12	Thursday	Cap and Gown Day Convocation
May	19	Thursday	Senate meeting, 4:30 p.m.
May	30	Monday	Memorial Day; a holiday
June	8-11		Final examination period
June	11	Saturday	Spring quarter closes, 5:20 p.m.
June	12	Sunday	Baccalaureate service
June	13	Monday	Fifty-fifth annual commencement

Summer Session

June	17-18		Summer Session first term begins, registration and payment of fees
June	20	Monday	Classes begin, 8:00 a.m.
July	4	Monday	Independence Day; a holiday
July	30	Saturday	Registration and payment of fees for second term closes
August	1	Monday	Second term classes begin
September	3	Saturday	Second term Summer Session closes

[1] Registration subsequent to the date specified will necessitate the approval of the assistant dean for students' work. See also penalty fees for late registration, General Information, section 13.

No student will be allowed to register in the University after one week from the beginning of the quarter excepting in unusual cases wherein special circumstances shall justify the assistant dean for students' work in permitting registration at a later date.

[2] First hour classes begin at 8:00 in the Medical School and at 8:15 at University Farm.

[3] New students must pay fees on dates announced for registration.

COURSES OF STUDY

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

GENERAL REQUIREMENTS

1. The student must earn 180 credits and 180 honor points, or a smaller number of credits determined as follows: for every five honor points in excess of one honor point per credit, the number 180 is diminished by one.

A student entering with advanced standing from some other institution must secure a total of 180 credits, and an average of one honor point per credit for the work done in this college. For every five honor points earned in this college in excess of one honor point per credit, the number 180 is diminished by one.

2. The student may not receive credit for beginning courses (two quarters, 10 credits) in more than one of the foreign languages, exclusive of Greek and Italian, unless his major adviser approves such courses as necessary for the proper development of the student's major work.

3. Not later than the end of his sophomore year, each student must elect the department in which he intends to do his major work. He will then be assigned to a major adviser by that department.

SPECIFIC REQUIREMENTS

Grouping of Departments in the Junior College

Group A English

Group B Foreign languages: German, Greek, Latin, Romance Languages, Scandinavian.

Group C Social sciences: Economics, Geography, History, Political Science, Sociology.

Group D Natural sciences: Animal Biology, Astronomy, Bacteriology and Immunology, Botany, Chemistry, Geology and Mineralogy, Human Physiology, Physics, Psychology.

Group E Architecture, Mathematics, Music, Philosophy.

For admission to the Senior College the student must have completed the following work in the Junior College or the equivalent in another recognized institution.

1. Group A 15 credits of Freshman English.

Group B The student must present for entrance four years of one foreign language, or he must complete 20 credits in one language in college, or he must continue a language which he presented for entrance, according to the following schedule:

	Amount Presented for Entrance	*Amount Required in Junior College*
	Four years of one language	None
	Three years of one language	5 credits in same language
	Two years of one language	10 credits in same language
	One year of one language	15 credits in same language
	Less than a year of one language	20 credits in one language
Group C	10 credits in one subject.	
Group D	10 credits in one subject.	
Group E	No requirement.	

2. Every student should plan to begin work in each of groups A, B, C, and D, early enough to provide for the completing of all group requirements before the end of his sophomore year, because otherwise his admission to the Senior College will be delayed.

3. In addition the student must secure the necessary preparation for a senior college major sequence in one subject.

4. The requirements in physical education and military drill (General Regulations, sections 6 and 7) must be met during the junior college years.

5. The student must earn a total of 90 credits with an average of one honor point per credit,* or a smaller number of credits determined as follows: For every five honor points in excess of one honor point per credit, the number 90 is diminished by one.

A student entering with advanced standing from some other institution must secure a total of 90 credits, and an average of one honor point per credit for the work done in this college. For every five honor points earned in this college, in excess of one honor point per credit, the number 90 is diminished by one.

Senior College

Requirements.—1. A major sequence, 27 to 36 credits. Each student must complete a coherent and progressive sequence of courses, known as a major sequence, which shall include, as specified by the department which offers it, from 27 to 36 credits in senior college courses. Such major sequences are offered by the following departments: Animal Biology, Anthropology, Architecture, Astronomy, Bacteriology, Botany, Chemistry, Economics, English, Geography, Geology and Mineralogy, German, Greek, History, Human Physiology, Latin, Mathematics, Music, Philosophy, Physics, Political Science, Psychology, Romance Languages, Sociology. The courses constituting a major sequence in any department are announced in the program.

A student must maintain an average of one honor point per credit in the work of the major sequence.

* For students entering the Senior College before the fall of 1927, the requirement is a total of 90 credits and 90 honor points, or a smaller number of credits determined as above.

2. A minor sequence, 9 credits. A student must secure in some department other than his major department and in addition to his major sequence 9 credits in senior college courses.

*Graduation Honors**

The degree B.A. may be awarded *cum laude, magna cum laude,* or *summa cum laude* upon the recommendation of the Committee on Honors.

Honors are awarded only to students who have a scholastic record of two honor points per credit in all work carried. A student who has this record will be awarded the degree B.A. *cum laude.*

Students wishing to become candidates for the higher honors *(magna cum laude, summa cum laude)* must signify their intention not later than the beginning of the third quarter before graduation. Students are admitted as candidates upon the recommendation of the major department with the approval of the Committee on Honors. The committee will not admit as a candidate a student who has limited his senior college work to the minimum requirements in major and minor subjects. The purpose of granting honors is to secure scholarly ideals and achievements, and the candidate is expected to show his interest and ideals in his election of studies.

With the approval of the Committee on Honors the candidate may pursue a course of reading in addition to the required major and minor studies and in lieu of any or all elective courses. Near the close of the senior year the candidate will take a special examination which may touch upon any part of the field of his college course. In this comprehensive examination the candidate should show (a) an acquaintance with the chief literature and sources of information in the fields studied, and (b) an ability to discuss with intelligence and clear reasoning, questions or problems upon which he has had opportunity to secure the necessary information. Such questions may be new to the student. The object is to test the student's ability to bring facts and theories to bear upon problems presented in the examination. The examination should be a test not of memory but of assimilation, of culture, and of power to command or use the knowledge which courses of study have put within the student's reach. Candidates who pass this examination will, upon recommendation of the committee, be awarded the degree B.A. *magna cum laude.*

A candidate whose standing in the comprehensive examination is satisfactory and who in addition presents an acceptable critical paper, a piece of creative work, or a thesis embodying the results of original research will, upon recommendation of the committee, be awarded the degree B.A. *summa cum laude.* The preparation of the paper should be begun early in the senior year.

* Students who enter with advanced standing are eligible to become candidates for honors if they will have earned 75 credits of work in residence before graduation.

I. GENERAL REGULATIONS

32. *Senior examinations.*—The grade of a senior about to graduate will be determined by an instructor without special final examination, provided that the student's work in the course is C or above, one week previous to the date upon which senior grades are due, and provided that, at the beginning of his last quarter, the student had an average of at least one honor point per credit hour. Otherwise, the student will be given a special final examination.

II. DESCRIPTION OF COURSES

ANIMAL BIOLOGY

25. Introductory Histology. A brief course on the structure of the cell, tissues, and organs. Lectures, laboratory.

ANTHROPOLOGY

56. Primitive Science. The beginnings of science in early culture. Primitive ideas of cosmogony, cosmology, nature, and man.

106. Prehistoric Man. Known facts about prehistoric man, physically, culturally, and in relation to geographic and animal environment.

ARCHITECTURE

84-85-86. Modeling. An elementary course in clay modeling. Ornament, heads, and animals from casts and from life.

87-88-89. Hand Print Processes. Making and printing wood engravings, etchings, dry-points, and lithographs.

90-91-92. Illustration. Design of illustration as applied to the printed page. Magazine illustration, posters, and books.

ART EDUCATION

1. Art Appreciation. An orientation course. Purpose: increase in enjoyment of the arts of painting, sculpture, and architecture through attention to the principles governing the artist's expression and the means which he employs. Stereopticon lectures and museum study.

BOTANY

134. Research Methods in Ecology. A study of the methods used in the investigation of problems dealing with vegetation and environment and the relations between them.

CHEMISTRY

NOTE.—Courses in chemistry are now listed under five headings: Inorganic Chemistry, Analytical Chemistry, Organic Chemistry, Physical Chemistry, and Technological Chemistry. See program for changes in numbers.

CHILD WELFARE

50-51. Nursery School Methods. Materials and methods utilized in the training of small children as individulas and in groups. Special attention will be paid to the home. The Nursery School will be used for illustration and observation.

52-53-54. Nursery School Technique. The technique and practice of Nursery School instruction and management. The student will be expected to spend considerable time in the Nursery School.

60. The Nursery School and Parental Education Movement. Orienting the student with reference to development of Nursery School and movement for parental education. Other movements—kindergarten, Montessori school, and physical and mental hygiene movement in relation to the pre-school period.

130. The Development of the Young Child. An advanced course dealing with the development of the pre-school child from the anatomical, physiological, psychological, educational, and social points of view. Lectures, readings in the experimental literature, and reports.

170. Parental Education in Child Care and Training. A consideration of the content and methods used in courses and study groups for parents in the care and training of young children. Lectures, discussions, and reports.

173-174. Technique and Practice of Parental Education. Field work in the technique of organizing and conducting parental study groups and courses for the study of the young child.

190-191. Mental Examination of Pre-School Children. A study of the methods used in testing young children together with practice in such testing.

ECONOMICS

141. Monetary and Banking Policy. Advanced course in money and banking. Public policies relative to the banking organization, efficiency and safety of financial operations, stabilization of the price level, prevention of undue financial concentration, subsidizing certain economic groups.

172. Economics of Transportation. Formerly 72.

174. Transportation Problems. Formerly 74.

187. Market Prices. A realistic study of the manner in which individuals determine their buying and selling prices. Factors which influence demand for specific commodities. Uniformity of prices and the economic significance of f.o.b., delivered, and other methods of pricing.

ENGLISH

COURSES IN ENGLISH

41. Browning and Tennyson. Most of the time will be spent on Browning.

61. American Pronunciation. Changed from Present Day English. A study of the sounds of present day English, with particular reference to American usage.

63. American Usage. A study of the forms and syntax of present day English, with particular reference to American English.

COURSES IN PUBLIC SPEAKING

51. Advanced Public Speaking. Formerly 59.
61. Speech Correction. An introduction to the correction of speech disorders. Speech defects as symptoms of maladjustment and organic malformations. Case histories. The vocal mechanism. Examination of the literature of the field.
107. Seminar in Great Orators. A critical study of the great English and American orators. One historical period each year. For 1926-27 the English orators of the French Revolutionary period.
121-122. Advanced Speech Problems. Factors determining the behavior of speakers and audiences.

GEOGRAPHY

151-152-153. Current Literature in Geography. A survey of current literature with reports and discussions on assigned topics.

HISTORY

123. Introduction to the History of Russia. Survey of the history of the Russian people and the development of the Russian state. As far as time permits, attention will be paid to foreign affairs and to the development of Poland. Reading knowledge of French and German desired.

PHYSICS

3, 4, 23, 24, 33, 34, 43, 44, 124, 134, 144. Formerly 2, 3, 21, 22, 31, 32, 41, 42, 122, 132, 142, respectively.
52. Laboratory Arts. Formerly 102.

PSYCHOLOGY

140. Social Psychology. Formerly 127.

ROMANCE LANGUAGES

ITALIAN

3-4. Intermediate Italian.
71. Modern Poetry (Leopardi, Carducci).
72. Modern Drama (Giacosa, Bracco, Pirandello).
73. Boccaccio.
74. Petrarch.

SPANISH

30. Formerly 73-74-75.
110-111-112. Formerly 80-81-82.

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Institute of Child Welfare Announcement for the Years 1926-1928

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FACULTY

ADMINISTRATION

Lotus Delta Coffman, Ph.D., LL.D., President
William Watts Folwell, LL.D., President Emeritus

INSTITUTE OF CHILD WELFARE

John E. Anderson, Ph.D., Professor and Director
Edith D. Dixon, B.S., Assistant Professor in charge of Extension
Josephine C. Foster, Ph.D., Assistant Professor and Principal of the Nursery School
Florence L. Goodenough, Ph.D., Research Assistant Professor and Psychologist
M. Adelia Boynton, Ph.B., Instructor and Teacher in Nursery School
Marion L. Faegre, B.A., Instructor and Extension Worker
Marion L. Mattson, M.A., Instructor and Teacher in Nursery School
Catherine M. Thompson, Instructor and Teacher in Nursery School
Ruth E. Atkins, M.A., Research Assistant in Education
Joseph T. Cohen, D.D.S., Research Assistant in Dentistry
Anne Louise Fenlason, B.A., Instructor in Sociology and Research Assistant in Sociology
Marie Johnson, R.N., Nurse in Nursery School
Elinor Lawrie, B.A., Teaching Assistant, Nursery School
S. Margaret Light, B.A., Research Assistant in Psychology
Dorothea McCarthy, B.A., Research Assistant in Psychology
Mildred Parten, B.A., Research Assistant in Sociology
Emily Payetta, B.S., Research Assistant in Education
Theodore Popovich, M.D., Research Assistant in Pediatrics
Louise R. Schmid, M.A., Research Assistant in Infant Study
Myrtle O. Larson, B.A., Technical Assistant
Donovan Lawrence, Technical Assistant
Julia Rindahl, Technical Assistant

MEMBERS OF OTHER DEPARTMENTS CO-OPERATING WITH THE INSTITUTE OF CHILD WELFARE

Melvin E. Haggerty, Ph.D., Dean of the College of Education, Professor of Educational Psychology, and Director of the Psycho-Educational Clinic
Frederick J. Kelly, Ph.D., Dean of Administration and Director of Summer Session
Frank W. Peck, M.S., Director of Agricultural Extension
Richard R. Price, Ed.D., Director of University Extension
F. Stuart Chapin, Ph.D., Professor of Sociology, Chairman of the Department of Sociology, and Director of the Training Course for Social and Civic Work

Richard M. Elliott, Ph.D., Professor of Psychology and Chairman of the Department of Psychology

Arthur S. Hamilton, B.S., M.D., Professor of Nervous and Mental Diseases

Wylle B. McNeal, M.A., Professor of Home Economics and Chief of the Division of Home Economics

Richard E. Scammon, Ph.D., Professor of Anatomy

Frederic W. Schlutz, B.A., M.D., Professor of Pediatrics and Chief of Department of Pediatrics

Edna F. Heidbreder, Ph.D., Assistant Professor of Psychology

John G. Rockwell, B.A., Assistant Professor of Educational Psychology

Jane M. Leichsenring, Ph.D., Assistant Professor of Home Economics

Julia O. Newton, B.A., State Leader, Home Economics Extension, and Associate Professor

Herbert Woodrow, Ph.D., Associate Professor of Psychology

Edith Boyd, M.D., Instructor in Pediatrics

Eula B. Butzerin, R.N., B.S., Instructor in Preventive Medicine and Public Health

Ruth E. Boynton, B.S., M.D., Instructor in Preventive Medicine and Public Health

Monica K. Doyle, B.A., Lecturer in Sociology

Lawrence F. Richdorf, M.D., Instructor in Pediatrics

Michael G. Mulinos, M.D., Instructor in Pediatrics

Irene I. Sell, Ph.B., Instructor in Home Economics

GENERAL INFORMATION

The Institute of Child Welfare was organized at the University of Minnesota in July, 1925, with the aid of a grant from the Laura Spelman Rockefeller Memorial of New York City. Its purpose is to make scientific studies of the development of the young child, to train future workers in the field, and to bring to parents through an extension program the information accumulated in its own and other research centers.

The institute is organized as a separate division of the University. It co-operates with the schools, colleges, and departments of the University which are carrying on work related to the institute program. Among these departments are: Anatomy, Education, Home Economics, Pediatrics, Psychology, Nervous and Mental Diseases, Public Health Nursing, and Sociology. The institute also co-operates with the General Extension Division and with the Agricultural Extension Division of the University.

As part of its activities, the institute maintains a Nursery School for children of the ages two, three, and four. Thirty-six children are at present enrolled. The school is in session from 9 in the morning until 4 in the afternoon five days a week. The group is made up of normal, healthy children forming as nearly as possible a cross section of the population of the city. Selection is based upon the physical and mental examinations of the child, relative nearness of the home, and on the occupation of the father. The Nursery School fulfils several functions. It is, first of all, a place in which children receive excellent care and informal instruction of a type suited to their stage of development. In the second place, the Nursery School provides opportunity for a considerable number of varied researches on small children under ideal conditions. Through periodic physical and mental examination, careful records of the behavior of each child, and studies of the relationship of the child to his environment, a wealth of information is being obtained. In the third place, the Nursery School is a demonstration center for good technique in handling young children. Advanced students are given the opportunity of actual contact with the children.

In addition to the children of the nursery school group, the institute is making special studies on a considerable number of young children under home conditions. Studies on the development of infants from birth to two years of age are being carried on both in private homes and in institutions.

COURSES OF STUDY

Prior to the coming of the institute to the University of Minnesota, a number of courses dealing with the young child or related topics, were offered in various departments and colleges of the University. It has been the aim of the institute to develop its instructional program to supplement and round out the courses already offered rather than to duplicate courses now in existence. The following courses which have been accepted for credit in the College of Agriculture, Forestry, and Home Economics, in the College of Science, Literature, and the Arts, and in the College of Education, and whenever marked for graduate credit in the Graduate School are now offered by the institute.

DESCRIPTION OF COURSES

C.W.I. 50w-51s. Nursery School Methods. A consideration of the materials and methods utilized in the training of small children as individuals and in groups. Special attention will be paid to the home. The Nursery School will be used for illustration and observation. Lectures, discussions, and reports. (6 cred.; jr., sr.; prereq., 6 cred. in psychology or education and C.W.I. 60f.) Mrs. Foster.

C.W.I. 52f-53w-54s. Nursery School Technique. The technique and practice of nursery school instruction and management. The student will be expected to spend considerable time in the Nursery School. (6 cred.; jr., sr.; prereq., C.W.I. 50-51, and permission of instructor.) Mrs. Foster.

C.W.I. 60f. The Nursery School and Parental Education Movement. To orient student with reference to the development of the Nursery School and the movement for parental education. Consideration given to other movements such as the kindergarten and Montessori school and to the physical and mental hygiene movement in relation to preschool period. (2 cred.; jr., sr.; prereq., 6 cred. in psychology and 5 cred. in social science.) Miss Dixon.

C.W.I. 120s. Health Care of the Young Child. A course in the physical care, illnesses, prevention of disease, and health problems of the young child primarily for nursery school teachers and others who have charge of groups of children, and for workers in parental education. Opportunities for observation in the Nursery School and in clinics will be offered. With the co-operation of the Department of Pediatrics. (2 cred.; sr., grad.; open to graduate students by permission and to seniors in the curriculum in nursery school education.) Dr. Boyd.

C.W.I. 130s. The Development of the Young Child. An advanced course dealing with the development of the pre-school child from the anatomical, physiological, psychological, educational, and social aspects. Lectures, readings in the experimental literature, and reports. (2 cred.; sr., grad.; prereq., 12 cred. in psychology or equivalent, and permission of instructor.) Mr. Anderson.

133f, 134w, 135s. Observational and Experimental Methods in the Study of the Development of the Young Child. A study of the various methods and techniques such as growth records, mental tests, ratings, controlled observations, etc., used in the experimental study of the young child. Practical exercises and problems on institute records and data will be given. (4 or 6 cred.; sr., grad.; prereq., 10 credits in psychology or educational psychology, including one laboratory course, or the equivalent, and permission of instructor.) Miss Goodenough.

C.W.I. 170f. Parental Education in Child Care and Training. A consideration of the content and methods used in courses and study groups for parents in the care and training of young children. Lectures, discussions, and reports. (3 cred.; sr., grad.; prereq., C.W.I. 52-53-54, or H.E. 34, 35, and 44, or 15 cred. in education, or psychology, or sociology, or preventive medicine.) Miss Dixon.

C.W.I. 173w-174s. Technique and Practice of Parental Education. Field work in the technique of organizing and conducting parental study groups and courses for the study of the young child. (6 cred.; sr., grad.; prereq., C.W.I. 170 and permission of instructor.) Miss Dixon.

C.W.I. 190f-191w. Mental Examination of Pre-School Children. A study of the methods used in testing young children together with practice in such testing. (2 or 4 cred.; sr., grad.; prereq., Ed., Psy. 143-144-145 or 134-135-136, or equivalent, and permission of instructor.) Miss Goodenough.

C.W.I. 230-231-232. Seminar in the Development of the Young Child. Reviews of current literature, discussion of fundamental problems and reports on research. Meetings in alternate weeks. (3 cred.; graduate students only. Permission of instructor.) Mr. Anderson.

C.W.I. 233-234-235. Research in the Development of the Young Child. (Cred. ar.; grad. students only.) Mr. Anderson.

The following course is offered by the institute under the auspices of the College of Education:

H.E.Ed. 40. Child Training. A brief study of the physical and mental development of the child is followed by a discussion of the problems of training small children. Emphasis is placed on the pre-school child. Lectures, observations in the Nursery School, and reports. Mr. Anderson, Mrs. Foster.

In addition to the courses offered by the institute, there are a considerable number of other courses offered in the University which are related directly to training in the field of child welfare. A list follows. These courses, with their prerequisites, are described in the catalogs of the various colleges of the University which may be obtained from the registrar.

1. Anat. 135. Physical Development of Childhood.
2. Art. Ed. 36. Cardboard and Paper Construction.
3. Ed. 44. Children's Literature.
4. Hist. Ed. 103su. History of Modern Elementary Education.
5. Ed. Psy. 157fsu. Ontogenetic Psychology. With emphasis on the activities of the pre-school child.
6. Ed. Psy. 143, 144, 145. Individual Mental Examination.
7. Ed. Psy. 149, 150, 151. Psycho-educational Clinic.
8. Ed. Psy. 192, 193. Psychology of Behavior Problems in Children.
9. Ed. 141su. Phonetic Disorders of Speech.
10. H.E. 19su. Nutritional Aspects of Health.
11. H.E. 70. Food Preparation.

12. H.E. 71. Elementary Dietetics.
13. Ed. 181w. Technique of Elementary Instruction.
14. Prev. Med. 58su. Maternal and Child Hygiene.
15. Prev. Med. 52. Health Care of the Family.
16. Prev. Med. 61. Mental Hygiene.
17. Prev. Med. 64. Field Practice in Infant Welfare Nursing.
18. Psy. 125, 126, 127. Psychology of Individual Differences.
19. Psy. 144, 145. Abnormal Psychology.
20. Phys. Ed. 87. Personal and School Hygiene.
21. Soc. 14. Rural Sociology.
22. Soc. 52. Elementary Case Work.
23. Soc. 60. Child Welfare.
24. Soc. 119. The Family.
25. Soc. 133. Social Case Work in Health Problems.
26. Soc. 134. Legal Protection of the Child.
27. Soc. 135. Field Practice in Legal Protection of the Child.
28. Soc. 138, 139. Mental Case Work.

SPECIAL CURRICULUM IN NURSERY SCHOOL EDUCATION

The following special curriculum is offered in the College of Education and leads to a degree of bachelor of science in education. A university teacher's certificate is also given upon its completion.

This special curriculum is arranged for persons who are preparing to teach or direct nursery schools or other types of schools for children of pre-school age, a field of work which is becoming increasingly important.

It also offers opportunity for individuals who wish to enter the field of parent education or the direction of child study classes to secure basic training which, combined with one year of graduate work, will prepare the individual for work in this rapidly growing field.

JUNIOR COLLEGE REQUIREMENTS

The student must satisfy the regular requirements of the Junior College. For the purpose of this curriculum, he must present at least the following:

a. 15 cred. in English.
b. 10 cred. in psychology.
c. 15 cred. in natural sciences, exclusive of psychology.
d. 15 cred. in social sciences, including Sociology 1.
e. Additional courses to total 90 credits.

SENIOR COLLEGE REQUIREMENTS

In addition to the required courses listed below, the candidate must present a sufficient number of electives to make up a total of 90 credits. Electives should be discussed with the major adviser.

Junior Year

Fall Quarter No. and Title	Cred.	Winter Quarter No. and Title	Cred.	Spring Quarter No. and Title	Cred.
Prev. Med. 53, Elem. Prev. Med.	3	Soc. 51, Occ. Soc. Inad.	3	Psy. 144, Abnormal Psy.	3
H.E. 70, Food Prep.	3	Psy. 144, Abnormal Psy.	3	C.W.I. 50, Nurs. Sch. Methods	3
C.W.I. 60, N. S. & P. Ed. Movement	3	C.W.I. 50, Nurs. Sch. Methods	3	Electives	5
Ed. Psy. 157, Ontogenetic Psy.	3	Prev. Med. 58, Maternal and Child Hygiene	3		
Electives	3	Electives	3		
	15		15		15

For Prev. Med. 53, Prev. Med. 50 or 52 may be substituted. For H.E. 70, H.E. 20 may be substituted.

Senior Year

Fall Quarter No. and Title	Cred.	Winter Quarter No. and Title	Cred.	Spring Quarter No. and Title	Cred.
Anat. 135, Phys. Dev. Child	2	C.W.I. 53, Nurs. Sch. Tech.	2	C.W.I. 54, Nurs. Sch. Tech.	2
C.W.I. 170, Parental Ed.	3	H.E.Ed. 40, Child Tr.	3	Ed. 103, Hist. Mod. Elem. Ed.	3
C.W.I. 52, Nurs. Sch. Tech.	2	Soc. 90, Field Work	2	C.W.I. 130, Dev. Young Child	3
Soc. 90, Elem. Field Work	2	Electives	8	Electives	7
Electives	6				
	15		15		15

SUMMER SCHOOL COURSES

In the summer quarter some of the institute courses are offered. Many of the courses relating to the young child in other departments are also offered, and specialists from other institutions frequently give courses in the summer quarter. Interested persons can usually secure a well-rounded program in child welfare with opportunities for nursery school observation. A summer school catalog may be obtained from the registrar.

GRADUATE WORK

The requirements for graduate work are described in the bulletin of the Graduate School. In general, students working for advanced degrees are advised to major in one of the sciences related to the institute program and to minor in child welfare.

OPPORTUNITIES FOR RESEARCH

Graduate students in the University working toward advanced degrees in any of the sciences, may take advantage of the facilities of the institute for research. The proposed research must have the approval of the student's major adviser and the director of the institute.

Research fellows, advanced students, other than those working for degrees, and members of the faculty desirous of utilizing the facilities of the institute in a research project should consult the director of the institute. The institute feels that one of its primary functions is to promote research by qualified individuals by furnishing opportunity and facilities in so far as it may be possible. A large number of such co-operative researches are now under way.

RESEARCH ASSISTANTS

The institute each year appoints a number of research assistants on the recommendation of co-operating departments or the staff of the institute. Such assistants are assigned certain duties in connection with the institute program. In making appointments, preference is given students who are undertaking in connection with their work for an advanced degree a research problem in line with the general program of the organization.

EXTENSION

The extension activities of the institute are varied. It co-operates with the General Extension Division of the University in offering extension and correspondence courses and with the Agricultural Demonstration Extension Service in offering projects in child care and training in various localities and counties in the state. It also organizes and supervises parental study groups in the Twin Cities and various parts of the state, and co-operates with such state organizations as the Parent-Teacher Association, the American Association of University Women, Federation of Women's Clubs, etc., and such local groups as may be formed through churches, schools, neighborhood groups, and other organizations. It also co-operates with the Division of Child Hygiene of the State Board of Health and other health agencies, both state and local. The Extension Service, from time to time as occasion may warrant, organizes courses of lectures given by specialists. It also maintains a library of books and pamphlets on child welfare for use by study groups.

STUDY GROUPS

The institute furnishes leadership and supervision for groups of parents and others interested in the problems of child care and training. These groups are in some cases sponsored by state or local organizations. The plan followed by the institute is that of planning and conducting or supervising the program and supplying a small traveling library of selected books and pamphlets bearing on the topics in which the group is interested, while the group is responsible for its own organization, the arrangements for time and place of meeting, the regular attendance of members, and the distribution and return of the books. The groups meet primarily for study and discussion, the leader serving not as a lecturer but rather as a guide and aid in controlling the discussion.

AGRICULTURAL EXTENSION

The enrolment for projects in child care and training offered in co-operation with the Agricultural and Home Demonstration Service is arranged through the county or home demonstration agent. The lessons are given by a specialist sent out from the institute.

EXTENSION COURSES

In co-operation with the General Extension Division of the University, the institute offers the following extension courses. During the year 1926-27, they are being given in Minneapolis, St. Paul, and Duluth.

C.W.I. 40. Child Development and Training. A brief study of the physical and mental development of the child is followed by a discussion of the training of young children. Behavior problems in their various aspects and techniques of good and bad management will be considered. (3 cred.; one meeting a week; first semester.) Miss Dixon, Mrs. Faegre.

C.W.I. 50. Educational Methods for Young Children. A study of the education of the young child in the home. Stories, music, art, and dramatics, as well as the use of tools, toys, and a variety of occupational materials are discussed. The educational importance of play and of projects initiated and carried out by the children is stressed. Slides and moving pictures of children will be used for illustration and demonstration. (3 cred.; one meeting a week; second semester.) Miss Dixon, Mrs. Faegre.

CORRESPONDENCE COURSES

In co-operation with the General Extension Division, the institute offers the following correspondence courses:

1. Child Care and Training. Physical growth, care, and diet of young children. Mental development, personality, and behavior. The management of young children with reference to the establishment of correct habits of behavior. Play, toys, games, stories, and music. Intended primarily for the parents of young children. Offered to residents of Minnesota without fee. People outside the state may take the course upon payment of a fee of $2 which is non-refundable. Sixteen lessons, no credit. Institute of Child Welfare.
2. Child Development and Training. A brief study of the physical and mental development of the young child is followed by a discussion of the training of young children. Behavior problems in their various aspects, and the techniques of good and bad management will be considered. Sixteen lessons; three credits. Mr. Anderson. $10.00.
3. Educational Methods for Young Children. A study of the education of the young child in the home. Stories, music, art, and dramatics, as well as the use of tools, toys, and a variety of occupational materials are discussed. The educational importance of play and of projects initiated and carried out by the children is stressed. Open to those who have completed Course 2. Sixteen lessons; three credits. Miss Dixon. $10.00.

Special attention is called to Correspondence Course No. 1 which is a course offered to residents of the state of Minnesota without fee. The lessons in this course which are presented in simple language are mailed to those registered every two weeks. As this bulletin goes to press, several hundred people in every section of Minnesota are enrolled. Information about this course may be obtained by writing to the General Extension Division, University of Minnesota, Minneapolis.

The Bulletin *of the* University *of* Minnesota

Courses in Medical Technology for Clinical and Laboratory Technicians 1926-1928

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COURSES IN MEDICAL TECHNOLOGY

The demand for well-trained laboratory technicians is increasing. Positions may be secured in hospitals, clinics, and physicians' offices. Three types of individuals are holding them: (1) university graduates in technology; (2) short course graduates; and (3) those whose training has been acquired by practice under preceptors. The University of Minnesota does not offer any short courses. The regular four-year course is open to graduates of accredited high schools. The rules for admission and registration are those of the College of Science, Literature, and the Arts. The first two years are essentially the same as the pre-medic requirement. The last two years are spent in the Medical School and University Hospital laboratory, or other approved laboratory.

Credits and honor points.—At least 90 credits and 90 honor points in the two years (S.L.A.) and the same for the last two years (Medical School).

Degrees.—Upon satisfactory completion of the prescribed course the degree of bachelor of science will be conferred by the Board of Regents. Students desiring to specialize in bacteriology, anatomy, parasitology, hematology, or chemistry are advised to do graduate work as fellows. (See bulletin of Graduate School.)

Requirements.—The main qualifications for a good technician are a love of accuracy coupled with dexterity. Ability to cook, sew, and make things with the hands are excellent accomplishments for would-be technicians, but not essential. Men are not advised to take the course because of limited opportunities for employment at the present time. The regular course in medicine followed by graduate study is advised for men and women who desire to become pathologists.

Courses.—The following guide has been prepared for the assistance of the student in registering. The committee in charge are William A. O'Brien, M.D., chairman, W. P. Larson, M.D., and S. Marx White, M.D: Further information may be obtained by addressing the chairman at the University Hospital, University of Minnesota, Minneapolis, Minnesota.

Abbreviations.—(S.L.A.) Science, Literature, and the Arts College, (M.S.) Medical School.

Before registering be sure to note prerequisites.

THE COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

1. (S.L.A.) English: Composition 4f-5w-6s, 9 credits, or Freshman English Af-Bw-Cs, 10 credits.
2. (S.L.A.) Animal Biology: General Zoology 5f-6w-7s, 12 credits, or 1f-2w, 10 credits.
3. (S.L.A.) Chemistry: (a) General Inorganic Chemistry 1f-2w-3s, 12 credits, or 4f-5w, 8 credits; (b) Qualitative Chemical Analysis 11f, 4 credits; (c) Quantitative Analysis 7f (27) or 7w,s (27), 4 credits; (d) Elementary Organic Chemistry 6w-7s (31-32), 8 credits, or 51f-52w-53s (35-36-37), jr., sr. only.
4. (S.L.A.) Physics: Elem. of Mechanics and Sound 3f, 4f,w,s, 4 credits; Optics 35w, 2 credits; Electricity 43w,s, 44w, 4 credits.
5. (S.L.A.) Mathematics: Algebra and Trigonometry 4w or 4s, 4 credits. Note prerequisites 3f or 5f or 5w or 5s.
6. (S.L.A.) Foreign Languages: French or German, reading knowledge of medical literature, Scientific French 8, 9, and 10 (any two) or by transfer of credits from elsewhere (15 credits of French, grade C) followed by special examination, German 31-32, or two years of college German or equivalent.
7. (S.L.A.) Electives: Sociology 1f, 1w or 1s, 5 credits; Psychology 1f, 2w, 6 credits; History, Lettering, Drawing, and others.
8. (S.L.A.) Physical Education (men and women). See special announcements as to swimming tests, drill, gym, etc.

THE MEDICAL SCHOOL

1. (S.L.A.) Animal Biology: Histology and Organology 48f-49w-50s, 9 credits, or Histology 25w, 5 credits only by permission of Mr. Downey as course is prerequisite to Hematology.
2. (S.L.A.) Animal Biology: Introd. Animal Parasitology 24f, 5 credits, or Animal Parasites 44s, 3 credits.
3. (S.L.A.) Animal Biology: Hematology 154f,w-155s, 6 credits. Note prerequisites.
4. (M.S.) Bacteriology: General Bacteriology 51su,f,w,s, 5 credits.
5. (M.S.) Bacteriology: Special Bacteriology 101f,su, 4 credits, or 52s, 4 credits.
6. (M.S.) Bacteriology: Immunity 116w, 3 credits.
7. (M.S.) Pathology: Pathologic Technique 106f,w,s, credits arranged.
8. (M.S.) Physiology: Human Physiology 4f,w,s,su, 5 credits or 58w,su, 59s,su, 8 credits.
9. (M.S.) Physiology: Physiologic Chemistry 100su,w-101su,s, 12 credits, or 57f,su, 4 credits. Special permission for substitution.
10. (M.S.) Physiology: Pathological Chemistry 155f, 156w, 157s, 3 credits a quarter. At least 2 quarters, if possible 3 quarters.
11. (M.S.) Physiology: Metabolism 163w, 1 credit.
12. (M.S.) Medicine: Clinical Chemistry and Microscopy 26su,s, 4 credits.
13. (M.S.) Practical Work: Blood, urine, feces, gastric analysis, blood chemistry, practical bacteriology, basal metabolism, X-ray, and serology. Arrange with Dr. O'Brien. Laboratories of University Hospital, Medical Dispensary, Minneapolis General Hospital, Northern Pacific Hospital, and others of approved list. 2 to 3 quarters.

The Bulletin *of the* University *of* Minnesota

Department of Music
Announcement for the Years
1926-1928

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

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Act of October 3, 1917, authorized July 12, 1918

FACULTY

Carlyle M. Scott, Professor and Director of the Department of Music
George H. Fairclough, F.A.G.O., M.Mus., Assistant Professor of Music
Donald N. Ferguson, M.A., Associate Professor of Music
Gertrude Hull, Assistant Professor of Music
Earle G. Killeen, Professor of Music
William Lindsay, Associate Professor of Music
Gertrude Reeves, Assistant Professor of Music
Alexandre Duvoir, Instructor in Oboe
Christian Erck, Instructor in Cello
Thaddeus Giddings, Instructor in Public School Music
Georges Grisez, Instructor in Clarinet
Blanche Kendall, Instructor in Music
Richard Otto Lindenhahn, Instructor in French Horn
Abe Pepinsky, Instructor in Music
Inez C. Richter, Instructor in Music
Karl Scheurer, Instructor in Violin
Miles Sery, Instructor in Tuba and Cornet
Clyde W. Stephens, Instructor in Piano
Henry J. Williams, Instructor in Harp
Michael Jalma, Bandmaster
Mary Malcolm, B.A., Assistant

GENERAL INFORMATION

This bulletin is issued for the purpose of bringing together in convenient form all the information available concerning the courses of music offered in the different colleges of the University of Minnesota, together with announcements of some of the principal advantages and activities open to students of music at Minnesota.

The Department of Music is fortunate in having one of the most complete and satisfactory music buildings that is to be found in the country. It was granted by the state legislature and erected at a cost of $257,000. It contains a concert hall with a seating capacity of 600 (provided with a fully equipped stage, orchestra pit, and a four-manual pipe organ), teachers' studios, classrooms, library, 3 small organs, and 32 sound proof practice studios. With this equipment, the excellent teaching staff is now enabled to offer to the music students of the state every advantage necessary to a broad and thoro musical education. Besides the regularly outlined courses, there are many cultural opportunities provided both on the campus and in the two cities.

FACULTY RECITALS

During the year, the Department of Music presents its faculty members in recital in the music auditorium. Among the faculty are concert artists and chamber music exponents of exceptional ability, who offer every type of program. These recitals are open to the general public as well as to the student body, and are given without admission charge. Every Tuesday the university organist gives a noon-time recital, often assisted by singers or other instrumentalists of note.

STUDENT RECITALS

One of the chief factors in the college work of the music students is the student recital every Thursday at 4:30, in which, at least once during the year, each music student takes part. These programs are carefully arranged to include as much variety and interest as possible, and are at all times well attended. Beside being instructive to the student body, these appearances furnish excellent experience for the performers and enable them to gain the poise and ease of execution before an audience that are essential to their training and success.

CHORAL SOCIETY

The University Choral Society, reorganized in 1921, has given public performances of Mendelssohn's *Elijah*, Handel's *Messiah*, Verdi's *Aïda*, Gaines' *Russian Fantasy*, and Pierene's *The Children's Crusade*. This organization is designed to acquaint students with choral and operatic masterpieces. The University Symphony, the Minneapolis Symphony Orchestra, and nationally known artists have assisted at these productions.

SYMPHONY ORCHESTRA

The University Symphony Orchestra offers an unusual opportunity for the serious study of the best in orchestral literature. A nucleus of faculty music lovers with orchestral experience has materially aided the organization in maintaining high standards of attainment. During the past years the orchestra has developed in size and efficiency and is an important factor in the musical life of the campus.

BANDS

The University maintains two bands, one the R.O.T.C. band (70 pieces) and the other known as the Concert Band (64 pieces). Scholarships are available to 35 members of the concert band: 27, at $35 each, and 8, at $50 each, for the year. The band gives a series of concerts, plays at the commencement exercises, convocations, and football games, and is one of the most valuable organizations at the University.

UNIVERSITY CONCERT COURSES

Under the general direction of the Department of Music two remarkable courses are presented during the year: a course of all-star recitals in the University Armory and a shorter series of chamber music concerts in the Music Hall. In these, only artists of international reputation appear. The fee for either course never exceeds $5, and a season ticket may be obtained at $3 for five or six outstanding concerts. These two courses, together with the series of symphony concerts offered by the Minneapolis Symphony Orchestra, and other excellent programs given under different auspices during the year in both cities, make the cultural opportunities at Minnesota rich beyond measure.

COURSES OF STUDY

Three major courses of study are offered to the student of music as follows:

1. Course in Arts and Music leading to the degree of bachelor of arts with a major in music.

2. Course in Arts and Music leading to the degree of bachelor of music.

3. Course in Public School Music leading to the degree of bachelor of science and the university teacher's certificate.

Students desiring to follow either of the first two courses of study will register in the College of Science, Literature, and the Arts. Those desiring to follow the course in Public School Music will register in the College of Education.

Opportunities are also offered through registration in the General Extension Division to those who desire to take special work in practical and theoretical music without qualifying for a degree.

The Department of Music also offers its courses as electives to the students of any school or college of the University subject to the rules of the school or college in which the student is registered, and subject to satisfying the general requirements for admission to practical courses in music as stated below.

ADMISSION

1. *General requirements* for admission to the work of the music department. A student wishing to register in one of the four-year courses of study listed above or for any course in practical music must first pass an examination in practical music before a committee of the faculty of the Music Department. Entrance requirements, according to instrument, are:

a. Piano: Czerny's *School of Velocity* and the easier Hadyn and Mozart sonatas (or equivalent).
b. Voice: Good natural equipment and 2 years of piano.
c. Violin: First ten studies from Kayser *Etudes* (or equivalent).

2. *Admission to courses of study leading to a degree.*—Admission is either by certificate (for graduates of accredited secondary schools) or by examination. Candidates must have completed the equivalent of a four-year high school course and must present:

a. Four units of English; or three units of English and four units of a foreign language; or three units of English and two units of each of two foreign languages.
b. One unit of algebra and one unit of plane geometry.
c. Enough additional work to make in all fifteen units, of which not more than four may be in Group F (vocational and miscellaneous subjects).

A detailed statement of admission requirements may be found in the bulletin of general information.

3. *Admission to extension courses.*—Any student who meets the general requirements under 1, above, may register for extension courses in

music. Such courses, however, will not carry credits toward a university degree until the entrance requirements under 2, above, have been met.

FEES

Degree Courses of Study

Tuition fee (per quarter)	
Residents of Minnesota	$20.00
Non-residents	30.00
Incidental fee (per quarter)	4.00
Deposit fee (first quarter each year)	5.00
Military deposit (required of all students registered for Military Science and Tactics)	10.00
Music fees (for each course in practical music)	
Two individual lessons per week (one half hour)	65.00
One class and one individual lesson per week	55.00
Class lessons (three students in each class—two hours per week)	45.00
One individual lesson per week	35.00
Practice fees	
Organ (per hour)	
Small	.20
Large	.40
Piano (six hours per week) per quarter	5.00
($.50 per quarter for each additional hour per week)	
Graduation fee	10.00

Extension Courses

Tuition fee per credit hour	3.33
Music fees (for each course in practical music) same as above	

Students in other schools and colleges of the University are required to pay the music fees for each course in practical music in addition to the regular fees of the curriculum in which they are registered.

I. GENERAL COURSES LEADING TO DEGREE OF BACHELOR OF ARTS WITH A MAJOR IN MUSIC

The four-year course leading to the degree of bachelor of arts combines the theoretical and practical work in music with the study of psychology, modern languages, English literature, and history. The object is to provide a well-rounded cultural course for those whose major interest is music.

To secure the degree of bachelor of arts with a major in music, a student must fulfill the requirements of both the Junior and Senior colleges as stated in the bulletin of the College of Science, Literature, and the Arts, securing 144 credits in courses other than practical music (piano, voice, etc.).

FRESHMAN AND SOPHOMORE YEARS

	Credits
English A-B-C or equivalent	15
Foreign language to fulfill the requirements for admission to Senior College	0 to 20*
History 11-12-13, Medieval History	10
Psychology 1-2, 4-5, General Psychology with laboratory	10
Music 1-2-3, Harmony; 4-5-6, Counterpoint; 7-8-9, Ear Training	18
Practical music under the direction of an adviser	24
Electives to make a total of 90	

* A student must present for entrance four years of one foreign language, or he must complete twenty credits of one language in college, or he must continue a language which he presented for entrance, according to the following schedule:

Amount Presented for Entrance	*Amount Required in Junior College*
Four years of one language	None
Three years of one language	5 credits in same language
Two years of one language	10 credits in same language
One year of one language	15 credits in same language
Less than a year of one language	20 credits in one language

JUNIOR AND SENIOR YEARS

A major sequence. See program, p. 12	27 or 30
A minor sequence. (9 credits in senior college courses in one department)	9
Practical music	12-24
Electives to make a total of 180 credits	

FIRST YEAR

Fall	Credits	Winter	Credits	Spring	Credits
English A	5	English B	5	English C	5
History 11	3	History 12	3	History 13	4
Music 1	3	Music 2	3	Music 3	3
Music 7	1	Music 8	1	Music 9	1
Practical music	4	Practical music	4	Practical music	4

SECOND YEAR

Psychology 1, 4	5	Psychology 2, 5	5		
Language	0 or 5	Language	0 or 5	Language	0 or 5
Music 4	2	Music 5	2	Music 6	2
Practical music	4	Practical music	4	Practical music	4
Elective		Elective		Elective	

THIRD YEAR†

Major Sequence A		*Major Sequence B*		*Major Sequence C*	
Ensemble	6	Advanced Harmony	6	Ensemble	6
History of Music	9	Ensemble	6	History of Music	9
Analysis	3	History of Music	9	Normal Piano	6
Practical music	6 or 12	Practical music	6 or 12	Practical music	6 or 12

FOURTH YEAR†

Major Sequence A		*Major Sequence B*		*Major Sequence C*	
Bach-Beethoven	9	Bach-Beethoven	9	Advanced Normal Piano	6
Romantic Movement	6	Composition-Orchestration	6	Bach-Beethoven	9
Practical music	6 or 12	Practical music	6 or 12	Practical music	6 or 12
Electives		Electives		Electives	

† Credits in each case are for one year's work.

II. SPECIAL COURSE IN MUSIC LEADING TO THE DEGREE BACHELOR OF MUSIC

The four-year course leading to the degree of bachelor of music combines the theoretical and practical work in music with the study of English literature, psychology, and a modern language or history. The object is to provide a well-rounded cultural course for those who are preparing for professional work in music.

For graduation the student must present 180 credits and 180 honor points, and he must have an average of C in the courses in music taken in the third and fourth years. He must earn 60 credits in practical music. Students of voice must have 30 credits in language.

FIRST YEAR

English A-B-C or equivalent	15
Music 1-2-3, Harmony, and 7-8-9, Ear Training	12
Orchestra or chorus	3
Practical music	15

SECOND YEAR

Psychology 1-2, General Psychology	6
Foreign language*	15
or	
History 11-12-13, Medieval History	10
Music 4-5-6, Counterpoint	6
Orchestra or chorus	3
Practical music	15

THIRD YEAR

Foreign language*	15
Music 106-107-108, History of Music; 112-113-114, Ensemble; 103-104-105, Analysis	18
Orchestra, chorus, or choir	3
Practical music	15
Electives	

FOURTH YEAR

Music 109-110-111, Bach-Beethoven; 115-116-117, Advanced Ensemble; 124-125-126, Advanced Harmony; or 127-128-129, Advanced Composition	21
Orchestra, chorus, or choir	3
Practical music	15
Electives to make a total of 180 credits	

III. FOUR-YEAR COURSE IN PUBLIC SCHOOL MUSIC LEADING TO THE DEGREE OF BACHELOR OF SCIENCE

The Public School Music Course is a four-year course leading to the degree of bachelor of science, in which the theoretical and practical work in music is combined with the study of English literature, general psychology, grade school and high school methods, educational sociology, educational psychology, history of education, and observation and teaching. The object is to provide a well-rounded course for those who are prepared to follow public school music as a profession.

A student must earn 180 credits and 180 honor points, with at least 30 credits in practical music. The following subjects, English, history, language, etc., are suggested for a minor in one academic secondary school subject.

* For students of voice. Thirty credits required.

FIRST YEAR

	Credits
English A-B-C or equivalent	15
Music 1-2-3, Harmony, and 7-8-9, Ear Training	12
Public School Music 71-72-73, Class Instrument Teaching	6
Practical music (piano and voice)	12

SECOND YEAR

Psychology 1-2, General Psychology	6
Music 103-104-105, Analysis, and 106-107-108, History of Music	12
Public School Music 29-30-31, Grade School Methods	9
Practical music (piano and voice)	6
Electives	

THIRD YEAR

Education 1, History of Education; Education 3, Educational Sociology	8
Educational Psychology 55	3
Public School Music 51-52-53, Instrumentation, and 32-33-34, High School Methods	15
Practical music	6
Orchestra or chorus*	3
Electives	

FOURTH YEAR

Education 160, Principles of Supervision	2
Music 86-87-88, Normal Piano,* and 112-113-114, Ensemble	6 or 12
Public School Music 64-65-66, Orchestra Conducting 81-82-83, Observation and Teaching	12
Orchestra or chorus	3
Practical music	6
Electives to complete a minor teaching requirement in one of the academic secondary school subjects	

MUSIC

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

1-2-3.† Harmony. The study of chords, their construction, relations, and progressions. Written exercises on bases, the harmonization of given melodies.

4-5-6.† Counterpoint. Strict counterpoint up to eight parts; free contrapuntal harmonization of chorales and composition of smaller contrapuntal forms as inventions.

7-8-9.† Ear Training.

10-11-12. First Year Organ.

13-14-15. Second Year Organ.

16-17-18. First Year Piano.

19-20-21. Second Year Piano.

22-23-24. First Year Violin.

25-26-27. Second Year Violin.

28-29-30. First Year Vocal Training.

31-32-33. Second Year Vocal Training.

34-35-36, 37-38-39, 74-75-76, 77-78-79. Other Orchestral Instruments.

* Elective.

† The entire course must be completed before credit is received for any quarter.

40-41-42. Orchestra. Study of standard orchestral literature and accompaniment of vocal and instrumental soloists. This ensemble group is an ideal campus institution, supporting and inducing campus spirit and activities.

43-44-45. University Chorus. Open to juniors and seniors. May be taken only with the consent of the instructor. May be taken a second year with credit.

50-51-52. Third Year Organ.

53-54-55. Fourth Year Organ.

56-57-58. Third Year Pianoforte.

59-60-61. Fourth Year Pianoforte.

62-63-64. Third Year Violin.

65-66-67. Fourth Year Violin.

68-69-70. Third Year Vocal Training.

71-72-73. Fourth Year Vocal Training.

86-87-88. Normal Piano. Special course offered to students desiring to teach pianoforte as a profession.

89-90-91. Advanced Normal Piano. Practice teaching.

92-93-94. Principles of Vocal Technique. Historical development of vocal technique to meet demands of various schools of composition, and an appraisement of modern theories.

100-101-102. Composition Orchestration. For those specializing in theory. May be taken only with the consent of the instructor.

103-104-105. 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.

106-107-108. 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.

109-110-111. Bach and Beethoven, Wagner and Brahms. Critical study of selections from master works of the four greatest composers. Biographical readings, topics, and analyses, giving historical and literary background to culminate periods in composition.

112-113-114. Ensemble. Section 1. (For students of piano, violin, organ, etc.) Chamber music, duos, trios, and quartets and other larger combinations for strings and wind instruments. Section 2. (For voice students.) Oratorio and opera.

115-116-117. Advanced Ensemble. Section 1. (For students of piano, organ, violin, etc.) Chamber music continued. Section 2. (For voice students.) Offers to groups made up of students from all voice ensemble classes, practical experience in scenes from opera.

121-122-123. Romantic Movement. An analytical course covering the romantic movement with illustrations by the instructor. Papers assigned during the year.

124-125-126. Advanced Harmony. Harmony 1-2-3 prerequisite. A course designed to develop more freedom in expression and in musical effect. Especial attention given to modulations.

127-128-129. Advanced Composition.

PUBLIC SCHOOL MUSIC

COLLEGE OF EDUCATION

29. Grade School Methods. First term. Piano class teaching. Practical methods of teaching piano classes, and theory underlying the methods. Practice teaching with the class and with classes of children. This is also a good course in practical schoolroom teaching.

30. Grade School Methods. Second term. Methods of teaching vocal music in the kindergarten and in the first five grades. Theory and practice of teaching combined in class work. Students required to observe and teach classes in the Minneapolis public schools three hours weekly.

31. Grade School Methods. Third term. Same as above for grades six, seven, eight, also a short course in voice training for child and adult.

32. High School Methods. First term. Organization of junior high and high school music. Methods and material used in the chorus, glee clubs, of the modern high school. Pupils will be required to observe in the Minneapolis high schools.

33. High School Methods. Second term. Students will learn to apply methods of high school music teaching by practical work with the class itself. They will be required to teach in the Minneapolis high schools three hours weekly.

34. Voice. A practical course in class voice teaching, in the use and care of the child voice, the changing voice, the adult voice. Testing and classification of voices in upper grades and high schools. Voices of all ages will be used for demonstration.

51-52-53. Instrumentation and Orchestration. (Junior, three quarters.) Theoretical study of orchestral and band instruments. Examination, revision, and scoring of material suitable for school orchestras.

64-65-66. Orchestra Conducting. (Fourth year, three quarters.) Devoted to the theory and practice of general principles of conducting. Technique of the baton and elements of interpretation.

71-72-73. Class Instrument Teaching. Fall quarter, beginner's classes in violin, viola, cello, and bass; winter quarter, beginner's classes in flute, oboe, clarinet, and bassoon; spring quarter, beginner's classes in all brass and percussion instruments.

74-75-76. Advanced Class Instrument Teaching. Practical orchestral routine augmenting University High School Orchestra, under baton of the director and members of class in Orchestra Conducting, 64,65,66.

81-82-83. Observing and Teaching. (Senior year, three quarters.) Observation and practice teaching in the high schools, city, and University, under supervision.

PROGRAM

Major Advisers

Professors Scott and Killeen; Associate Professor Ferguson.

Major Sequences

A. Courses 103-104-105, 106-107-108, 109-110-111, 112-113-114, 121-122-123.
B. Courses 106-107-108, 100-101-102, 109-110-111, 112-113-114, 124-125-126.
C. Courses 106-107-108, 109-110-111, 112-113-114, 86-87-88, 98-90-91.

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w-3s†	Harmony ..... (9 cred.; fr. mu.; no prereq.)				
	Sec. 1	II	MWF	Mu	Mr. Scott
	2	VI	MWF	Mu	Mr. Scott
1w-2s-(3su)†	Harmony ..... (See 1f-2w-3s)	III	MWF	Mu	Miss Reeves
4f-5w-6s†	Counterpoint ..... (6 cred.; soph. mu.; prereq., 1-2-3)	III	TTh	Mu	Mr. Ferguson
7f-8w-9s†	Ear Training ..... (Cred.;* fr., soph. mu.; no prereq.)	VI	TTh	Mu	Ar
7w-8s	Ear Training	VII	MTh	Mu	Ar
10f-11w-12s	First Year Organ ..... (6 or 12 cred.; fr. mu.)	Ar	Ar	Mu	Ar
13f-14w-15s	Second Year Organ ..... (6 or 12 cred.; soph. mu.; prereq., 10-11-12)	Ar	Ar	Mu	Ar
16f-17w-18s	First Year Pianoforte ..... (6 or 12 cred.; fr. mu.)	Ar	Ar	Mu	Ar
19f-20w-21s	Second Year Pianoforte ..... (6 or 12 cred.; soph. mu.; prereq., 16-17-18)	Ar	Ar	Mu	Ar
22f-23w-24s	First Year Violin ..... (6 or 12 cred.; fr. mu.)	Ar	Ar	Mu	Ar
25f-26w-27s	Second Year Violin ..... (6 or 12 cred.; soph. mu.; prereq., 22-23-24)	Ar	Ar	Mu	Ar
28f-29w-30s	First Year Vocal Training..... (6 or 12 cred.; fr. mu.)	Ar	Ar	Mu	Ar
31f-32w-33s	Second Year Vocal Training..... (6 or 12 cred.; soph. mu.; prereq., 28-29-30)	Ar	Ar	Mu	Ar
34f-35w-36s	First Year of Other Orchestral Instruments ..... (6 or 12 cred.; fr. mu.)	Ar	Ar	Mu	Ar
37f-38w-39s	Second Year of Other Orchestral Instruments ..... (6 or 12 cred.; soph. mu.; prereq., 37-38-39)	Ar	Ar	Mu	Ar
40f-41w-42s	Orchestra	7:30 p.m.	W	Mu	Mr. Pepinsky
	String Section ..... (3 cred.; jr., sr.)	IX	T	Mu	Ar

* Course 7-8-9 carries 3 credits for freshmen; none for sophomores.

† The entire course must be completed before credit is received for any quarter.

( ) Numbers in parentheses do not refer to the year 1926-27.

No.	Title	Hour	Day	Bldg.	Instructor
43f-44w-45s	University Chorus† ..... (3 cred.; fr. and soph. mu., acad. jr., sr.)	7 p.m.	T	Mu	Mr. Killeen
50f-51w-52s	Third Year Organ ..... (6 or 12 cred.; jr.; prereq., 13-14-15)	Ar	Ar	Mu	Ar
53f-54w-55s	Fourth Year Organ ..... (6 or 12 cred.; sr.; prereq., 50-51-52)	Ar	Ar	Mu	Ar
56f-57w-58s	Third Year Piano ..... (6 or 12 cred.; jr.; prereq., 19-20-21)	Ar	Ar	Mu	Ar
59f-60w-61s	Fourth Year Piano..... (6 or 12 cred.; sr.; prereq., 56-57-58)	Ar	Ar	Mu	Ar
62f-63w-64s	Third Year Violin ..... (6 or 12 cred.; jr.; prereq., 25-26-27)	Ar	Ar	Mu	Ar
65f-66w-67s	Fourth Year Violin..... (6 or 12 cred.; sr.; prereq., 62-63-64)	Ar	Ar	Mu	Ar
68f-69w-70s	Third Year Vocal Training..... (6 or 12 cred.; jr.; prereq., 31-32-33)	Ar	Ar	Mu	Ar
71f-72w-73s	Fourth Year Vocal Training..... (6 or 12 cred.; sr.; prereq., 68-69-70)	Ar	Ar	Mu	Ar
74f-75w-76s	Third Year of Other Orchestral Instruments ..... (6 or 12 cred.; jr.; prereq., 37-38-39)	Ar	Ar	Mu	Ar
77f-78w-79s	Fourth Year of Other Orchestral Instruments ..... (6 or 12 cred.; sr.; prereq., 74-75-76)	Ar	Ar	Mu	Ar
86f-87w-88s	Normal Piano ..... (6 cred.; jr.; prereq., 2 yrs. piano)	VII	MWF	Mu	Miss Reeves
89f-90w-91s	Advanced Normal Piano..... (6 cred.; sr.; prereq., 86-87-88)	VIII	MWF	Mu	Miss Reeves
92f-93w-94s	Principles of Vocal Technique..... (3 cred.; all; no prereq.)	III	W	Mu	Mr. Killeen
100f-101w-102s	Composition Orchestration ..... (6 cred.; jr., sr.; prereq., 1-2-3, 4-5-6)	Ar	Ar	Mu	Mr. Ferguson
103f-104w-105s	Analysis ..... (3 cred.; jr., sr.; prereq., 1-2-3, 4-5-6)	III	T	Mu	Mr. Pepinsky
106f-107w-108s	History of Music ..... (9 cred.; jr., sr.; prereq., 1-2-3, 4-5-6)	II	MWF	Mu	Mr. Ferguson
109f-110w-111s	Bach and Beethoven..... (9 cred.; sr.; prereq., 106-107-108)	VII, VIII	TTh	Mu	Mr. Ferguson
112f-113w-114s	Ensemble ..... (6 cred.; jr.)				
	Sec. 1	II	TTh	Mu	Mr. Pepinsky
	2 (For voice students)	II	TTh	Mu	Miss Hull

† Does not carry credit for academic freshmen and sophomores.

No.	Title	Hour	Day	Bldg.	Instructor
115f-116w-117s	Advanced Ensemble ..... (6 cred.; sr.; prereq., 112-113-114)				
	Sec. 1	IV	MW	Mu	Mr. Pepinsky
	2 (For voice students)	VI	MW	Mu	Mrs. Richter
121f-122w-123s	Romantic Movements ..... (6 cred.; jr., sr.; prereq., 106-107-108)	VII	WF	Mu	Miss Kendall
124f-125w-126s	Advanced Harmony ..... (6 cred.; jr.; prereq., 4-5-6)	Ar	Ar	Mu	Mr. Scott
127f-128w-129s	Advanced Composition ..... (9 cred.; sr.; prereq., 4-5-6)	Ar	Ar	Mu	Mr. Ferguson

PUBLIC SCHOOL MUSIC

Major Advisers: Carlyle M. Scott, Abe Pepinsky

No.	Title	Hour	Day	Bldg.	Instructor
29-30-31	Grade School Methods..... (9 cred.; jr., sr.; no prereq.)	IX, X	F	John Marshall High School	Mr. Giddings
32-33-34	High School Methods..... (9 cred.; jr., sr.; prereq., 29-30-31)	IX, X	W	John Marshall High School	Mr. Giddings
51f-52w-53s	Instrumentation and Orchestration. (3 cred.; jr., sr.; prereq., 1, 2, and 3 or equiv.)	VII	Th	3Mu	Mr. Pepinsky
	Lab.	VIII	TF	3Mu	Mr. Pepinsky
64f-65w-66s	Orchestra Conducting ..... (6 cred.; jr., sr.)	VII	M	4Mu	Mr. Pepinsky
		VIII	Th		
		(Observation 7:30 p.m.)	W		
71-72-73	Class Instrument Teaching..... (3 cred.; soph.; no prereq.)	I	T	3Mu	Mr. Pepinsky
74-75-76	Advanced Class Instrument Teaching ..... (3 cred.; jr.; prereq., 71-72-73)	I	MW	4Mu	Mr. Pepinsky
81f-82w-83s	Observation of Teaching ..... (6 cred.; jr., sr.; prereq., 32-33-34)	Ar	Ar	Ar	Mr. Giddings

The Bulletin *of the* University *of* Minnesota

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1925

JULY

Su	Mo	Tu	W	Th	Fr	Sa
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1926

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JULY

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SEPTEMBER

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OCTOBER

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NOVEMBER

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DECEMBER

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UNIVERSITY CALENDAR

1925-26

FALL QUARTER

September	21-25		Examinations for removal of conditions
			Physical examinations for all new students
			Registration period,[1] colleges of Science, Literature, and the Arts, and Education
September	24-25		Registration days[1] for all colleges not included above
September	25	Friday	Payment of fees for new students closes
September	28	Monday	Fall quarter classes begin, 8:30[2] a.m.
December	16-19		Final examination period
December	19	Saturday	Fall quarter ends, Christmas vacation begins, 5:20 p.m.
December	23	Wednesday	Payment of fees closes for all students in residence, fall quarter[3]

WINTER QUARTER

December	31	Thursday	Registration days for new students in all colleges
January	2	Saturday	
January	4	Monday	Christmas vacation ends, winter quarter begins, 8:30[2] a.m.
March	17-20		Final examination period
March	18	Thursday	Payment of fees closes for all students in residence, winter quarter[3]
March	20	Saturday	Winter quarter ends, spring vacation begins, 5:20 p.m.

SPRING QUARTER

March	26-27		Registration days for new students in all colleges
March	29	Monday	Spring vacation ends, spring quarter classes begin, 8:30[2] a.m.
June	9-12		Final examination period
June	12	Saturday	Spring quarter closes, 5:20 p.m.

SUMMER SESSION

June	18-19		Summer Session first term begins, registration and payment of fees
June	21	Monday	Classes begin, 8:00 a.m.
July	31	Saturday	Registration and payment of fees for second term closes
			First term Summer Session closes
August	2	Monday	Second term classes begin
September	4	Saturday	Second term Summer Session closes

[1] Registration subsequent to the date specified will necessitate the approval of the college concerned. See also pnalty fees for late registration, S. L. A. bulletin.

[2] First hour classes begin at 8:00 in the Medical School and at 8:15 at University Farm.

[3] New students must pay fees on dates announced for registration.

Requests concerning the dates of opening and closing of the quarters 1926-27 should be addressed either to the registrar of the University or the Department of Preventive Medicine and Public Health.

PREVENTIVE MEDICINE AND PUBLIC HEALTH

FACULTY STAFF

Robert W. Archibald, V.M.D., Instructor in Preventive Medicine and Public Health; and Bacteriologist, Division of Sanitation, State Board of Health

Ruth E. Boynton, B.S., M.D., Instructor in Preventive Medicine and Public Health and Director, Division of Child Hygiene, State Board of Health

Eula B. Butzerin, B.S., R.N., Instructor in Preventive Medicine and Public Health and Director of the Course in Public Health Nursing

Laurence Cady, B.S., M.D., Instructor in Preventive Medicine and Public Health

Albert J. Chesley, M.D., Associate Professor of Preventive Medicine and Public Health and Executive Secretary of the State Board of Health

James A. Childs, C.E., Instructor in Preventive Medicine and Public Health and Engineer, Division of Sanitation, State Board of Health

Harold S. Diehl, M.A., M.D., Director of Students' Health Service and Associate Professor and Chief of the Department of Preventive Medicine and Public Health

Hally J. Fisher, R.N., Instructor in Preventive Medicine and Public Health

Alice H. Fuller, B.A., R.N., Instructor in Preventive Medicine and Public Health Nursing and Assistant Superintendent, Visiting Nurse Association, Minneapolis

Harry De Witt Lees, B.M., Instructor in Preventive Medicine and Public Health and Assistant Director of Students' Health Service

Orianna McDaniel, M.D., Assistant Professor of Preventive Medicine and Public Health, and Director, Division of Preventable Diseases, State Board of Health

Lillian M. Mayer, B.S., M.D., Instructor in Preventive Medicine and Public Health

Jay A. Myers, Ph.D., M.D., Assistant Professor of Preventive Medicine and Public Health and Director of Lymanhurst School for Tuberculous Children

William A. O'Brien, M.D., Instructor in Pathology and Preventive Medicine and Public Health

Helen Chesley Peck, R.N., Executive Secretary, Infant Welfare Society, Minneapolis, and Instructor in Public Health Nursing

E. Marion Wade, M.A., Assistant Professor of Preventive Medicine and Public Health and Director of Laboratories, State Board of Health

Harold A. Whittaker, B.A., Assistant Professor of Preventive Medicine and Public Health and Director, Division of Sanitation, State Board of Health

Eleanore Zuppann, B.S., R.N., Superintendent Visiting Nurse Association, Minneapolis, and Instructor in Public Health Nursing

MEMBERS OF THE COMMITTEE ON PUBLIC HEALTH NURSING

Harold S. Diehl, M.A., M.D., Director of Students' Health Service and Associate Professor and Chief of the Department of Preventive Medicine and Public Health

Richard Olding Beard, M.D., Professor of Physiology, Emeritus

Eula B. Butzerin, B.S., R.N., Instructor in Preventive Medicine and Public Health and Director of the Course in Public Health Nursing

Marion L. Vannier, R.N., Director of School of Nursing and Associate Professor of Nursing

MEMBERS OF THE ADVISORY COMMITTEE FOR PUBLIC HEALTH NURSING EDUCATION IN THE PRACTICE FIELDS

Harold S. Diehl, M.A., M.D., Director of Students' Health Service and Associate Professor and Chief of the Department of Preventive Medicine and Public Health

Eula B. Butzerin, B.S., R.N., Instructor in Preventive Medicine and Public Health and Director of the Course in Public Health Nursing

Esther Andreasen, R.N., Assistant Superintendent of Nurses, Glen Lake Sanatorium

Richard Olding Beard, M.D., Professor of Physiology, Emeritus

Alice H. Fuller, B.A., R.N., Instructor in Preventive Medicine and Public Health Nursing and Assistant Superintendent, Visiting Nurse Association, Minneapolis

Dorothy W. Graves, B.S., R.N., Instructor, Infant Department, Infant Welfare Society, Minneapolis

Cora T. Helgesen, R.N., Supervisor of School Nurses, Board of Education, Minneapolis

Ruth Houlton, B.A., R.N., Superintendent of Public Health Nursing, Division of Child Hygiene, State Board of Health

Selma Lindblad, R.N., Supervisor of School Nurses, Board of Education, St. Paul

Helen Chesley Peck, R.N., Instructor in Public Health Nursing and Executive Secretary, Infant Welfare Society, Minneapolis

Marie Sargeant, R.N., Supervisor of Nurses in Rural Hennepin County

Jean Taylor, B.S., R.N., Supervisor of Instruction, Visiting Nurse Association, Minneapolis

Marion L. Vannier, R.N., Director of School of Nursing and Associate Professor of Nursing

Eleanore Zuppann, B.S., R.N., Instructor in Public Health Nursing and Superintendent Visiting Nurse Association, Minneapolis

ANNOUNCEMENT OF PUBLIC HEALTH COURSES

The knowledge of the way in which health may be preserved and disease avoided is no longer of interest to the medical profession alone. Teachers, parents, and citizens are realizing that health is a community problem in which each and every one must do his part and as a result the public is beginning to shoulder its share of the responsibility. In order to do this, trained teachers and leaders are necessary and general education is essential.

In response to this increasing demand on the part of the public for health education and for trained leaders in the various fields of public health work the Board of Regents, in 1922, authorized the establishment of a Department of Preventive Medicine and Public Health. This department is in the Medical School, but offers courses which are available to students in all colleges and schools of the University.

Various other departments of the University also are offering courses which are necessary for the education of sanitarians, health officials, public health nurses, teachers, etc. So, by properly choosing majors, minors, and electives, in accordance with the curriculum provisions of the college in which the student is registered, a student may obtain training for the various phases and specialties of health work.

The curricula in public health are planned so that, without the addition of any administrative organization, the splendid facilities of the various colleges and departments of the University, of the State Board of Health located on the University campus, and of the official and voluntary health organizations in Minneapolis and St. Paul are made available for training in public health work. Practical field and laboratory work receives credit in the same way as work in other courses.

UNDERGRADUATE COURSES

Courses leading to a bachelor of science degree in public health may be pursued in the College of Science, Literature, and the Arts. Programs of these courses are outlined in this bulletin but students should refer to the bulletin of the College of Science, Literature, and the Arts for information regarding registration, requirements for admission and graduation, college regulations, etc.

PUBLIC HEALTH NURSING COURSES

Development of the course.—As an emergency measure in 1918, when the need for public health nurses was very great, Minnesota responded to the urgent appeal made to her and established, under the direction of the University School of Nursing, a four months' course of instruction in public health nursing. This included both theory and practice. The health and social agencies of Minneapolis and St. Paul most cordially co-operated in the development of teaching facilities in the field. This co-operation has continued and has made it possible for the University to offer to the

students in public health nursing unusual opportunities in well-supervised practice fields. In the fall of 1922, when the Department of Preventive Medicine and Public Health was established in the Medical School, the course in public health nursing was transferred to this department and made an integral part of the University. The period of instruction was increased from four months to nine months and full University credit was granted to the work offered therein. Of these nine months, six months, or two quarters, are devoted to theory and three months, or one quarter, to the practice fields. With the development of public health and the ever increasing demands for better qualified workers in the various fields of activity the course has experienced a steady growth, both in attendance and in increased facilities for instruction.

Aim of the course.—It is the aim of the course to meet more adequately the urgent demands in the many fields now open to public health nurses, including the fields of maternal and child hygiene, infant welfare, pre-school, school, industrial, general visiting nursing, rural nursing, and many others. The need is especially great for nurses who possess that fine quality of leadership which will enable them to enter the fields of organization, administration, supervision, and teaching. To this end the course has enlarged its scope of study.

FACILITIES FOR INSTRUCTION

Through the various schools and departments of the University almost unlimited resources are available in class instruction.

A new and beautiful library building has just been completed, the privileges of which are open to students in this department as to all students in the University. The fine medical section of the General Library is available and a generous supply of books especially related to the needs of public health nursing students has recently been purchased.

Field supervision in family case work is secured through the Sociology Department.

Field supervision in medical social service is secured through the Medical Social Service Department of the University hospitals.

Experience in rural nursing is regularly available in Hennepin County under the immediate direction of the supervisor of nurses. A new program in rural nursing also is being offered for those who are primarily interested in county nursing. Specially selected counties throughout the state are being developed as teaching centers. The student nurse takes up her residence in such county for a period of four weeks; here she is under constant supervision of the county nurse, she participates in the regular program of the county, and she attends group conferences which are planned for general discussion.

Affiliation with the Visiting Nurse Association, the Infant Welfare Society of Minneapolis, and the public schools of Minneapolis and St. Paul offers unusual opportunity in the practice fields. Direct supervision is given by the individual agency and definite programs of instruction have been worked out.

For the students who have not had previous experience or instruction in the care of the tuberculous, an affiliation of two weeks is arranged at Glen Lake Sanatorium. (This is required in addition to the regular nine months' prescribed work.)

In affiliation with the University School of Nursing and using the already existing five-year course of study, the course in public health nursing offers to qualified graduate nurses an opportunity to matriculate in the University and follow a major sequence in public health nursing leading to a bachelor of science degree. Credentials from the School of Nursing will be evaluated on an individual basis and credit granted accordingly by the nursing committee.

Extension.—Through the Extension Division of the University a limited number of classes required for the certificate are available to city nurses. Certain prerequisites are set up for applicants taking this work and to the student who fully qualifies for the regular course full credit is given. No certificate, however, is gained solely through work in the Extension Division; a minimum of at least one quarter must be spent in residence in consecutive study, before a certificate may be earned.

Summer Session.—In order to help meet the need of those who are not able to give up a whole year to study, classes are given during the Summer Session. This work does not in any way represent a "short course." The credits gained are the same as those gained in the other quarters and work so taken may accumulate and within a reasonable period of time may be applied toward a certificate or degree.

The summer field work is the least desirable because at this time the public schools are not in session and the county program is not as complete as it is at other seasons of the year. Field work with the Visiting Nurse Association and Infant Welfare Society may be carried on as in the other quarters.

REGULATIONS AND REQUIREMENTS

CANDIDATES FOR ADMISSION

I. Students eligible to the course in public health nursing are of two groups:
   a. Qualified graduate nurses
   b. Senior students referred from recognized schools of nursing willing to accept one or more quarters of the course in public health nursing as a contribution to the work of the final year in the hospital. These student nurses must meet the regular high school requirement.

II. Qualifications for enrolment of graduate nurses:
   a. Nurse registration
   b. Eligibility to nurse membership in the National Organization for Public Health Nursing

c. Graduation from an accredited four-year high school course. Limited deficiencies may be made up in night classes in the city high schools or in the Minnesota College.

Experience since graduation is desirable.

Applicants should be in good physical condition.

III. Candidates for the bachelor of science degree must present high school credentials which fully meet university entrance requirements. Students having the necessary educational qualifications are urged to continue the work toward a degree; the demand for leaders is ever growing and, with this demand, the need of leaders equipped with higher education. There are two groups of candidates here:

a. Students who wish to take the full five-year arts and nursing course leading to B.S. degree and diploma in nursing with a major in public health nursing. (These students matriculate directly in the University School of Nursing. See special bulletin for School of Nursing.)

b. Graduate nurses who wish to complete work toward a degree.

IV. Certificates: The certificate in public health nursing is awarded to the student who has completed a minimum of 45 credits in certain prescribed subjects. (See p. 13.)

V. Students may be admitted in any quarter, but it is especially desirable that students register for theory in the fall quarter. Field work is available four times a year beginning October, January, April, and July.

GENERAL INFORMATION

Scholarships and loans.—A limited number of scholarship loans are available through the American Red Cross. Further information may be obtained from Miss Olivia Peterson, state field representative, American Red Cross Nursing Service. Address Curtis Hotel, Minneapolis, Minnesota.

The State Organization for Public Health Nursing has made available a sum of $500 to be used in small loans for students in the public health nursing course.

Fees.—The fees for the courses in public health nursing are as follows:

Tuition fee (per quarter)	$20.00
Incidental fee (per quarter)	4.00
General deposit	5.00

For special and penalty fees see the bulletin of general information.

Residence.—Sanford Hall for women students offers board and room together with attractive living conditions. A list of other approved rooming and boarding places may be obtained from Mrs. Mary Staples, Shevlin Hall. The living expenses for the academic year are similar to those of any other student group; the minimum amount, including tuition, has been estimated at $456; the average, $678; and the maximum as $925.

THE DEGREE OF BACHELOR OF SCIENCE WITH MAJOR IN PUBLIC HEALTH NURSING

a. Upon the recommendation of the Public Health Nursing Committee and with the approval of the dean of the College of Science, Literature, and the Arts, academic work or nursing courses will be adjusted in each individual case.

Prior work in nursing education must adequately cover general nursing services.

b. The student who in addition to undergraduate work in nursing has received satisfactory instruction in psychiatry, social service, occupational therapy, etc., which is certified by the school or department in which such services have been taken may receive additional credit therefor.

c. The student who has had no satisfactory experience or instruction in the care of the tuberculous patient or in the care of communicable diseases will be required to register in these services for such period of study as the committee may deem necessary.

Registration.—In the first and second years students are registered in the College of Science, Literature, and the Arts and are under the direction of the dean for the Junior College. In the third and fourth years they are registered in the Medical School and are under the direction of the dean of the Medical School.

Fees are the same as maintained in each college, the Medical School fee being $30 a quarter.

GRADUATE WORK IN PUBLIC HEALTH

In recent years there has been a great increase in the demand for men and women with graduate training and experience in public health work. To assist in meeting this need the Graduate School of the University of Minnesota has made available the excellent facilities of the University for graduate instruction in this field. Formal courses are offered in bacteriology, immunology, parasitology, statistics, sanitary engineering, etc., while practical training under supervision is offered by the State Board of Health, located on the campus, in sanitation, epidemiology, public health, bacteriology, and public health administration. The students taking this work register in the graduate school and upon the fulfillment of the requirements of that school will be granted graduate degrees. A minimum of at least one year in residence is required for a degree of master of arts or master of science, and at least three years in residence are required for a degree of doctor of philosophy. The detailed requirements for degrees will be found in the bulletin of the Graduate School of Medicine.[1]

[1] Further inquiries concerning any of these courses may be addressed to the director of the Department of Preventive Medicine and Public Health, or to the director of the Course in Public Health Nursing; offices of both, 112 Millard Hall, University of Minnesota.

PROGRAMS OF STUDY

With the facilities available at the University of Minnesota, it is possible to plan courses which will provide training for students in the various phases of public health work. The following several courses of study are definitely outlined.

A FOUR-YEAR COURSE IN PREVENTIVE MEDICINE AND PUBLIC HEALTH LEADING TO THE DEGREE OF BACHELOR OF SCIENCE

The course here outlined is intended to train men and women for laboratory, field, and administrative work in public health. Students of this course register in the College of Science, Literature, and the Arts and are subject to the rules and requirements of that college. (See bulletin of that college.)

It is desirable that a student be prepared to make use of a foreign language. For this reason the language requirement of the bachelor of arts course is made one of the requirements of this course. If a student has not studied a foreign language in high school, he is advised to elect French or German. A student entering without a foreign language may be obliged to spend additional time in completing the course.

FIRST AND SECOND YEARS

Department	Title	Credits
English A-B-C	Freshman English	15
or		
Rhetoric 1-2-3	General Survey of English Literature	9
Language (Junior college requirements, see S. L. and A. bulletin)[1]		0 to 20
History 1-2 or 2-3	The Modern World	10
Animal Biology 1-2 or 5-6-7	General Zoology	10 or 12
Sociology 1	Introduction to Sociology	5
Psychology 1-2	General Psychology	6
Political Science 1	American National Government	5
Chemistry 1-2-3 or 4-5	General Inorganic Chemistry	12 or 8
Bacteriology 51	General Bacteriology	5
Anatomy 3	Elementary Anatomy	4
Physiology 4 or 58-59	Human Physiology	5 or 8
[2] Physics 1-2	Elements of Mechanics and Sounds	4
[2] Physics 21-22	Heat	4
[2] Physics 41-42	Magnetism and Electricity	4
[3] Economics 1-2	Introduction to Economics	10

Electives to complete a total of 90 credits.

[1] A student entering without a foreign language may require additional time to complete the course.

[2] Required for Sequence 1.

[3] Required for Sequence 2.

THIRD AND FOURTH YEARS

During the third and fourth years the student may elect to follow either one of the following sequences:

Sequence 1. Public Health Laboratory or Sanitary Work

This sequence is intended to prepare a student to undertake sanitary surveys and inspections and to perform chemical and bacteriological examinations of water, sewage, foods, milk, excretions, and blood. Competent persons with such a training as this sequence comprises are in constant demand by federal, state, and municipal boards of health, as well as by certain private enterprises.

Department	Title	Credits
Chemistry 11	Qualitative Chemical Analysis	4
Chemistry 27	Quantitative Analysis	4
Chemistry 31-32	Elementary Organic Chemistry	8
Bacteriology 101	Special Bacteriology	4
Bacteriology 116	Course in Immunity	3
Physiology 57-58	Physiological Chemistry	4
Civil Engineering 162	Water Supply and Sewerage	3
Animal Biology 44	Animal Parasites	3
Animal Biology 45	Insects and Disease	3
Pathology 1 (Medical School)	Elementary Pathology	2
Medicine 1 (Medical School)	Elementary Symptomology	2
Preventive Medicine and Public Health 53, 73, 102, 103, 104, 107, 200		29

Electives to complete a total of 180 credits for the four years.

Sequence 2. Leading to Service in Public Health Organizations

This course is intended to prepare the student to assume certain positions with official and voluntary public health organizations and to give the fundamental training essential for advancement to positions of responsibility.

Department	Title	Credits
Psychology 3	Psychology Applied to Daily Life	3
Political Science 11	Municipal Government	5
Political Science 130	Introduction to Administration	3
Sociology 45	Social Statistics	5
Sociology 51	The Occurrence of the Socially Inadequate	3
Sociology 52	Elementary Case Work	3
Sociology 90	Elementary Field Work	6
Sociology 110	Community Organization and Social Work in Small Towns and Country	2
Sociology 128	Principles of Administration Applied to Social Work	2
Bacteriology 101	Special Bacteriology	4
Bacteriology 116	Immunity	3
Pathology 1	Elementary Pathology	2
Medicine 1	Elementary Symptomology	2
Preventive Medicine and Public Health 53, 58, 59, 60, 61, 73, 106, 107, 200		20

Electives to complete a total of 180 credits for the four years.

PROGRAM

PUBLIC HEALTH NURSING

The following program is designed for students who are candidates for the certificate in public health nursing.

Department	Title	Credits
Psychology 1-2	General Psychology	6
Sociology 1	Introduction to Sociology	5
Sociology 52	Elementary Family Case Work	3
Sociology 90	Elementary Field Work	2
Sociology 60	Child Welfare	3
Preventive Medicine and Public Health 53	Elements of Preventive Medicine	3
Preventive Medicine and Public Health 62-63	Principles of Public Health Nursing and Special Fields	6
Preventive Medicine and Public Health 58	Maternal and Child Hygiene	2
Preventive Medicine and Public Health 61	Mental Hygiene	1
Preventive Medicine and Public Health 59	Social Hygiene	1
Preventive Medicine and Public Health 60	The Tuberculosis Problem	2
Medical Social Service 70	Medical Social Service	2
Field work—11 weeks		12

The following fields are included:

Minneapolis Visiting Nurse Association, Infant Welfare Society, public schools of Minneapolis and St. Paul, county services.

A minimum of 45 credits is required from the above specified subjects. A student must also earn 45 honor points before a certificate is granted.

DESCRIPTION OF COURSES IN PREVENTIVE MEDICINE AND PUBLIC HEALTH

2w. First Aid. (See bulletin of Physical Education.)

3f,w,s. Personal Hygiene and Elementary Sanitation. (See Science, Literature, and the Arts bulletin.)

5f. Elementary Preventive Medicine for Nurses. (See Nursing bulletin.)

12s. Hygiene and First Aid to the Sick and Injured. (See Engineering bulletin.)

50f,w,su. Public and Personal Health. (See Science. Literature, and the Arts bulletin.)

52f,w,s. Health Care of the Family. (See Home Economics bulletin.)

53f,su. Elements of Preventive Medicine. Susceptibility, resistance, and immunity to disease; methods of spread and the prevention of communicable and degenerative diseases; protection of food, water, and milk; school health work; vital statistics. Prerequisites: Psychology 1-2, Bacteriology 1 (or equivalent). 3 credits. Dr. Diehl, Dr. Lees.

58w,su. Maternal and Child Hygiene. The maternal welfare program; importance of breast feeding; conduct of infant welfare clinics in cities and rural communities; consideration of child of pre-school and school age as to malnutrition, physical defects, cardiac and nervous disorders. Prerequisites: 50 or 52 or 53. 2 credits. Dr. Boynton, Dr. Adair, Dr. Huenekens, and others.

59w. Social Hygiene. Relation to public health; normal physiological development through adolescence; educational measures; responsibility of the public health nurse; prevention and control of venereal diseases. Prerequisites: 50 or 52 or 53. 1 credit.

60w. The Tuberculosis Problem. History of tuberculosis movement and campaign in the United States. Early diagnosis and sanatorium treatment. Tuberculosis in children. The psychology of tuberculosis; supervision of returned sanatoria patients. State program for the eradication of tuberculosis; legislation. Prerequisites: 50 or 52 or 53. 2 credits Dr. Myers.

61w. Mental Hygiene. History of movement; factors underlying mental diseases; diagnosis of feeble-mindedness and border-line cases; institutional treatment; insanity; its relation to social work and to the institution; the importance of psychiatric nursing. Prerequisites: 50 or 52 or 53; and Psychology 1-2. 1 credit. Dr. Hamilton and others.

62f,su. Principles of Public Health Nursing. Development, principles of organization, administration, and supervision of public health nursing; methods of co-operative endeavor with social agencies; health teaching as an essential factor in the promotion of individual and community well-being. Prerequisites: 53. 3 credits. Miss Butzerin.

63w. Special Fields in Public Health Nursing. Development of special fields in public health nursing; scope of program; analysis of services; special excursions; class demonstrations and discussions. Prerequisite: 62 or equivalent. 3 credits. Miss Butzerin.

64f,w,s,su. Field Practice in Infant Welfare Nursing. For public health nurses. Class instruction, observation, and supervised practice in home visiting in the interest of breast feeding and well baby care; in conducting well baby clinics and behavior clinics for pre-school children; in understanding family problems affecting children. Prerequisite: 58 and 62. 3 credits. Miss Butzerin, Miss Peck.

65f,w,s Field Practice in School Nursing. Routine inspections with the school nurse; assistance at medical examinations; general sanitary inspections; home visits; visits to special classes, as sight-saving, defective speech and hearing, subnormal, open air, and tuberculosis schools. Prerequisite: 62. 2 credits. Miss Butzerin.

66f,w,s,su. Field Practice in County Nursing. Student nurse observes and assists the nurse on her rounds in the county, in the routine physical inspection of school children, the home calls, the health talks and classes in home nursing, as well as the organizing, advertising, and conducting of the rural clinic. Prerequisite: 62. 2 credits. Miss Butzerin.

67f,w,s,su. Field Practice in a Tuberculosis Sanatorium. Observation and practical care of pulmonary, osseous, laryngeal tuberculosis; tuberculous enteritis; general sanatorium treatment; special treatment; exercise; laboratory; occupational therapy and the reading of literature on tuberculosis. Prerequisites: 60 and 62. 2 credits. Dr. Mariette.

68f,w,s,su. Field Practice in Visiting Nursing. Lectures, demonstrations, supervision, and field practice in bedside care of general and maternity patients; communicable disease, tuberculosis, and mental cases with special emphasis upon recognition of social problems, co-operation with social agencies and accurate record-keeping. Prerequisite: 62. 5 credits. Miss Butzerin, Miss Zuppann.

69su. School Nursing. Discussion will include school nursing program, objectives, scope; teaching hygiene, aims, subject-matter, arrangement and presentation. Prerequisite: 62 or equivalent. 12 hours; 1 credit. Miss Butzerin.

73w. Occupational Hygiene and Disease. For non-medical students. Working hours and conditions as related to health; specific occupational diseases, their causes and prevention; importance of temperature; light and dust; wages and disease; industrial medical and nursing services. Prerequisite: 50 or 52 or 53. 2 credits. Dr. Myers.

80w,su. Educational Hygiene. (See Educational bulletin.)

100f. Preventive Medicine and General Hygiene. (See Medical bulletin.)

101w,s,su. Public Health Administrative and Field Work. (See Medical bulletin)

102f,w,s,su. Sanitation. Sanitary supervision of water and milk supplies, sewage, refuse, and garbage disposal systems. Practical work, including field investigations, laboratory examinations, interpretation of results, recommendations to correct unsatisfactory conditions, report-writing and office procedure. Prerequisites: Bacteriology 101; Chemistry 21 or 27, and 32 or 37; Physics 22, 32, 42. Credits and hours arranged. Mr. Whittaker, Dr. Archibald, Mr. Childs.

103s. Public Health Bacteriology. Modern methods of a public health laboratory in making diagnoses; in the preparation of vaccines, and in research. Prerequisites: Bacteriology 101, 116. 3 credits or arranged. Miss Wade.

104f,w,s,su. Epidemiology. Open only to graduate medical students. Lectures on principles and methods of epidemiological investigation. Analysis of data; methods of reaching conclusions; individual field work; collateral reading. Credits arranged. Dr. Chesley, Dr. McDaniel.

105f,w,s. Vital Statistics. Application of statistical methods to morbidity and mortality figures; births and deaths; drawing conclusions; preparation of tables and graphs; measurements of effectiveness of health activities; calculation of expectancy; actual experience with State Board of Health. Prerequisites: 53 and Soc. 45. Credits arranged. Dr. Chesley, Mrs. Pierson.

106f,w,s. Public Health Administration. Organization of state, municipal, and voluntary health activities; preparation of budgets; procedures in enforcing quarantine; in correcting unsanitary conditions, in controlling tuberculosis and venereal diseases; value of sanitary surveys, food inspections, etc. Prerequisite: 53 or 101. Credits arranged. Dr. Chesley, Dr. Diehl.

107s. Sanitary Surveys. For medical students. Conferences, practical field work and report on a specified survey. Of particular value to practitioners who may be called upon to serve as local health officers. Prerequisite: 53 or 100. 2 credits. Dr. Diehl, Dr. Myers.

108. Public Health Experience. This will consist of actual health work under supervision, in one or more of the approved public health organizations. The time, assignment, and credits will be arranged. Prerequisite: 104 or 106. Dr. Chesley, Dr. Diehl.

200. Research. Opportunities will be offered by the University and by the various co-ordinated organizations for qualified students to pursue research work. Staff.

The Bulletin *of the* University *of* Minnesota

College of Engineering and Architecture

Part I

Announcement of Courses for the Years 1925-1927

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[1] Absent on leave 1925-26.

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Charles Boehnlein, B.S., M.E., Instructor in Mathematics and Mechanics

Harry A. Doeringsfeld, C.E., Instructor in Mathematics and Mechanics

Forrest E. Miller, B.S.(A.E.), Instructor in Mathematics and Mechanics

Walter R. Warne, Ph.B., B.Pd., Instructor in Mathematics and Mechanics

MECHANICAL ENGINEERING

John J. Flather, Ph.B., M.M.E., Professor of Mechanical Engineering and Head of the Department

Frank B. Rowley, B.S., M.E., Professor of Mechanical Engineering and Director of the Experimental Engineering Laboratories

S. Carl Shipley, B.E., M.E., Professor of Machine Construction and Superintendent of Shops

Charles F. Shoop, B.S., B.S.(M.E.), Professor of Steam Engineering

John V. Martenis, M.E., Associate Professor of Machine Design

John Flodin, B.S., M.E., Assistant Professor of Machine Design

Burton J. Robertson, E.E., Assistant Professor of Gas Engines

Laurence F. Campbell, B.S., M.E., Instructor in Mechanical Engineering
Ronald M. Hazen, B.S.(M.E.), Instructor in Automotive Engineering
Thomas P. Hughes, Instructor in Forging
John H. Moffett, Met.E., Instructor in Foundry Practice
Frank A. Morris, M.S.(M.E.), Instructor in Mechanical Engineering and Assistant Director of the Experimental Engineering Laboratories
William H. Richards, Instructor in Woodworking
Dayton A. Rogers, Instructor in Machine Shop Practice
George L. Tuve, B.S., M.E., Instructor in Steam Engineering
Harry Martinson, Assistant in Machine Shop Practice
Carl Peterson, Assistant in Woodworking
Fred Teal, Assistant in Forging
John A. Widing, Assistant in Foundry Practice

METALLURGY

William R. Appleby, M.A., Professor of Metallurgy and Dean of the School of Mines
Peter Christianson, B.S., E.M., Professor of Metallurgy
Oscar E. Harder, Ph.D., Professor of Metallography
Levi B. Pease, M.S., Professor of Metallurgy
Ralph L. Dowdell, Met.E., M.S., Instructor in Metallography
Ludwig J. Weber, B.S., Ch.E., Instructor in Metallography

MILITARY SCIENCE AND TACTICS

Bernard Lentz, Major, Infantry, U.S.A., Professor of Military Science and Tactics and Head of the Department
Henry H. Rutherford, B.A., M.D., Lieutenant Colonel, Medical Corps, U.S.A., Assistant Professor of Military Science and Tactics
Edward Montgomery, Major, Coast Artillery Corps, U.S.A., Assistant Professor of Military Science and Tactics
Wilton B. Persons, B.S.(E.E.), Captain, Signal Corps, U.S.A., Assistant Professor of Military Science and Tactics
Arthur R. Walk, Captain, Infantry, U.S.A., Assistant Professor of Military Science and Tactics
Julian H. Gist, Captain, Infantry, U.S.A., Assistant Professor of Military Science and Tactics
Don F. Pratt, Captain, Infantry, U.S.A., Assistant Professor of Military Science and Tactics
William F. Rehm, Captain, Infantry, U.S.A., Assistant Professor of Military Science and Tactics
Nyal L. Adams, Captain, Coast Artillery Corps, U.S.A., Assistant Professor of Military Science and Tactics
Myron J. Conway, First Lieutenant, Infantry, U.S.A., Assistant Professor of Military Science and Tactics
Joseph Havlicek, Regimental Commissary Sergeant, U.S.A., Retired, Instructor in Military Science and Tactics

Alfred Brandt, Master Sergeant, U.S.A., Instructor in Military Science and Tactics

Harry E. Strider, Master Sergeant, U.S.A., Instructor in Military Science and Tactics

Aubrey R. Dunkum, Staff Sergeant, U.S.A., Instructor in Military Science and Tactics

Ernest R. Mylk, Sergeant, U.S.A., Instructor in Military Science and Tactics

John Coop, Sergeant, U.S.A., Instructor in Military Science and Tactics

PHYSICAL EDUCATION FOR MEN

Fred W. Luehring, Ph.M., Professor of Physical Education and Director of the Department of Physical Education and Athletics

Louis J. Cooke, M.D., Assistant Director of Physical Education and Athletics

Louis S. Keller, M.A., Associate Professor of Physical Education

Emil Iverson, Instructor in Physical Education for Men

Blaine McKusick, B.A., LL.D., Instructor in Physical Education for Men

Harold T. Taylor, M.A., Instructor in Physical Education for Men

Niels Thorpe, Instructor in Physical Education for Men

PHYSICAL EDUCATION FOR WOMEN

J. Anna Norris, M.D., Professor of Physical Education for Women and Director of Health and Physical Education for Women

Gertrude M. Baker, B.A., Assistant Professor of Physical Education for Women

May S. Kissock, B.A., Assistant Professor of Physical Education for Women

Alice J. H. Tolg, M.D., Assistant Professor of Physical Education for Women

Irene Clayton, B.S., Instructor in Physical Education for Women

Grace E. Denny, B.S., Instructor in Physical Education for Women

Helen Hazelton, B.A., Instructor in Physical Education for Women

Katharine Sias, B.A., Instructor in Physical Education for Women

PHYSICS

Henry A. Erikson, B.E.E., Ph.D., Professor of Physics and Chairman of the Department

Louallen F. Miller, Ph.D., Associate Professor of Physics

Joseph Valasek, B.S., Ph.D., Assistant Professor of Physics

Anthony Zeleny, Ph.D., Professor of Physics

PREVENTIVE MEDICINE AND PUBLIC HEALTH

Harold S. Diehl, M.A., M.D., Assistant Professor of Preventive Medicine and Public Health and Director of Health Service

Jay A. Myers, Ph.D., M.D., Assistant Professor of Preventive Medicine and Public Health

Laurence H. Cady, B.A., M.D., Instructor in Preventive Medicine and Public Health

William A. O'Brien, M.D., Instructor in Pathology and Preventive Medicine

PSYCHOLOGY

Richard M. Elliott, Ph.D., Professor of Psychology and Chairman of the Department

William S. Foster, Ph.D., Professor of Psychology

Donald G. Paterson, M.A., Professor of Psychology

SOILS

Frederick J. Alway, Ph.D., Professor of Soils and Chief of Division

Clayton O. Rost, Ph.D., Associate Professor of Soils

Paul R. McMiller, M.S., Instructor in Soils

RHETORIC (COLLEGE OF AGRICULTURE)

Robert C. Lansing, M.A., Assistant Professor of Rhetoric

Harry J. Burtis, B.A., Assistant Professor of Rhetoric

GENERAL INFORMATION

History.—The College of Engineering and Architecture had its beginning in the College of Agriculture and the Mechanic Arts which was authorized by the legislative act of 1868. Courses in civil and mechanical engineering were first offered in 1871. In the reorganization of the University, in 1872, the College of the Mechanic Arts was established. It became the College of Engineering, Metallurgy, and the Mechanic Arts in 1892, and the College of Engineering and the Mechanic Arts in 1897. A course in Electrical Engineering was first offered in 1887. Architecture and Architectural Engineering were announced in 1912. In 1916 the college received its present name. The course in Interior Decoration was established in 1923. The Agricultural Engineering course was offered in 1925.

The purpose of the college.—The purpose of this college is to give the students a broad foundation in the fundamental principles of engineering and architecture, together with sufficient knowledge of professional practice to enable them to apply them. It is not possible in college to educate a fully trained engineer, as the application of the principles to the practice of engineering is to be learned through experience. There are certain subjects, such as surveying and drafting, in which some proficiency is required. This enables a student upon graduation to fill satisfactorily a subordinate position while obtaining a basis for growth and advancement.

It is intended that all of the technical courses given in this college shall be taught by men who have had practical experience in their respective fields in addition to their professional training.

The field of engineering is very broad and is continually becoming more extensive. From the technical lines of design, construction, maintenance, and operation of engineering works, which have always belonged to him, the trained engineer has been drawn into the business world to occupy positions of an executive character. To meet the demand for such service, this college recognizes the importance of the broader training of engineers in economic and commercial principles and industrial relations.

Withal, it is intended that the young graduate shall have obtained material assistance in developing those traits of character which will make him a loyal and exemplary citizen and a true gentleman.

Courses and degrees.—The College of Engineering and Architecture offers four-year courses of study in Civil, Mechanical, Electrical, Architectural, and Agricultural Engineering, and Architecture. These courses lead to the degree of bachelor of science in civil, mechanical, electrical, architectural, or agricultural engineering, or in architecture. In some of the courses, optional groups of electives are arranged for the guidance of students who desire to devote special attention to certain fields of engineering.

A four-year course in Interior Decoration is provided, of which the first two years are taken in the College of Science, Literature, and the Arts

and the last two years in the College of Engineering and Architecture, leading to the degree of bachelor of science in interior decoration.

The Engineering Pre-business course requires the first two years of work in this college. This is followed by two years in the School of Business upon the completion of which the degree of bachelor of science in business is conferred.

This college also offers work in the Graduate School leading to the degree of master of science in the appropriate branch of engineering or in architecture or to the Doctor's degree.

The professional degree of civil, mechanical, electrical or agricultural engineer will be conferred upon those who have received the degree of bachelor of science in civil, mechanical, electrical or agricultural engineering, when they have completed the equivalent of one additional year's college work, four years of engineering experience in positions of responsibility, and have presented a satisfactory professional thesis.

Graduates of this college may be granted permission to pursue the year of graduate study *in absentia* under the direction of the faculty. It is recommended, however, that this year be spent in residence at this University and that the Master's degree be obtained in this manner. There are many advantages in taking this year immediately following graduation from the four-year course, thus making a five-year course leading to the Master's degree in the corresponding branch of engineering or in architecture. Then after four years of approved experience and the preparation of the professional thesis, the Engineer degree may be obtained. This procedure is especially recommended to those students whose undergraduate work is of high grade and who desire additional preparation for the higher positions which require strong character and leadership.

Candidates for the Engineer degrees register in the Graduate School.

Fees and expenses.—The annual fee for students in this college is $90 for residents and $120 for non-residents, one third of which is due at the beginning of each quarter. Fellows, scholars, assistants, and instructors are not required to pay University fees or tuition when they are regularly enrolled in the Graduate School.

Tuition fee (per quarter):	
Residents of Minnesota	$30.00
Non-residents	40.00
Deposit (first quarter only)	5.00
Incidental fee, per quarter	4.00
Military deposit (required of all students taking military drill)	10.00
Special fees:	
Examination for removal of condition	1.00
Examinations for credit (after the first quarter in residence)	5.00
Special examination	5.00
Chemistry deposit	5.00
Graduation fee	10.00

Registration penalty fees.—A penalty fee for late registration, late change of registration, or late payment of fees shall be two dollars ($2) and one dollar ($1) additional for each day of delay after classes begin,

provided that no student shall pay more than twelve dollars ($12) of penalty in any given quarter.

Entrance requirements.—1. English, four units, or English three units and one foreign language, two units.

2. Mathematics, elementary algebra, one unit; plane geometry, one unit; higher algebra, one-half unit; and solid geometry, one-half unit. (See note.)

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

NOTE.—Students desiring to enter this college who have not the specified credits in *higher algebra* and *solid geometry*, but who present the full fifteen acceptable units, will be admitted subject to their taking the necessary course or courses for the satisfaction of these requirements during their first quarter, without credit. They must expect, however, to attend the University Summer Session in the following summer in order to obtain the regular third quarter's work in mathematics and drawing.

Owing to the fact that many high school students coming to this college have had no algebra since their first year in high school, such students are strongly advised to attend the University Summer Session for six weeks beginning about June 15 in order to study higher algebra (as well as solid geometry, if they have not had this subject). In addition to completing the requirements for admission to this college, they thus obtain a valuable introduction to the University and its methods which saves time and trouble for them when they enter in the fall. Whenever possible, students who intend to enter this college should take solid geometry and higher algebra in their last year in the high school. Students who have not had these subjects when they graduate from high school and who cannot attend the Summer Session are advised to study higher algebra by correspondence through the University Extension Division during the summer preceding their admission to the University. This course also affords a good review for students who have had higher algebra more than one year before coming to the University.

For all students who intend to enter the College of Engineering and Architecture, it is very desirable that physics as well as chemistry be included in the high school course. Students entering the course in Architecture without chemistry must take this subject in the University.

Students who desire to enter the freshman year at the beginning of the winter quarter should have had chemistry in high school.

Special students.—In exceptional cases applicants are admitted to the college as special students without fulfilling the complete entrance requirements and without registering for a degree. After two years of satisfactory work and upon the recommendation of the dean and the Students' Work Committee, the student may be classed as a regular student. Special students must be of mature years, and must give satisfactory evidence of ability to do with credit the work applied for. Admission of students of this class requires in each specific case the approval of the dean.

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.

Students who have taken trigonometry in high school with satisfactory record and who have passed College Algebra in the University with a good grade may be permitted to take a comprehensive examination for credit in this subject.

Registration.—All undergraduate students are required, at the beginning of each quarter of residence, to pay the prescribed fees to the university cashier, to fill and file at the Main Engineering Building the necessary classification blanks showing the courses they expect to pursue during the quarter, and to enroll for their various classes.

All students entering the college for the first time must present their credentials to the registrar at the University, who will notify the applicant with regard to his admission. Before registering all new matriculants are required to take a physical examination.

Students should consult the university calendar in regard to registration dates and the *Handbook for Students in the College of Engineering and Architecture* for the procedure of registration.

Students will not be allowed to register for less than 14 or more than 19 credit hours without the approval of the Students' Work Committee.

No change in registration will be submitted later than 10 days after the beginning of the quarter.

The unit of credit.—The standard unit of credit in the University is the quarter credit, or simply, the *credit.* It corresponds to one class period per week for one quarter. This class period may be a one-hour lecture or recitation, or a two- or three-hour class in laboratory, drawing, surveying, or computations, but in any case one credit is supposed to require three actual hours of the average student's time per week for one quarter. One hour of recitation is assumed to require two hours of preparation or study. A two-hour laboratory period may require one hour of home work to complete the credit. A three-hour period usually carries one credit without additional work outside of class. The credit allowed for a lecture may be from one-third to one hour depending upon the amount of outside work or study required in connection with it.

Credit for outside work.—Credit for certain courses, as a result of work done outside of the regular classes, may be obtained by satisfactorily passing comprehensive examinations.

Work done outside of class includes work done by correspondence, by the aid of a private tutor, by individual study, through practical experience, or otherwise.

The comprehensive examination will be of such thoro and searching character as to determine whether the student has done all the work of the course. It should require at least three times the work of the usual final or condition examination and will be conducted by a committee of three, appointed by the head of the department in which the course is given.

Permission to take the examination must be obtained from the Students' Work Committee, and the usual fee of $5 for a special examination must be paid unless it be taken within six weeks after first entering the University.

Extension courses.—Certain courses in engineering and architecture are offered by the Extension Division of the University in evening classes and

by correspondence. Persons who are unable to attend the regular university courses may obtain instruction in this manner. Definite information regarding extension work will be found in the bulletins of the General Extension Division.

Attendance.—It is expected that all students registered in this college will be regular in attendance at all class exercises and that they will do all the work of the course. Neglect of work, as indicated by irregularity in attendance or low scholarship, will be sufficient reason for exclusion from class. "Any student who has unexcused absences equal to the number of credits in a course, but in no case less than two, shall be dropped from the class with a record of failure in the course." *Senate, May 11, 1921.*

Scholarship.—Every student in this college must complete all the mathematics and physics of the sophomore year before he will be allowed to register for any junior courses.

Requirements for graduation.—To be recommended for the degree of bachelor of science in civil, electrical, mechanical, or architectural engineering or in architecture, the student must satisfactorily complete all of the courses prescribed in the corresponding curriculum together with sufficient electives to make a total of at least 204 credits. In agricultural engineering, 210 credits are required for graduation. For the degree of bachelor of science in interior decoration, the requirements are 192 credits, including all required courses, plus 90 honor points.

In cases of continued low scholarship, even tho all the courses of the curriculum have been passed, the faculty reserves the right to require additional work to be completed, over and above the regular curriculum, and with a specified grade, before the degree will be recommended.

Students entering the College of Engineering and Architecture with advanced standing from other colleges or universities must spend at least one year in residence in this college before they will be recommended for graduation. If the term of residence is only one year it must be the senior year; and in any case such a student must spend two "quarters" of his senior year in residence.

Scholarships and prizes.—For scholarships and prizes in this college, see the bulletin of general information.

In the Engineering Experiment Station there are four research fellowships which are open to engineering graduates. Two of these are in structural engineering. Each fellowship bears an annual stipend of $750. The holder is required to give twenty hours per week to such service as may be assigned to him. In addition he is expected to carry work in the Graduate School towards an advanced degree.

Reserve Officers Training Corps.—The War Department has established at this University, units of infantry, coast (heavy) artillery, and signal corps in which both basic and advanced courses are given. The basic course is required for the first two years; the advanced course is elective for the third and fourth years.

Students of the College of Engineering and Architecture may enroll in the advanced course in the infantry, signal corps, or artillery under the

prescribed regulations, and receive for this work eighteen elective credits towards graduation. They receive an allowance of cash and clothing from the government during the two years of the course, pay and transportation to attend a special training camp in the summer, and if successful, a commission in the Reserve Corps of the United States Army after graduation. Special arrangements may be made in the student's program to enable him to take this course, the advantages of which are recognized.

Self-support and outside activities.—A large number of students contribute to their financial support by means of part-time work during the college year. Frequently such students undertake too much. They are advised to carry a lighter program of studies and to plan to spend more than four years in the college course if their outside work requires a very large amount of their time.

Freshmen, in particular, are advised that the work of the first year in this college will require their closest attention and application if they are to succeed. They should refrain from participation in unnecessary outside activities, while bearing in mind the importance of physical as well as mental development.

Handbook for students.—At the beginning of the year each student is given a copy of the *Handbook for Students in the College of Engineering and Architecture* which contains regulations and instructions for his information and guidance. He is expected to observe these instructions throughout his course.

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.

Program of courses.—The times and places at which the various courses offered by this college are given will be found in Part II which is published annually. Copies of Part II of this bulletin may be obtained by addressing the registrar of the University.

CURRICULA

Civil Engineering
Electrical Engineering
Mechanical Engineering
Agricultural Engineering
Architecture
Architectural Engineering
Interior Decoration
Engineering Pre-business
Engineering Administration

CIVIL, ELECTRICAL, MECHANICAL, AND AGRICULTURAL ENGINEERING

FRESHMAN YEAR

The freshman year is the same for these four engineering courses. The freshman year for courses in Architecture and Architectural Engineering is shown on pages 29 and 30.

Mathematics

Entering freshmen who have not had *higher algebra* in high school will register for M. & M. 9 (Higher Algebra). Those who have had higher algebra will register for M. & M. 11 (College Algebra). At the end of the first two weeks, students who do not show sufficient ability to proceed in College Algebra will be transferred for the balance of the quarter, to Course 9, which carries no credit towards graduation.

Students who do not offer *solid geometry* for entrance will take M. & M. 10 (Solid Geometry) instead of Drawing 1 during the fall quarter and without University credit. They should follow this by Drawing 1, 2, and 3 in the winter and spring quarters and the Summer Session, respectively.

Students who do not complete *College Algebra* in the fall quarter should plan to take M. & M. 11, 12, and 13 in the winter and spring quarters and the Summer Session, respectively.

Those who have had *solid geometry* but do not complete *College Algebra* in the fall quarter will have to postpone Drawing 3 until the Summer Session since they cannot get its prerequisite, M.&M. 12 (Trigonometry), until the spring quarter.

Chemistry

Students who have not had high school *chemistry* will take Chemistry 14f-15w, five credits per quarter, instead of Chemistry 4f-5w, four credits per quarter.

Military Science and Tactics

Students who, for any reason, are not required to take military science and tactics for their freshman and sophomore years, must take physical education both years in its stead and without credit.

REGULAR FRESHMAN PROGRAM

(Civil, Electrical, Mechanical, and Agricultural Engineering and Pre-Business)

(For students who satisfy the requirements in algebra and solid geometry and who have presented entrance credit in high school chemistry.)

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
M. & M. 11	College Algebra	5	5	..	..
Chem. 4	General Inorganic Chemistry	4	1	3	3
Engl. 4	Rhetoric and Composition	3	3	..	..
Draw. 1	Engineering Drawing	3	..	..	8
M.E. 11, 12, or 13	Shop Practice	2	..	..	6
G.E. 11	Orientation	0	..	1	..
Mil. Sci. 1	First Year Basic Course	0	..	..	3
	Winter Quarter				
M. & M. 12	Trigonometry	5	5	..	..
Chem. 5	General Inorganic Chemistry	4	1	3	3
Engl. 5	Rhetoric and Composition	3	3	..	..
Draw. 2	Engineering Drawing	3	..	..	8
M.E. 11, 12 or 13	Shop Practice	1	..	..	6
G.E. 12	Orientation	0	..	1	..
Mil. Sci. 2	First Year Basic Course	0	..	..	3
	Spring Quarter				
M. & M. 13	Analytical Geometry	5	5	..	..
Chem. 16	Qualitative Analysis	5	..	3	6
Engl. 6	Rhetoric Composition	3	3	..	..
Draw. 3	Descriptive Geometry	3	..	..	8
M.E. 11, 12, or 13	Shop Practice	2	..	..	6
P.H. 12†	Hygiene and First Aid	0	..	1	..
Mil. Sci. 3	First Year Basic Course	0	..	..	3

CIVIL ENGINEERING

Four-year course leading to the degree of bachelor of science in civil engineering, B.S.(C.E.).

For freshman year, see pages 17 and 18.

In addition to the prescribed courses, sufficient electives must be taken to complete a total of at least 204 credits for graduation. This is an average of 17 credits per quarter for 12 quarters.

† Women take Phy. Ed. for Women, Course 4, in place of P.H. 12.

SOPHOMORE YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
M. & M. 24	Differential Calculus	5	5	..	..
Phys. 3	Mechanics and Sound	3	1	3	..
Phys. 4	Mechanics Laboratory	1	..	..	2
Draw. 21	Drafting	2	..	..	6
C.E. 11	Surveying	3	1	..	8
Mil. Sci. 4	Second Year Basic Course	0	..	..	3
	*Elective				
	Winter Quarter				
M. & M. 25	Integral Calculus	5	5	..	..
Phys. 23	Heat	3	1	3	..
Phys. 24	Heat Laboratory	1	..	..	2
Draw. 22	Drafting	2	..	..	6
C.E. 12	Surveying	3	1	..	8
Mil. Sci. 5	Second Year Basic Course	0	..	..	3
	*Elective				
	Spring Quarter				
M. & M. 26	Technical Mechanics (Statics)	5	5	..	..
Phys. 43	Electricity	3	1	3	..
Phys. 44	Electricity Laboratory	1	..	..	2
Draw. 23	Drafting	2	..	..	6
C.E. 13	Surveying	3	1	..	7
Mil. Sci. 6	Second Year Basic Course	0	..	..	3
	*Elective				

JUNIOR YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
M. & M. 128	Strength of Materials	5	5	..	..
M. & M. 141	Materials Laboratory	1	..	..	.
C.E. 14	Surveying	3	..	..	8
C.E. 31	Stresses in Structures	3	..	1	6
C.E. 51	Highways and Pavements	3	..	1	8
	*One or more electives.				
	Winter Quarter				
M. & M. 129	Hydraulics	4	4	..	..
M. & M. 143	Hydraulics Laboratory	1	..	..	2
C.E. 15	Surveying	2	..	4	..
C.E. 21	Railway Engineering	2	1	..	4
C.E. 32	Stresses in Structures	3	..	1	6
C.E. 52	Highways and Pavements	3	..	1	6
	*One or more electives.				
	Spring Quarter				
M. & M. 127	Technical Mechanics (Dynamics)	5	5	..	..
C.E. 16	Surveying	2	..	4	..
C.E. 22	Railway Engineering	2	1	..	4
C.E. 33	Structural Design	3	..	1	6
C.E. 53	Civil Engineering Practice	3	1	2	0
	*One or more electives.				

* For list of elective courses, see pages 38 to 42.

Summer Camp

C.E. 23 — Summer camp is held in the vacation preceding the senior year for 6 weeks beginning about the middle of August. Nine credits. Required of all students taking the course in Civil Engineering.

SENIOR YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
C.E. 121	Railway Engineering	3	..	1	6
C.E. 131	Bridge Analysis	3	1	..	6
C.E. 141	Reinforced Concrete	3	1	1	3
C.E. 161	Hydrology	3	1	1	3
C.E. 146	Concrete Laboratory	3	..	1	6
or					
C.E. 164	Water Power	3	..	1	6
	*Electives to complete program.				
	Winter Quarter				
C.E. 124	Transportation	3	3	..	..
C.E. 132	Bridge Design	3	1	..	6
C.E. 142	Reinforced Concrete Design	3	1	..	6
C.E. 162	Water Supply Engineering	3	..	1	6
E.E. 42	Electric Power	4	3	..	3
or					
M.E. 149	Heat Engines	4	3	..	4
	*Electives to complete program.				
	Spring Quarter				
C.E. 134	Statically Indeterminate Structures	3	..	1	6
C.E. 163	Water Supply and Sewerage	3	1	..	6
C.E. 146	Concrete Laboratory	3	..	1	6
or					
C.E. 164	Water Power	3	..	1	6
E.E. 42	Electric Power	4	3	..	3
or					
M.E. 149	Heat Engines	4	3	..	4
	*Electives to complete program.				

SPECIAL SENIOR YEAR

(For students who have completed Courses C.E. 23, 131, 132, 134.† Such students may be able to graduate at the end of the winter quarter if they have sufficient electives and no deficiencies.)

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
C.E. 121	Railway Engineering	3	..	1	6
C.E. 141	Reinforced Concrete Design	3	1	1	3
C.E. 161	Hydrology	3	1	1	3
C.E. 162	Water Supply Engineering	3	..	1	6
M.E. 149	Heat Engines	4	3	..	4
	*Electives to complete program.				

* For list of elective courses, see pages 38 to 42.

† Courses C.E. 131, 132, and 134 have been offered in the Summer Session by special arrangement only.

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Winter Quarter				
C.E. 124	Transportation	3	3	..	..
C.E. 142	Reinforced Concrete Design	3	1	..	6
C.E. 146	Concrete Laboratory	3	6	1	6
C.E. 163	Water Supply and Sewage	3	1	..	6
C.E. 164	Water Power	3	..	1	6
E.E. 42	Electric Power	4	3	..	4 3
	*Electives to complete program.				

ELECTRICAL ENGINEERING

Four-year course leading to the degree of bachelor of science in electrical engineering, B.S.(E.E.).

For freshman year, see pages 17 and 18.

In addition to the prescribed courses, sufficient electives must be taken to complete a total of at least 204 credits for graduation. This is an average of 17 credits per quarter for 12 quarters.

SOPHOMORE YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
M. & M. 24	Differential Calculus	5	5	..	..
Phys. 3	Mechanics and Sound	3	1	3	..
Phys. 4	Mechanics Laboratory	1	..	..	2
Draw. 26	Drafting	2	..	..	6
E.E. 11	Elements of Electrical Engineering	3	2	..	2
Mil. Sci. 4	Second Year Basic Course	0	..	..	3
	*Elective				
	Winter Quarter				
M. & M. 25	Integral Calculus	5	5	..	..
Phys. 23	Heat	3	1	3	..
Phys. 24	Heat Laboratory	1	..	..	2
Draw. 27	Drafting	2	..	..	6
E.E. 13	Elements of Electrical Engineering	3	2	..	2
Mil. Sci. 5	Second Year Basic Course	0	..	..	3
	*Elective				
	Spring Quarter				
M. & M. 26	Technical Mechanics (Statics)	5	5	..	..
Phys. 35	Optics	2	1	2	..
Phys. 43	Electricity	3	1	3	..
Phys. 44	Electricity Laboratory	1	..	..	2
M.E. 16	Machine Shop	2	..	..	6
E.E. 15	Elements of Electrical Engineering	3	2	..	2
Mil. Sci. 6	Second Year Basic Course	0	..	..	3
	*Elective				

* For list of elective courses, see pages 38 to 42.

JUNIOR YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
M. & M. 129	Hydraulics	4	4	..	..
M. & M. 143	Hydraulics Laboratory	1	..	..	2
E.E. 111	Direct Current Machinery	3	3	..	..
E.E. 112	Direct Current Machinery Laboratory	2	..	..	4
Phys. 144	Electrical Measurements	3	1	1	4
	*One or more electives.				
	Winter Quarter				
M. & M. 127	Technical Mechanics (Dynamics)	5	5	..	..
E.E. 113	Direct Current Machinery	3	3	..	..
E.E. 114	Direct Current Machinery Laboratory	2	..	..	4
M.E. 33	Mechanism and Kinematics	3	2	..	3
	*One or more electives.				
	Spring Quarter				
M. & M. 128	Strength of Materials	5	5	..	..
M. & M. 141	Materials Laboratory	1	..	..	2
E.E. 115	Direct Current Machinery	3	3	..	..
E.E. 116	Direct Current Machinery Laboratory	2	..	..	4
M.E. 37	Machine Design	3	..	1	6
	*One or more electives.				

SENIOR YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
E.E. 121	Alternating Currents	3	3	..	..
E.E. 122	Alternating Currents Laboratory	2	..	..	4
E.E. 132	Electrical Design†	2	..	1	3
M.E. 144	Heat Engines†	3	2	..	3
	*One or more electives.				
	Winter Quarter				
E.E. 123	Alternating Currents	3	3	..	..
E.E. 124	Alternating Currents Laboratory	2	..	..	4
E.E. 134	Electrical Design†	2	..	1	3
M.E. 145	Heat Engines†	3	2	..	3
	*One or more electives.				
	Spring Quarter				
E.E. 125	Alternating Currents	3	3	..	..
E.E. 126	Alternating Currents Laboratory	2	..	..	4
E.E. 136	Electrical Design†‡	2	..	1	3
M.E. 146	Gas Engines and Producers†	3	2	..	3
	*One or more electives.				

* For list of elective courses, see pages 38 to 42.

† Students specializing in chemistry, physics, or electrical communication may substitute electives in such departments for Courses E.E. 132, 134, 136 and M.E. 144, 145, 146.

‡ Students specializing in business may substitute an approved elective in that department for Course E.E. 136.

SPECIALIZED COURSES IN ELECTRICAL ENGINEERING

The number of electives in the electrical engineering course makes it practicable to obtain either a broad or a specialized education. To further facilitate such election, certain courses (indicated †) in the senior year may be replaced by substitutes in physics, chemistry, or electrical communication, subject to the approval of the head of the department and the Students' Work Committee. By properly choosing prerequisite subjects during the sophomore or junior year, a far-seeing student may prepare for advanced specialized courses in the following undergraduate and graduate years. As examples, one may specialize in business, chemistry, communication, education, illumination, manufacturing, military science, physics, power generation and distribution, public utilities, railway engineering, or other chosen line. Students are advised to consult with their classifier, or with the head of the department, concerning desirable sequences of general or of special courses.

MECHANICAL ENGINEERING

Four-year course leading to the degree of bachelor of science in mechanical engineering, B.S.(M.E.).

For freshman year, see pages 17 and 18.

In addition to the prescribed courses, sufficient electives must be taken to complete a total of at least 204 credits for graduation. This is an average of 17 credits per quarter for 12 quarters.

It is recommended that each student in the Mechanical Engineering Department spend at least one summer vacation in machine shop practice.

At the beginning of the junior year, the student should confer with his classifier with regard to the particular line of work, if any, for which he desires to prepare. He can then select his electives according to this plan.

SOPHOMORE YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
M. & M. 24	Differential Calculus	5	5	..	..
Phys. 3	Mechanics and Sound	3	1	3	..
Phys. 4	Mechanics Laboratory	1	..	..	2
Draw. 28	Drafting	2	..	..	6
M.E. 14	Machine Shop Practice	4	..	1	10
Mil. Sci. 4	Second Year Basic Course	0	..	..	3
Chem. 60†	Power Plant Chemistry	3	..	1	8
	Winter Quarter				
M. & M. 25	Integral Calculus	5	5	..	..
Phys. 23	Heat	3	1	3	..
Phys. 24	Heat Laboratory	1	..	..	2
Draw. 29	Drafting	2	..	..	6
M.E. 15	Machine Shop Practice	4	..	1	10
Mil. Sci. 5	Second Year Basic Course	0	..	..	3
Phys. 35†	Optics	2	1	2	..

† Automotives, Power Plant Chemistry, and Optics are required subjects. Power Plant Chemistry and Automotives may be taken any quarter. Optics may be taken either in the winter or spring quarters. The Power Plant Chemistry section is limited to 20 students each quarter.

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Spring Quarter				
M. & M. 26	Technical Mechanics (Statics)	5	5	..	..
Phys. 43	Electricity	3	1	3	..
Phys. 44	Electricity Laboratory	1	..	..	2
M.E. 21	Mechanical Technology	1	..	1	..
M.E. 31	Machine Design	2	..	..	6
M.E. 40†	Automotives	2	3	..	..
Mil. Sci. 6	Second Year Basic Course	0	..	..	3
	*Elective				

JUNIOR YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
M. & M. 127	Technical Mechanics (Dynamics)	5	5	..	..
M.E. 32	Mechanism	4	4	..	..
M.E. 42	Steam Engines	3	3	..	..
M.E. 81	Mechanical Laboratory	2	..	..	6
	*One or more electives.				
	Winter Quarter				
M. & M. 128	Strength of Materials	5	5	..	..
M. & M. 141	Materials Laboratory	1	..	..	2
M.E. 34	Kinematics and Machine Design	4	2	1	6
M.E. 43	Steam Engines and Boilers	3	3	..	..
M.E. 82	Steam Laboratory	2	..	..	6
	*One or more electives.				
	Spring Quarter				
M. & M. 129	Hydraulics	4	4	..	..
M. & M. 143	Hydraulics Laboratory	1	..	..	2
M.E. 35	Machine Design	3	..	2	6
M.E. 61	Measurement of Power	2	2	..	2
M.E. 83	Power Laboratory	2	..	..	6
M.E. 151	Thermodynamics	3	3	..	..
	*One or more electives.				

SENIOR YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
M.E. 150	Gas Engines and Producers	3	3	..	..
M.E. 182	Advanced Steam Laboratory	2	..	..	6
M.E. 190	Seminar§	1	..	1	1
	Engineering Design‡	3	..	..	8
E.E. 46	Electric Power	4	3	..	3
	*One or more electives.				

* For list of elective courses, see pages 38 to 42.

† Automotives, Power Plant Chemistry, and Optics are required subjects. Power Plant Chemistry and Automotives may be taken any quarter. Optics may be taken either in the winter or spring quarters. The Power Plant Chemistry section is limited to 20 students each quarter.

§ Three quarters required. May be taken in junior year.

‡ The following courses are accepted for this requirement: M.E. 131f-132w-133s. Advanced Engineering Design; M.E. 135f, Steam Engine Design; M.E. 136f,w, Gas Engine Design; M.E. 137w-138s, Advanced Gas Engine Design; M.E. 237s, Gas Tractor Design; M.E. 164s, Elements of Power Plant Design; M.E. 265f, 266w, Power Plant Design; C.E. 37s, Structural Engineering.

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Winter Quarter				
M.E. 183	Power and Gas Engine Laboratory	2	..	..	6
M.E. 191	Seminar§	1	..	1	1
	Engineering Design‡	3	..	..	8
E.E. 47	Electric Power	4	3	..	3
	*One or more electives.				
	Spring Quarter				
M.E. 184	Advanced Engineering Laboratory	2	..	..	6
M.E. 192	Seminar§	1	..	1	1
	Engineering Design‡	3	..	..	8
E.E. 48	Electric Power	4	3	..	3
G.E. 193	Engineering Practice	2	..	2	..
	*One or more electives.				

FIFTH YEAR

In addition to the regular four-year course in Mechanical Engineering, those who are qualified are urged to take a fifth year, that is, a year of graduate study. This year's work may lead to the degree of master of science in mechanical engineering and also satisfy the requirement of graduate study towards the professional degree of mechanical engineer. (For detailed information as to procedure, the bulletin of the Graduate School should be consulted.)

Graduate work for a degree is divided into a major subject, a minor subject, and a thesis. In this case, the major subject is Mechanical Engineering and the thesis will lie in the same field. If the Master's degree is not sought as a result of the fifth year's work, the thesis is not required. The student is advised to obtain the Master's degree. The minor should be in another department. A total of 15 to 18 credits per quarter, should be taken.

The major work, in Mechanical Engineering, is quite flexible and may conform to the wishes of the student, in general. However, the following optional groups of courses have been arranged to meet the needs of students who are especially interested in these fields. Electives are indicated for the junior and senior years which provide the logical preparation for the graduate work.

Industrial Management Option

JUNIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
Economics, Ec. 8	3	Economics, Ec. 9	3	Economics, Ec. 10	3

SENIOR YEAR

Bus. Law, Ec. 28f	3	Ind. Plants, 120w	3	Prod. Meth., 121s	3
Accounting, Ec. 29	3	Org. & Man., Ec. 91	3	Bus. Finance, Ec. 92	3
				Cost Acctg., Ec. 93s	3

* For list of elective courses, see pages 38 to 42.

§ Three quarters required. May be taken in junior year.

‡ The following courses are accepted for this requirement: M.E. 131f-132w-133s. Advanced Engineering Design; M.E. 135f, Steam Engine Design; M.E. 136f,w, Gas Engine Design; M.E. 137w-138s, Advanced Gas Engine Design; M.E. 237s, Gas Tractor Design; M.E. 164s, Elements of Power Plant Design; M.E. 265f, 266w, Power Plant Design; C.E. 37s, Structural Engineering.

FIFTH (GRADUATE) YEAR

Fall	Credits	Winter	Credits	Spring	Credits
Ind. Man., 223f	3	Ind Man., 224w	3	Ind. Man., 225s	3
		Cont. & Spec., G.E. 101w	3		
Labor Probs.. Ec. 161f	3	Ind. Eng. Probs., 227w	3	Ind. Eng. Probs., 228s	3
Ind. Eng. Probs., 225f	3	Labor Movement, Ec. 162w	3	Public Utilities, Ec. 154s	3
(Thesis)		(Thesis)		(Thesis)	
(Minor)		(Minor)		(Minor)	

Power Engineering Option

SENIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
Pow. Pl. Mach., 162f	3	Power Eng., 163w	3	Pow. Pl. Des., 164s	3
Heat. & Vent., 153f	4	Ind. Plants, 120w	3	Bus. Law, Ec. 28	3

FIFTH (GRADUATE) YEAR

Pow. Pl. Des., 265f	3	Pow. Pl. Des., 266w	3	Pow. Pl. Man., 267s	3
Ind. Man., 223f	3	Steam Turbines, 152w	3	Comp. Air & Refrig., 156s	3
or				or	
Adv. Thermo., 251f	3	Cont. & Spec., G.E. 101	3	Water Turbines, 166s	3
Research Lab., 287f	0 to 3	Research Lab., 288w	0 to 3	Research Lab., 289s	0 to 3
(Thesis)		(Thesis)		(Thesis)	
(Minor)		(Minor)		(Minor)	

Automotive Engineering Option

SENIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
Gas. Eng. & Prod., 150f	3	Gas. Eng. Des., 137w	3	Bus. Law, Ec. 28	3
Metallography, 156f	3	Metallography, 157w	3	Prod. Meth. 121s	3
Gas. Eng. Des., 136f	3	Autos. & Trucks, 141w	3	Autos. & Trucks, 142s	3
		Org. & Man., Ec. 91	3		

FIFTH (GRADUATE) YEAR

Des. of Autos. & Trucks, 231f	3	Des. of Autos & Trucks, 232w	3	Des. of Autos. & Trucks, 233s	3
Auto. Test & Research, 281f	3	Auto. Test & Research, 282w	3	Auto. Test & Research, 283s	3
Ind. Man., 223f	3	Cont. & Spec., G.E. 101w	3	Motor Truck Transp., 295s	3
(Thesis)		(Thesis)		(Thesis)	
(Minor)		(Minor)		(Minor)	

General Mechanical Engineering Option

SENIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
Metallography, 156f	3	Metallography, 157w	3	Bus. Law, Ec. 28	3
		Ind. Plants, 120w	3	Prod. Meth. 121s	3
Heat. & Vent., 153f	4	Org. & Man., Ec. 91	3		

FIFTH (GRADUATE) YEAR

Adv. Thermo., 251f	3	Steam Turbines, 152w	3	Comp. Air and Refrig., 156s	3
Ind. Man, 223f	3	Cont. & Spec., G.E. 101	3	Water Turbines, 166s	3
Research Lab., 287f	0 to 3	Research Lab., 288w	0 to 3	Research Lab., 289s	0 to 3
(Thesis)		(Thesis)		(Thesis)	
(Minor)		(Minor)		(Minor)	

AGRICULTURAL ENGINEERING

Four-year course leading to the degree of bachelor of science in agricultural engineering, B.S.(Ag.E.), in co-operation with the College of Agriculture, Forestry, and Home Economics.

For freshman year, see pages 17 and 18.

Requirements for graduation include all prescribed courses with sufficient approved electives to make a total of at least 210 credits. This is an average of 17½ credits per quarter for 12 quarters.

In connection with this general course, three distinct lines of specialization are provided, namely, Farm Buildings, Farm Machinery, and Reclamation.

SOPHOMORE YEAR

Fall Quarter

Course No.	Title	Credits	Rec.	Lect.	Lab.
M. & M. 24	Differential Calculus	5	5	..	..
Hort. 6*	Fruit-Growing	3	..	2	4
Soils 4	Soils	3	..	2	2
Ag.E. 19	Elementary Surveying	3	..	2	4
Ag.E. 13	Tractor and Auto Work I	3	..	2	..
Mil. Sci. 4	Second Year Basic Course	0	..	..	3

Winter Quarter

M. & M. 25	Integral Calculus	5	5	..	..
Ag.E. 24	Agricultural Physics I	4	..	3	3
Soils 108	Physical Properties of Soils	3	..	1	4
Ag.E. 31	Principles of Drainage	3	1	2	..
Agron. 1	Farm Crops	3	..	2	4
Mil. Sci. 5	Second Year Basic Course	0	..	..	3

Spring Quarter

M. & M. 84	Technical Mechanics	5	5	..	..
Ag.E. 20	Advanced Surveying	3	..	2	4
Ag.E. 25	Agricultural Physics II	4	..	3	3
Hort. 32	Vegetable-Growing	3	..	2	4
Ag.E. 40	Mechanical Training I	3	..	2	4
Mil. Sci. 6	Second Year Basic Course	0	..	..	3

JUNIOR YEAR

Fall Quarter

Course No.	Title	Credits	Rec.	Lect.	Lab.
M. & M. 85	Strength of Materials	4	3	..	2
Ag.Econ. 1	Principles of Economics	5	..	5	..
Geol. 5	Engineering Geology	3	..	3	..
M.E. 38	Machine Design	3	..	1	6
C.E. 51	Highways and Pavements	3	..	1	4

Winter Quarter

M. & M. 86	Hydraulics with Laboratory	3	2	..	2
Ag.Econ. 2	Principles of Economics	5	..	5	..
Ag.E. 54	Applied Electricity	5	..	3	6
Ag.E. 7	Farm Structures I	3	1	1	3
Ag.E. 42	Principles of Irrigation	3	1	2	..

* Students who did not present physics for entrance must take General Physics (Ag.E. 23) instead of Fruit-Growing and without credit toward graduation. The Fruit-Growing must then be taken later in the course.

Spring Quarter

C.E. 37	Structural Engineering	3	..	..	3
Ag.E. 13	Agricultural Hydraulics	3	..	2	4
Agron. 11	Farm Machinery	3	..	2	4
D.H. 1	Elements of Dairying	5	..	3	4
A.H. 8	Fundamentals of Feeding	3	..	2	4

SENIOR YEAR

Fall Quarter

Course No.	Title	Credits	Rec.	Lect.	Lab.
Agron. 102	Farm Management II: Organization	3	..	3	..
C.E. 144	Reinforced Concrete	3	..	2	5
Ag.E. 37	Rural Sanitation	3	..	2	4
Ag.E. 122	Farm Power Machinery	4	..	2	4
	*Electives to complete program.				

Winter Quarter

Agron. 103	Farm Management II: Operation	3	..	3	..
G.E. 101	Contracts and Specifications	3	..	3	..
Ag.E. 121	Steam Boilers and Engines	3	..	2	4
	*Electives to complete program.				

Spring Quarter

Econ. 85	Principles of Marketing	3	1	2	..
G.E. 193	Engineering Practice	2	..	2	..
Ag.E. 126	Selection of Farm Equipment	3	..	3	..
Ag.E. 150	Seminar	2	2	..	..
	*Electives to complete program.				

RECOMMENDED ELECTIVES

The following courses are suggested for the guidance of students who wish to elect work along the general lines indicated.

Farm Structures

Course No.	Title	Credits
Ag.E. 5f	Farm Building Construction	3
Ag.E. 36w	Rural Heating and Ventilation	4
Ag.E. 67s	Farm Structures II	3
For. 27w	Groves and Windbreaks	3
Ag.E. 111f	Structural Materials	3
Ag.E. 136w	Experimental Physical Analysis	5
Ag.E. 112s	Farm Building Problems	3
Hort.	Landscape Planning	3
Rhet. 22f,w,s	Public Speaking	3

Farm Mechanics

Ag.E. 15f	Ignition and Carburetion	3
Ag.E. 14s	Tractor and Auto Work II	3
Ag.E. 28w	Land Clearing	3
Ag.E. 101f	Drainage Engineering and Works	4
Ag.E. 125w	Farm Machinery Design	4
Ag.E. 135f	Ignition Systems	4
Ag.E. 136w	Experimental Physical Analysis	5
Ag.E. 123s	Farm Power	4
Rhet. 22f,w,s	Public Speaking	3

* For list of elective courses, see pages 38 to 42.

Reclamation

Ag.E. 28w	Land Clearing	3
Ag.E. 104w	Drainage Administration and Law	3
Ag.E. 101f	Drainage Engineering and Works	4
Hort.	Landscape Architecture	3
C.E. 161f	Hydrology	3
Ag.E. 103s	Irrigation Engineering and Works	4
Ag.E. 102s	Advanced Drainage Problems	3
Ag.E. 136w	Experimental Physical Analysis	5
Rhet. 22f,w,s	Public Speaking	3

ARCHITECTURE AND ARCHITECTURAL ENGINEERING

The course in Architecture affords training for the general practice of architecture, and, while giving adequate attention to structural studies, lays particular stress on the study of architectural design. It leads to the degree of bachelor of science in architecture and requires normally four years for its completion.

The course in Architectural Engineering is formulated for those who wish to specialize in the engineering aspects of architecture, with a view to practicing in association with one specializing more particularly in design. It leads to the degree of bachelor of science in architectural engineering and requires normally four years for its completion.

Students who wish to broaden their architectural training can arrange a five-year course in Arts and Architecture, leading to the degree of bachelor of science in the College of Science, Literature, and the Arts, and bachelor of science in architecture in the College of Engineering and Architecture. A five-year course is recommended by the American Institute of Architects and is strongly advised to those who are able thus to extend their studies.

FRESHMAN YEAR

The freshman year is the same for both these courses.

Mathematics

Entering freshmen who have not had *higher algebra* in high school will register for M. & M. 9 (Higher Algebra). Those who have had higher algebra will register for M. & M. 11 (College Algebra). At the end of the first two weeks, students who do not show sufficient ability to proceed in College Algebra will be transferred, for the balance of the quarter, to Course 9, which carries no credit towards graduation.

Students who do not offer *solid geometry* for entrance will take M. & M. 10 (Solid Geometry) instead of Architecture 31 during the fall quarter and without university credit. They should follow this by Architecture 31, 32, and 33 in the winter and spring quarters and the Summer Session, respectively.

Students who do not complete *college algebra* in the fall quarter should plan to take M. & M. 11, 12, and 13 in the winter and spring quarters and the Summer Session, respectively.

Chemistry

Students who have not had high school *chemistry* will take Chemistry 1f-2w-3s, four credits per quarter, in their junior year instead of Economics 8, 9, and 28.

Military Science and Tactics

Students who, for any reason, are not required to take military science and tactics for their freshman and sophomore years, must take physical education both years in its stead and without credit.

REGULAR FRESHMAN PROGRAM

(Architecture and Architectural Engineering)

(For students who satisfy the requirements in algebra and geometry.)

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
M. & M. 11	College Algebra	5	5	..	..
Engl. 4	Rhetoric and Composition	3	3	..	..
Arch. 21	Free-Hand Drawing	2	..	..	6
Arch. 31	Elements of Architecture	5	..	2	9
Arch. 61	Projections	2	..	1	2
G.E. 11	Orientation	0	..	1	..
Mil. Sci. 1	First Year Basic Course	0	..	..	3
	Winter Quarter				
M. & M. 12	Trigonometry	5	5	..	..
Engl. 5	Rhetoric and Composition	3	3	..	..
Arch. 22	Free-Hand Drawing	2	..	..	6
Arch. 32	Elements of Architecture	5	..	2	9
Arch. 62	Shades and Shadows	2	..	1	2
G.E. 12	Orientation	0	..	1	..
Mil. Sci. 2	First Year Basic Course	0	..	..	3
	Spring Quarter				
M. & M. 13	Analytical Geometry	5	5	..	..
Engl. 6	Rhetoric and Composition	3	3	..	..
Arch. 23	Free-Hand Drawing	2	..	..	6
Arch. 33	Elements of Architecture	5	..	2	9
Arch. 63	Perspective	2	..	1	2
P.H. 12†	Hygiene and First Aid	0	..	1	..
Mil. Sci. 3	First Year Basic Course	0	..	..	3

ARCHITECTURE

Four-year course leading to the degree of bachelor of science in architecture, B.S.(Arch.).

The required courses amount to 205 credits, or, if high school chemistry be not presented for entrance, to 208 credits for graduation.

For freshman year, see pages 29 and 30.

† Women take Phys. Ed. for Women, Course 4, in place of P.H. 12.

SOPHOMORE YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
M. & M. 91	Calculus for Architects	4	4	..	..
Phys. 3	Mechanics and Sound	3	1	3	..
Arch. 14	Architectural History	2	..	2	..
Arch. 24	Free-Hand Drawing	2	..	..	6
Arch. 34	Architectural Design, Grade I	4	..	..	12
Arch. 44	Building Construction	2	..	2	..
Mil. Sci. 4	Second Year Basic Course	0	..	..	3
	Winter Quarter				
M. & M. 92	Mechanics for Architects	4	4	..	..
Phys. 23	Heat	3	1	3	..
Arch. 15	Architectural History	2	..	2	..
Arch. 25	Free-Hand Drawing	2	..	..	6
Arch. 35	Architectural Design, Grade I	4	..	..	12
Arch. 45	Building Construction	2	..	2	..
Mil. Sci. 5	Second Year Basic Course	0	..	..	3
	Spring Quarter				
M. & M. 93	Strength of Materials for Architects	4	4	..	..
Phys. 43	Electricity	3	1	3	..
Arch. 16	Architectural History	2	..	2	..
Arch. 26	Free-Hand Drawing	2	..	..	6
Arch. 36	Architectural Design, Grade I	4	..	..	12
Arch. 46	Building Construction	2	..	2	..
Mil. Sci. 6	Second Year Basic Course	0	..	..	3

JUNIOR YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
Arch. 17	Architectural History	2	..	2	..
Arch. 27	Free-Hand Drawing	2	..	..	6
Arch. 37	Architectural Design, Grade II	7	..	..	21
C.E. 38	Stresses in Structures	3	..	..	6
Econ. 8*	General Economics	3	..	3	..
	Winter Quarter				
Arch. 18	Architectural History	2	..	2	..
Arch. 28	Free-Hand Drawing	2	..	..	6
Arch. 38	Architectural Design, Grade II	7	..	..	21
C.E. 39	Structural Design	3	..	..	6
Econ. 9*	General Economics	3	..	3	..
	Spring Quarter				
Arch. 19	Architectural History	2	..	2	..
Arch. 29	Free-Hand Drawing	2	..	..	6
Arch. 39	Architectural Design, Grade II	7	..	..	21
C.E. 41	Reinforced Concrete	3	..	..	6
Econ. 28*	Business Law	3	..	3	..

* Students who entered without high school chemistry will substitute Chemistry 1, 2, and 3, four credits per quarter, for Economics 8, 9, and 28.

SENIOR YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
Arch. 131	Architectural Design, Grade III	10	..	..	30
Arch. 141	Building Construction	2	..	2	..
Arch. 151	Architectural Seminar	1	..	1	..
Arch. 161	Decoration and Applied Arts	2	..	2	..
E.E. 40	Electric Wiring and Equipment	2	..	2	..
	Winter Quarter				
Arch. 132	Architectural Design, Grade III	10	..	..	30
Arch. 142	Building Construction	2	..	2	..
Arch. 152	Estimating	1	..	1	..
Arch. 162	Landscape Design	2	..	2	..
C.E. 171	Building Sanitation	2	..	2	..
	Spring Quarter				
Arch. 133	Architectural Design, Grade III	10	..	..	30
Arch. 143	Building Construction	2	..	2	..
Arch. 153	Business Relations	2	..	2	..
Arch. 163	History of Painting and Sculpture	2	..	2	..
M.E. 154	Heating and Ventilating	2	..	2	..

ARCHITECTURAL ENGINEERING

Four-year course leading to the degree of bachelor of science in architectural engineering, B.S.(Arch.E.).

In addition to the prescribed courses, sufficient electives must be taken to complete a total of at least 204 credits for graduation. This is an average of 17 credits per quarter for 12 quarters.

The freshman year of this course is identical with the freshman year of the course in Architecture, pages 29 and 30.

SOPHOMORE YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
M. & M. 24	Differential Calculus	5	5	..	..
Phys. 3	Mechanics and Sound	3	1	3	..
Phys. 4	Mechanics Laboratory	1	..	..	2
Arch. 34	Architectural Design, Grade I	4	..	..	12
Chem. 4*	Chemistry	4	1	3	3
Mil. Sci. 4	Second Year Basic Course	0	..	..	3
	Winter Quarter				
M. & M. 25	Integral Calculus	5	5	..	..
Phys. 23	Heat	3	1	3	..
Phys. 24	Heat Laboratory	1	..	..	2
Arch. 35	Architectural Design, Grade I	4	..	..	12
Chem. 5*	Chemistry	4	1	3	3
Mil. Sci. 5	Second Year Basic Course	0	..	..	3

* Students who enter without high school chemistry must register for Chemistry 14 15, five credits per quarter, instead of Chemistry 4, 5.

Spring Quarter

M. & M. 26	Technical Mechanics (Statics)	5	5	..	..
Phys. 43	Electricity	3	1	3	..
Phys. 44	Electricity Laboratory	1	..	..	2
Arch. 36	Architectural Design, Grade I	4	..	..	12
Chem. 16	Chemistry	5	..	3	6
Mil. Sci. 6	Second Year Basic Course	0	..	..	3

JUNIOR YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
M. & M. 127	Technical Mechanics (Dynamics)	5	5	..	..
C.E. 31	Stresses in Structures	3	..	1	6
Arch. 14	Architectural History	2	..	2	..
Arch. 47	Building Construction	4	..	3	3
Econ. 8	Economics	3	..	3	..
	Winter Quarter				
M. & M. 128	Strength of Materials	5	5	..	..
M. & M. 141	Materials Laboratory	1	..	..	2
C.E. 32	Stresses in Structures	3	..	1	6
Arch. 15	Architectural History	2	..	2	..
Arch. 48	Building Construction	4	..	3	3
Econ. 9	Economics	3	..	3	..
	Spring Quarter				
M. & M. 129	Hydraulics	4	4	..	..
M. & M. 143	Hydraulics Laboratory	1	..	..	2
C.E. 33	Elementary Structural Design	3	..	1	6
Arch. 16	Architectural History	2	..	2	..
Arch. 49	Building Construction	4	..	3	3
Econ. 28	Business Law	3	..	3	..

SENIOR YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
Arch. 17	Architectural History	2	..	2	..
Arch. 141	Building Construction	2	..	2	..
M.E. 153	Heating and Ventilating	4	2	1	4
C.E. 141a	Reinforced Concrete	3	..	..	7
E.E. 40	Electrical Wiring and Equipment	2	..	2	..
	*One or more electives.				
	Winter Quarter				
Arch. 18	Architectural History	2	..	2	..
Arch. 142	Building Construction	2	..	..	..
Arch. 152	Estimating	1	..	1	..
C.E. 142a	Reinforced Concrete	3	..	..	7
C.E. 171	Building Sanitation	2	..	2	..
E.E. 49	Electric Motors	2	3	..	..
	*One or more electives.				

* For list of elective courses, see pages 38 to 42.

Spring Quarter

Arch. 19	Architectural History	2	..	2	..
Arch. 153	Business Relations	2	..	2	..
C.E. 18	Surveying	3	..	..	6
C.E. 135	Reinforced Concrete Design	4	..	2	8
M.E. 149 *	Heat Engines	4	3	..	4

*One or more electives.

INTERIOR DECORATION

Four-year course leading to the degree of bachelor of science in interior decoration, B.S.(Int. Dec.).

The course in Interior Decoration is primarily designed to meet vocational needs of women who wish to prepare for the practice of architecture, or interior decoration. This course requires normally four years for its completion, the first two years in the College of Science, Literature, and the Arts and the last two in the College of Engineering and Architecture.

For the freshman and sophomore years, students register in the College of Science, Literature, and the Arts and complete the requirements of the Junior College, including 90 credits and 90 honor points.

Courses Required in the First Two Years

	Credits
English A-B-C	15
Mathematics 6 (with prerequisite)	5 or 10
French (see Junior College Requirements, page 5, S. L. A. bulletin)	0 to 20
History 11-12-13	10
Physics 1 and 2 and any one of the continuations, 21, 31, 41, with laboratory	8
or	
Chemistry 1-2-3 or 4-5	8 to 12
Architecture 21-22-23	6
Architecture 31-32-33	12
Architecture 61-62-63	6

For Those Who Enter with Higher Algebra and Two Years of French

Freshman Year

FALL	Credits	WINTER	Credits	SPRING	Credits
English A	5	English B	5	English C	5
Mathematics	5	French	5	French	5
Elective	5	Elective or physics	5	Elective or physics	5

* For list of elective courses, see pages 38 to 42.

Sophomore Year

	Credits
Architecture 21-22-23	6
Architecture 31-32-33	12
History 11-12-13	10
Chemistry or physics	8 to 12
Architecture 61-62-63	6

Electives to complete a total of 90 for the two years.

NOTE.—Students who intend to take physics should elect Physics 1 and 2 during the freshman year.

Having satisfied the requirements of the Junior College, the students transfer to the College of Engineering and Architecture and pursue the following curriculum, amounting to 102 credits for the remaining two years:

JUNIOR YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
Arch. 14	Architectural History	2	..	2	..
Arch. 34	Architectural Design	4	..	..	12
Arch. 51	Building Construction	2	..	2	..
Arch. 74	Free-Hand Drawing	3	..	..	9
Art. Ed. 20	Principles of Harmony in Form and Color	3	..	..	6
	Non-technical electives	3			
	Winter Quarter				
Arch. 15	Architectural History	2	..	2	..
Arch. 35	Architectural Design	4	..	..	12
Arch. 52	Building Construction	2	..	2	..
Arch. 75	Free-Hand Drawing	3	..	..	9
Art. Ed. 21	Principles of Harmony in Form and Color	3	..	..	6
	Non-technical electives	3			
	Spring Quarter				
Arch. 16	Architectural History	2	..	2	..
Arch. 36	Architectural Design	4	..	..	12
Arch. 53	Building Construction	2	..	2	..
Arch. 76	Free-Hand Drawing	3	..	..	9
Art. Ed. 22	Principles of Harmony in Form and Color	3	..	..	6
	Non-technical electives	3			

SENIOR YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
Arch. 17	Architectural History	2	..	2	..
Arch. 27	Free-Hand Drawing	2	..	..	6
Arch. 134	Interior Decoration Design	7	..	..	28
Arch. 151	Seminar	1	..	1	..
Arch. 182	Furniture and Decoration	3	..	3	..
	Non-technical electives	3			

Winter Quarter

Arch. 18	Architectural History	2	..	2	..
Arch. 28	Free-Hand Drawing	2	..	..	6
Arch. 135	Interior Decoration Design	7	..	..	6
Arch. 183	Furniture and Decoration	3	..	3	..
	Non-technical electives	3			

Spring Quarter

Arch. 19	Architectural History	2	..	2	..
Arch. 29	Free-Hand Drawing	2	..	..	6
Arch. 136	Interior Decoration Design	7	..	..	21
Arch. 163	History of Sculpture and Painting	2	..	2	..
	Non-technical electives	3			

ENGINEERING PRE-BUSINESS

This course has been arranged for students who wish to prepare for work along lines of industrial administration, such as purchasing or sales, employment, or cost accounting. The student registers in the College of Engineering and Architecture, and after the completion of the first two years of work as prescribed, transfers to the School of Business for the third and fourth years. The combined course leads to the degree of bachelor of science in business.

The freshman year is the same as that for civil, mechanical, electrical and agricultural engineering, as shown on pages 17 and 18.

SOPHOMORE YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
M. & M. 91	Calculus	4	4	..	..
Phys. 3	Mechanics and Sound	3	1	3	..
Phys. 4	Mechanics Laboratory	1	..	..	2
Econ. 8	General Economics	3	..	3	..
M.E. 14	Machine Shop Practice	4	..	1	10
Psy. 1	General Psychology	3	1	2	..
Mil. Sci. 4	Second Year Basic Course	0	..	..	3
	Winter Quarter				
M. & M. 92	Mechanics	4	4	..	..
Phys. 23	Heat	3	1	3	..
Phys. 24	Heat Laboratory	1	..	..	2
Econ. 9	General Economics	3	..	3	..
Econ. 25	Principles of Accounting	4	3	..	2
Psy. 6	General Psychology	3	1	2	..
Mil. Sci. 5	Second Year Basic Course	0	..	..	3
	Spring Quarter				
M. & M. 93	Strength of Materials	4	4	..	..
Phys. 43	Electricity	3	1	3	..
Phys. 44	Electricity Laboratory	1	..	..	2
Econ. 10	General Economics	3	1	3	..
Econ. 26	Principles of Accounting	4	3	..	2
M.E. 21	Mechanical Technology	1	..	1	..
M.E. 40	Automotives	2	3	..	..
Mil. Sci. 6	Second Year Basic Course	0	..	..	3

JUNIOR YEAR
(In the School of Business)

Course No.	Title	Credits
	Fall Quarter	
Econ. 85	Principles of Marketing	3
Econ. 51	Business Law	3
Econ. 143	Financial System	4
	Electives	5 to 7
	Winter Quarter	
Econ. 73	Railway Traffic and Rates	3
Econ. 52	Business Law	3
Econ. 144	Financial System	4
	Electives	5 to 7
	Spring Quarter	
Econ. 155	Corporation Finance	3
Econ. 53	Business Law	3
Econ. 149	Business Cycles	3
Econ. 14	Elements of Statistics	3
	Electives	2 to 5

SENIOR YEAR
(In the School of Business)

Course No.	Title	Credits
	Fall Quarter	
Econ. 103	Advanced General Economics	3
Econ. 131	Cost Accounting	3
Econ. 161	Labor Problems	3
	Electives	5 to 7
	Winter Quarter	
Econ. 104	Advanced General Economics	3
Econ. 132	Cost Accounting	3
Econ. 167	Personnel Administration	3
	Electives	5 to [illegible]
	Spring Quarter	
Econ. 168	Advanced Personnel Administration	3
Econ. 133	Cost Accounting	3
	Electives	10

ENGINEERING ADMINISTRATION

The following group of elective courses has been prepared for those advanced students in this college who desire a broad training for service in executive and administrative positions. There is an increasing demand for engineers who have such training, and students whose scholastic records are of high grade are encouraged to include this entire series of electives.

SOPHOMORE YEAR

Course No.	Title	Credits
	Fall Quarter	
Econ. 8	Principles of Economics	3
	Winter Quarter	
Econ. 9	Principles of Economics	3
	Spring Quarter	
Econ. 10	Principles of Economics	3

JUNIOR YEAR

Course No.	Title	Credits
	Fall Quarter	
Econ. 29	Principles of Accounting	3
	Winter Quarter	
Econ. 91	Principles of Organization and Management	3
	Spring Quarter	
Econ. 92	Business Finance	3

SENIOR YEAR

Course No.	Title	Credits
	Fall Quarter	
Econ. 161	Labor Problems	3
Econ. 85	Principles of Marketing	3
	Winter Quarter	
Econ. 167	Personnel Management	3
Econ. 73	Traffic and Rates	3
	Spring Quarter	
Econ. 28	Business Law	3
Econ. 154	Public Utilities	3
Econ. 93	Cost Accounting	3

LIST OF ELECTIVE COURSES

For detailed schedules of classes see the programs of the respective departments.

OPEN TO ALL CLASSES

Course No.	Title	Credits	Prerequisites
A.B. 1f,w,s, 2w,s,su	General Zoology	10	None
Ag.E. 5f	Farm Building Construction	3	None
Ag.E. 14s	Tractor and Auto Work II	3	Ag.E. 13
Arch. 21f,w,s,su-22f,w,s,su-23f,w,s,su	Free-Hand Drawing (per quarter)	2	None
Draw. 36w,s	Graphical Methods	3	M. & M. 11
Draw. 44f,w,s	Lettering	1	None
Draw. 50w,s	Diagrams and Charts	2	None

Course No.	Title	Credits	Prerequisites
Draw. 54f,w,s	Advanced Lettering	1	Any lettering course
Econ. 1f,s-2w,f	Introduction to Economics	10	None
Econ. 35	Mechanism of Exchange	5	None
Rhet. 4f,w-5w,s-6s	Composition for Technical Students (S.L.A.)	9	None
Geol. 8w,s	Introductory Geology	5	None
Ger. 1f,w,s	Beginning German A	5	None
Ger. 2f,w,s	Beginning German B	5	Ger. 1 or one year preparation
Ger. 3f,w,s	Beginning German C	5	Ger. 2
Ger. 4f,w,s	Rapid Reading	5	Ger. 3 or two years preparation
Ger. 24f-25w-26s	Beginning German	12	None
Hist. 1f-2w	Modern World History	10	None
Hist. 4f,s-5w	England 1066 to Present	10	None
Lib. Meth. 1f,w,s	Use of Books and Libraries	2	None
Phys. Ed. 1f-2w-3s	Hygiene and Physical Education (per quarter)	1	None
Fr. 1f,w,s-2f,w,s	Beginning French	10	None
Fr. 3f,w,s-4f,w,s	Intermediate French	10	French 1-2 or two years high school French
Span. 1f,w,s-2f,w,s	Beginning Spanish	10	None
Span. 3f,w,s-4f,w,s	Intermediate Spanish	10	Spanish 1-2 or two years high school Spanish

OPEN TO ALL CLASSES EXCEPT FRESHMEN

Course No.	Title	Credits	Prerequisites
Ast. 15f,w,s	Descriptive Astronomy for Engineers	3	M. & M. 12
Ast. 30s	Field Astronomy for Engineers	3	1 qr. surveying
Chem. 28f,w	Quantitative Analysis	3	Chem. 16
Chem. 60w,s	Power Plant Chemistry	3	Chem. 16
Chem. 69w,s	Boiler Water and Petroleum Products	2-3	Chem. 60
Chem. 78f	Engineering Chemistry	3	Chem. 16
C.E. 18s	Surveying	3	M. & M. 13, Draw. 2
Draw. 37f,w,s	Lettering for Engineers	2	Dr. 2
Draw. 64f,w,s	Commercial Drafting Practice	2-3	Dr. 22
Draw. 65f,w,s	Commercial Drafting Practice	2-3	Dr. 27 or 29
Econ. 6f,w,s-7f,w,s	Principles of Economics	10	None
Econ. 8f-9w-10s	General Economics	9	None
Econ. 14s	Elements of Statistics	5	Econ. 6-7
Econ. 25f,w-26f,w,s	Principles of Accounting	8	Econ. 6-7
Econ. 29f	Principles of Accounting	3	None
Engl. 1f-2w-3s	English Survey (S.L.A.)	9	9 cred in rhet.
Engl. 7w-8s	Explorations in Literature	3	Rhet. 4-5-6
Rhet. 31w,s	Technical Writing	3	Rhet. 4-5-6
Pub. Sp. 41w,s	Public Speaking	3	Rhet. 4-5-6
Geol. 1f,w,s-2w,s	General Geology	10	Chemistry
Geol. 5f	Engineering Geology	3	None
Geol. 6w-7s	Applied Geology for Civil Engineers	6	Geol. 1-5
Geol. 23w-24s-25f	Elements of Mineralogy	10	Chemistry
Hist. 7f-8w	American History	10	None
Jour. 13f-14w-15s	Reporting	9	Rhet. 6
M. & M. 99f,w,s	Materials of Engineering	3	M. & M. 13
M.E. 40f,w,s	Automotives	2	M.E. 11,12-13
M.E. 111f,w,s	Tool Construction	3	M.E. 15

Course No.	Title	Credits	Prerequisites
Met. 109f,w	Metallurgy	3	Chem. 16
Philos. 2f,w,s	Logic	5	None
Phys. Ed. 7f,8w,9s	Advanced Leaders (per quarter)	1	Phys. Ed. 1-2-3
P.H. 50f,su	Public and Personal Health	3	None
P.H. 53f	Elements of Preventive Medicine	3	Psy. 1-2; Bact. 51; or by permission
P.H. 73w	Occupational Hygiene and Disease	2	P.H. 53
Phys. 35w,s	Optics	2	Phys. 3
Phys. 123s	Pyrometry	3	Phys. 23 & 24
Pol. Sci. 1f,w,s	American Government	5	None
Pol. Sci. 2f,w,s	State Government	5	None
Pol. Sci. 11f,w,s	Municipal Government	5	Pol. Sci. 1 or 2
Psy. 1f-6w	General Psychology for Business Students	6	None
Italian 1f-2w	Beginning Italian	10	None
Soc. 1f,w,s	Introduction to Sociology	5	None

OPEN TO JUNIORS AND SENIORS ONLY

(See Engineering Administration, pages 37 and 38, and Mechanical Engineering Options, pages 25 and 26)

Course No.	Title	Credits	Prerequisites
Ag.E. 15f	Ignition and Carburetion	3	Ag.E. 13
Ag.E. 28w	Land Clearing	3	None
Ag.E. 36w	Rural Heating and Ventilation	4	Ag.E. 7 and 24
Ag.E. 67s	Farm Structures II	3	Ag.E 7
Ag.E. 101f,s	Drainage Engineering and Works	4	Ag.E. 25, 31, 134
Ag.E. 102s	Advanced Drainage Problems	3	Ag.E. 101
Ag.E. 103f,s	Irrigation Engineering and Works	4	Ag.E. 25, 42, 134
Ag.E. 104w	Drainage Administration and Law	3	Ag.E. 101
Ag.E. 111f	Structural Materials	3	Ag.E. 67
Ag.E. 112s	Farm Building Problems	3	Ag.E. 111
Ag.E. 123s	Farm Power	3	Ag.E. 122
Ag.E. 125w	Farm Machinery Design	3	Ag.E.122,M.E.38
Ag.E. 135f	Ignition Systems	4	Ag.E. 13, 54
Ag.E. 136s	Experimental Physical Analysis	5	Ag.E. 54, 122, 134
Ast. 101f-102w-103s	Practical Astronomy	9-18	Ast. 4 or 5, M. & M. 25
Ast. 111f-112w-113s	Celestial Mechanics	9	M. & M. 25
Ast. 140w	Method of Least Squares	3	M. & M. 25
Bact. 51f,w,s	General Bacteriology	5	Chem. 10 cr. & Biol. 10 cr.
C.E. 53s	Civil Engineering Practice	3	None
C.E. 161f	Hydrology	3	None (open to seniors only)
Chem. 76f-77w	Applied Electrochemistry	4	Jr., sr.
Chem. 186s	Gas Manufacture and Distribution	3	Two years of engineering
Draw. 38f-39w-40s	Graphs and Charts (per quarter)	2	Dr. 23, Ar. 27 or 29
Draw. 45f,w,s-46f,w,s	Alphabets (per quarter)	2	None
Draw. 71f,w,s	Graphics for Electrical Engineers	3	Dr. 27, E.E. 111
Draw. 111f,w,s-112f,w,s	Advanced Descriptive Geometry (per quarter)	2	Dr. 3, M. & M. 25
Draw. 113f,w,s	Perspective	3	Arch. 63
Draw. 115f-116w-117s	Geometry (per quarter)	3	M. & M. 25

Course No.	Title	Credits	Prerequisites
Econ. 28f,s	Business Law	3	Econ. 8-9 or 6 cr. in econ.
Econ. 51f-52w-53s	Business Law	9	Econ. 8-9-10 or 10 cr. in econ. or pol. sci. or 5 in each
Econ. 72f,s	Economics of Transportation	3	Econ. 8-9
Econ. 73w	Railway Traffic and Rates	3	Econ. 8-9
Econ. 74s	Transportation Problems	3	Econ. 72
Econ, 85f,s	Principles of Marketing	3	Econ. 8-9
Econ. 91w	Principles of Organization and Management	3	Seniors without prerequisites or juniors with Econ. 8-9 or equiv.
Econ. 92s	Business Finance	3	Econ. 8-9 or equiv.
Econ. 93s	Cost Accounting	3	Econ. 29
Econ. 113w-114s	Theory of Statistics	6	Econ. 14
Econ. 131f-132w-133s	Cost Accounting	9	Econ. 29
Econ. 154s	Public Utilities	3	Econ. 92
Econ. 161	Labor Problems	3	Econ. 8-9
Econ. 167w	Personnel Administration	3	Econ. 8-9
Econ. 168s	Advanced Personnel Administration	3	Econ. 167
E.E. 40f	Electric Wiring and Equipment	2	Phys. 43
E.E. 49w	Electric Motors	2	E.E. 40
E.E. 61f-63w-65s	Electrical Communication	2	Reg. E.E. 111
E.E. 81w	Electrical Engineering Measurements	3	E.E. 111
E.E. 191f,91s	Seminar	1	E.E. 111
E.E. 143f,w,s	Power Plant Operation	1	E.E. 45 or 48 or 116
E.E. 144w	Railway Electrical Engineering	2	E.E. 42 or 45 or 48 or 115
E.E. 146s	Storage Battery Engineering	2	E.E. 45 or 48 or 113
E.E. 151f,152f	Electric Lighting	3	Phys. 33, 43, 44
G.E. 81f,w,s	Estimating	3	Jr., sr. only
G.E. 101w	Contracts and Specifications	3	Seniors only
G.E. 111s	Valuation of Public Utilities Properties	2	Seniors only
G.E. 124w	Engineering Relations	1	Seniors only
G.E. 193s	Engineering Practice	1	Seniors only
Geol. 27s	Outlines of Mineralogy	1	None
Greek 42s	Greek Sculpture	2	None
M. & M. 150w	Advanced Mathematics for Electrical Engineers	3	M. & M. 151
M. & M. 151f	Differential Equations	3	M. & M. 25
M. & M. 152w-152s	Advanced Calculus and Applications (per quarter)	3	M. & M. 151
M. & M. 161f-162w-163s	Advanced Technical Mechanics (per quarter)	3	M. & M. 127
M. & M. 171f-172w-173s	Aerodynamics (per quarter)	3	M. & M. 127
M. & M. 180s	Advanced Strength of Materials	3	M. & M. 128
M. & M. 184f-185w-186s	Advanced Testing Materials Lab. (per quarter)	2	M. & M. 141
M. & M. 191f	Hydraulic Motors and Pumps	3	M. & M. 129
M. & M. 192w	Hydraulic Motors Laboratory	3	M. & M. 129

M. & M. 193s	Hydraulic Measurements	3	M. & M. 129
M. & M. 194f,w,s-195f,w,s-196f,w,s	Special Problems in Hydraulics (per quarter)	3	M. & M. 129, 143
M.E. 61s	Measurement of Power.....	2	M. & M. 127
M.E. 257w	Mechanical Equipment of Buildings.	3	Phys. 43
Met. 150f	Metallography for Electrical Engineers	3	None
Met. 151w	Advanced Metallography for Electrical Engineers	3	Met. 150
Met. 156f	Metallography for Mechanical Engineers	3	None—Open to seniors only
Met. 157w	Advanced Metallography for Mechanical Engineers	3	Met. 156
Met. 163f-164w-165s	Advanced Metallography	Ar	Met. 151, 157, or equiv.
Mil. Sci. 51f-52w-53s	First Year Advanced Course R.O.T.C. (per quarter)		
	Artillery	3	Mil. Sci. 6—Must be legally eligible for enrolment in R.O.T.C.
	Signal Corps	1	
Mil. Sci. 54f-55w-56s	Second Year Advanced Course R.O.T.C. (per quarter)		
	Artillery	3	Mil. Sci. 51-52-53
	Signal Corps	1	
P.H. 102f,w,su	Sanitation	Ar	Bact. 1 Chem. 28 & 32 or 37
Phys. 146w	Electrical Measurements of Precision	3	Phys. 144
Psy. 60of	Employment Psychology	3	Psy. 1-2 or 1-6 Econ. 8-9

DESCRIPTIONS OF COURSES

AGRICULTURAL ECONOMICS

Ag.Ec. 1f,w,s. Principles of Economics. 5 cred.; no prereq.; ar.
Ag.Ec. 2w,s. Agricultural Economics. 3 cred.; prereq., Ag.Ec. 1; ar.

AGRICULTURAL ENGINEERING

FARM BUILDINGS

5f. Farm Building Construction. Instruction and practice in framing, construction, and painting of farm buildings. 3 cred.; no prereq. Mr. White.

7w. Farm Structures I. Arrangement, planning, and designing of farm buildings, giving special attention to convenience, economy, and the durability of farm houses, barns, cribs, granaries, hog houses, etc. 3 cred.; prereq., Draw. 3 or equiv. Mr. White.

24f,w. Agricultural Physics I. Applied course involving lectures and laboratory work in mechanics and heat. Special emphasis given to farm power, hydraulics, heating, ventilation, and meteorology. 4 cred.; prereq., M. & M. 13 or equiv. Mr. Romness.

25w,s. Agricultural Physics II. Practical lecture, recitation, and laboratory course on electricity and light, including electric generating plants, batteries, motors, lighting systems, and light and radiant energy as applied to farm problems. 4 cred.; prereq., Ag.E. 24. Mr. Romness.

36w. Rural Heating and Ventilation. Fundamental principles of combustion, heat transmission, heating and ventilation. Application of heating and ventilating systems to homes, rural schools, churches, warehouses, and farm structures. 4 cred.; prereq., Ag.E. 7 and 24. Mr. Stewart.

37s. Rural Sanitation. Wells, pumps, and water supply, with methods of securing sanitary water systems for farmsteads and rural institutions. Sanitary sewage disposal methods for homes, creameries, etc. 3 cred.; no prereq. Mr. Stewart.

67s. Farm Structures II. Planning, estimating, and construction of farm buildings including a study of materials commonly used. 3 cred.; prereq., Ag.E. 7. Mr. White.

111f. Structural Materials. Use, strength, practicability, and durability of materials used in farm building construction and equipment. 3 cred.; prereq., Ag.E. 67. Mr. White.

112s. Farm Building Problems. Investigations in the utility and durability of building materials such as concrete, hollow building tile, lumber, prepared roofing, etc., as well as methods of construction of farm buildings. 3 cred.; prereq., Ag.E. 111. Mr. White.

150s. Seminar. Students will give reports of their investigations on certain assigned problems for research. Open to students registered in

Agricultural Engineering. 2 cred.; prereq., Ag.E. 102 or 112 or 125 or reg. in 136. Heads of sections.

FARM MACHINERY

13f,w,s. Tractor and Auto Work I. Theory, operation, care, and repair of gasoline engines. 3 cred.; no prereq. Mr. Torrance.

14s. Tractor and Auto Work II. Instruction and practice in the care, adjustment, and operation of the farm tractor. 3 cred.; prereq., Ag.E. 13. Mr. Torrance.

15f. Ignition and Carburetion. Lecture and shop study of the construction and action of the various forms of ignition and carburetion systems in use on gas engines of all types. 3 cred.; prereq., Ag.E. 13. Mr. Torrance.

40f. Mechanical Training I. Instruction and laboratory practice in mechanical trades, embracing rope work; belt-lacing and pulleys; cement work; soldering; pipe-fitting; cold metal work; electric wiring; babbitting; harness repair, etc. 3 cred.; no prereq. Mr. Dent.

54s. Applied Electricity. Course, largely of laboratory work in direct and alternating current machines as used on farms, including generators, motors, storage batteries, transformers, and complete isolated electric and hydro-electric plants. 5 cred.; prereq., Ag.E. 25 or equiv. Mr. Stewart.

121w. Steam Boilers and Engines. Lecture and laboratory study of the construction, operation, and care of simple steam engines and boilers. 3 cred.; prereq., Ag.E. 25, 40. Mr. Boss.

122f. Farm Power Machinery. Lecture and laboratory course dealing with the construction, operation, care, adjustment, and testing of the farm tractor and of farm machinery driven by tractor or other power. 3 cred.; prereq., Ag.E. 14, 25, Agron. 11. Mr. Torrance.

123s. Farm Power. Comparative study of the application and cost of the different sources of motive power to farm machinery and operations. 3 cred.; prereq., A.E. 122. Mr. Torrance.

125w. Farm Machinery Design. Drafting room study of design of farm machine parts, e.g., gearing, cams, shafts, flexible connections, etc.; laboratory tests of strength coupled with efficiency of machine parts. Recitation and lecture. 3 cred.; prereq., Ag.E. 122 and M.E. 38. Mr. Torrance.

126s. Selection of Farm Equipment. Field laboratory study of types and construction of machinery and equipment suited to the various farm and farm home operations. 3 cred.; prereq., Ag.E. 122, Agron. 11. Mr. Torrance.

135f. Ignition Systems. Lecture and laboratory course in the study of ignition and generating systems used on gas engines and tractors. 4 cred.; prereq., Ag.E. 13, 54. Mr. Stewart.

136s. Experimental Physical Analysis. A laboratory course in physical measurements for specialists in the agricultural sciences. The work

includes the use of bridges, potentiometers, galvanometers, refractometers, spectrometers, polarimeters, thermocouples, etc. 5 cred.; prereq., 54, 122, 134: Mr. Stewart.

NOTE.—Courses 150s, 24f,w, and 25w,s also come under this head.

RECLAMATION

19f. Elementary Surveying. Use of tape, transit, level, and traverse board in agricultural field problems, e.g., mensuration surveys, laying out plots in series, traverses, differential and profile leveling; plotting and mapping. Care and adjustment of instruments. 3 cred.; prereq., Draw. 3, M. & M. 12. Mr. Neal.

20s. Advanced Surveying. Topographic surveys by stadia and other methods, running simple curves, cross sectioning, mapping the survey, profile building, grade determination, and figuring of quantities in earth work. 3 cred.; prereq., Ag.E. 19. Mr. Roe.

28w. Land Clearing. Land clearing methods, explosives, and machinery. Farm development in cut over timber district. 3 cred.; no prereq. Mr. Schwantes.

31f,w,s. Principles of Drainage. Elementary principles and practice of drainage in relation to plant growth, crop and land values, and farm development. 3 cred.; no prereq. Mr. Neal.

42s. Principles of Irrigation. Irrigation and the development of arid and semi-arid lands, a study of irrigation practices; duty of water and water rights; correlation of drainage and irrigation. 3 cred.; no prereq. Mr. Roe.

101f,s. Drainage Engineering and Works. Design, location, and construction of public and private drainage systems and works; construction estimates, drainage engineering, and public records. 4 cred.; prereq., Ag.E. 25, 31, 134. Mr. Roe.

102s. Advanced Drainage Problems. Special drainage problems including surface run-off, soil permeability, relation of soil type to drainage, shape and regulation of water table in relation to root growth, etc. 3 cred.; prereq., Ag.E. 101. Mr. Roe.

103f,s. Irrigation Engineering and Works. Design, location, and construction of irrigation works; reservoir and transmission losses; general irrigation law; irrigation engineering and public records. 4 cred.; prereq., Ag.E. 25, 42, 134. Mr. Roe.

104w. Drainage Administration and Law. Organizing, financing, problems in legal development and administration of drainage and flood control districts, fiduciary duties of the engineer, etc. 3 cred.; prereq., Ag.E. 101. Mr. Roe.

134f. Agricultural Hydraulics. A laboratory and lecture course on hydraulics as applied to water movements in pipes, tile and open ditches in farm water systems, drainage, and irrigation. 4 cred.; prereq., Ag.E. 25, M. & M. 25. Mr. Stewart.

NOTE.—Courses 150s, 24f,w, 25w,s, and 136s also come under this head.

AGRONOMY AND FARM MANAGEMENT

Agron. 1s. Farm Crops. The important field crops of the United States with emphasis upon those of local importance, distribution, economic importance, agricultural classification, cultural methods, and principles of improvement and seed selection. 3 cred.; no prereq. Mr. Steinmetz.

Agron. 11s. Farm Machinery. Lectures and laboratory work covering classification, mechanical construction, adjustment, and operation of the different kinds of farm machinery. 3 cred.; no prereq. Mr. Bassett.

Agron. 102f. Farm Management II. Organization. The business side of farming is emphasized. Special attention is given to farm organization and equipment. 3 cred.; prereq., Ag.Ec. 2, Soils 4. Mr. Garey.

Agron. 103f. Farm Management II. Operation. Continuation of 102. Special attention is given to farm operation. 3 cred.; prereq., Ag. 102. Mr. Garey.

ANIMAL HUSBANDRY

A.H.8s. Fundamentals of Feeding. Brief survey of livestock and dairy feeding designed for students not majoring in animal industry. 3 cred.; no prereq. Mr. Harvey.

ARCHITECTURE

HISTORY

14f. Architectural History. Technical study of the architecture of ancient Egypt, Assyria, Persia, and Greece, with emphasis on the latter. Illustrated lectures and library research. 2 cred.; prereq., 33. Mr. Mann.

15w. Architectural History. Technical study of the architecture of ancient Rome and of the Renaissance in Italy to the end of the fifteenth century. Illustrated lectures and library research. 2 cred; prereq., 14. Mr. Mann.

16s. Architectural History. Technical study of the architecture of the Renaissance of the sixteenth and seventeenth centuries in Italy. Illustrated lectures and library research. 2 cred.; prereq., 15. Mr. Mann.

17f. Architectural History. Technical study of the architecture of the Middle Ages in Italy and France; sources and influences in the development of the Romanesque and Gothic styles. Lectures and library research. 2 cred.; prereq., 16. Mr. Mann.

18w. Architectural History. Technical study of developed Gothic architecture in France and England. Early Renaissance architecture in France and England, its sources and affecting influences. Lectures and library research. 2 cred.; prereq., 17. Mr. Mann.

19s. Architectural History. Technical study of the development of architecture from the seventeenth century to and including the present time, particularly in France, England, and America. Lectures and library research. 2 cred.; prereq., 18. Mr. Mann.

DRAWING

61f. Projections. Elementary principles of descriptive geometry and their application to architectural problems of projections and intersections. 2 cred.; no prereq. Mr. Forsythe.

62w. Shades and Shadows. The geometrical determination of shades and shadows on architectural forms. 2 cred.; prereq., 61. Mr. Forsythe.

63s. Perspective. The principles and methods of perspective as applied to architectural drawing. 2 cred.; prereq., 61. Mr. Forsythe.

FINE ARTS

21f,w,s,su-22f,w,s,su-23f,w,s,su. Free-Hand Drawing. Free-hand perspective; drawing in pencil, charcoal, and wash from geometric solids and architectural details. 2 cred. per qr.; no prereq. Mr. Young.

24f,w,s-25f,w,s-26f,w,s. Free-Hand Drawing. Drawing in charcoal and water color from still life, figure details, and the antique. 2 cred. per qr.; prereq., 23. Mr. Burton.

27f,w,s-28f,w,s-29f,w,s. Free-Hand Drawing. Drawing and painting from architectural detail, from the antique, and from life. 2 cred. per qr.; prereq., 26. Mr. Burton.

74f-75w-76s. Free-Hand Drawing. Similar to Courses 24, 25, and 26. For students in Interior Decoration. 3 cred. per qr.; prereq., 23. Mr. Burton.

84f,w,s-85f,w,s-86f,w,s. Modeling. An elementary course in clay modeling. Ornament, heads, and animals from casts and from life. 2 cred. per qr.; prereq., 29. Mr. Burton.

87f,w,s-88f,w,s-89f,w,s. Hand Print Processes. Making and printing wood engravings, etchings, dry-points, and lithographs. 1 cred.; prereq., 29. Mr. Burton.

90f,w,s-91f,w,s-92f,w,s. Illustration. Design of illustration as applied to the printed page. Magazine illustration, posters and books. 1 cred.; prereq., 29. Mr. Young.

121f,w,s-122f,w,s-123f,w,s. Free-Hand Drawing. Advanced life drawing, painting, or modeling and decoration. 2 cred. per qr.; prereq., 29. Mr. Burton.

163s. History of Sculpture and Painting. Historical study of ancient Renaissance and modern sculpture, and of the Renaissance and modern schools of painting. 2 cred.; prereq., sr. standing. Mr. Burton.

DESIGN

31f,w-32w,s-33s,su. Elements of Architecture. Architectural drawing, lettering, and wash-rendering. Elements of architectural design; walls, doors, windows, colonnades, arcades, moldings, vaults, etc. 5 cred. per qr.; no prereq. Mr. Forsythe.

*34f,w,s-35f,w,s-36f,w,s. Architectural Design, Grade I. Long and short problems under individual criticism dealing in general with the elements of plan and elevation. Sketch problems dealing with composition. 4 cred. per qr.; prereq., 33, 61, 62, 63. Mr. Robertson.

* 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 design course is three years. Some students find that they require a longer period and some are able to complete the design work in less time. Those who fall into the former group extend their time for graduation and to those able to complete the work in shorter time special advanced work is open.

*37f,w,s-38f,w,s-39f,w,s. Architectural Design, Grade II. Long and short problems under individual criticism dealing with simple architectural composition. Sketch problems dealing with large composition or decorative detail. 7 cred. per qr.; prereq., 36. Mr. R. C. Jones.

*131f,w,s-132f,w,s-133f,w,s. Architectural Design, Grade III. Long, short and sketch problems under individual criticism dealing with more complex kinds of architectural composition, especially with subjects involving special character and a decorative and imaginative interest. 10 cred. per qr.; prereq., 39. Mr. Arnal.

CONSTRUCTION

44f-45w-46s. Building Construction. General study, for architectural students, of the principles, methods, and materials involved in the design of ordinary masonry and frame construction. 2 cred. per qr.; prereq., 33. Mr. R. T. Jones.

47f-48w-49s. Building Construction. Detailed study, for architectural engineering students, of the principles, methods, and materials involved in the design of all systems of light and heavy construction. 4 cred. per qr.; prereq., 33. Mr. R. T. Jones.

51f-52w-53s. Building Construction. General non-technical study, for students in interior decoration, of the principles, methods, and materials of ordinary construction, particularly as related to domestic architecture and interior finish. 2 cred. per qr.; prereq., 38. Mr. R. T. Jones.

141f-142w-143s. Building Construction. An advanced study of the technology of building materials, soils, foundations, systems of framing, and fireproof and mill construction. 2 cred. per qr.; prereq., C.E. 41 or M.&M. 26. Mr. R. T. Jones.

INTERIOR DECORATION

64s. Interior Perspective. Practical handling of interior perspective drawing. 1 cred.; prereq., 33. Mr. Forsythe.

81f,w. Stage Design. The making of original models to solve stage problems in design. Form and color. For students interested in dramatics. 2 cred.; no prereq. Mr. Burton.

82w. Advanced Stage Design. Original models and costumes for actual productions. 2 cred.; prereq., 81. Mr. Burton.

*134f,w,s-135f,w,s-136f,w,s. Interior Decoration Design. Problems done under individual criticism dealing with the decorative treatment, furniture, and accessories of interiors, for students in interior decoration. 7 cred. per qr.; prereq., 36. Mr. Arnal.

161f. Decoration and Applied Arts. General historical and technical study, for architectural students, of decoration, furniture, etc., together with discussion of the use of color. 2 cred.; prereq., 16, 26. Mr. 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 credits. The normal time required to complete the design course is three years. Some students find that they require a longer period and some are able to complete the design work in less time. Those who fall into the former group extend their time for graduation and to those able to complete the work in shorter time special advanced work is open.

182f-183w. Furniture and Decoration. Historical and technical study, for students in architecture and decoration, of ornament, decoration, furniture, etc., together with discussion of the use of color in decoration. 3 cred. per qr.; prereq., 16, 26. Mr. Mann.

184s. Furniture and Decoration. Continuation of 183. 1 cred.; prereq., 183. Mr. Mann.

LANDSCAPE ARCHITECTURE

160f. History of Landscape Architecture. Historic study of landscape architecture in Italy, France, England, and America. 2 cred.; prereq., 16. Mr. Mann.

162w. Landscape Design. Theory and practice of landscape design. Lecture and design problems. 2 cred.; prereq., 39. Mr. Nichols.

164s. Landscape Design. Continuation of 162 with particular attention to the relation of buildings to their sites and surroundings. 2 cred.; prereq., 162. Mr. Mann.

RELATED SUBJECTS

151f. Architectural Seminar. Literature of architecture, special topics and topics of current interest, papers, and discussions. 1 cred.; prereq., sr. standing. Mr. Mann.

152w. Estimating. Principles of the quantity survey; cost analysis. 1 cred.; prereq., sr. standing. Mr. Sault.

153s. Business Relations. Relations of the architect, owner, and builder; professional ethics and practice; office administration. 2 cred.; prereq., sr. standing. Mr. Mann.

ART EDUCATION

20f-21w-22s. Principles of Harmony in Form and Color. Color theories of Munsell, Wilson, and Sargent, discussed and exemplified, with analysis of color harmonies and original work therein. Application of color harmonies in original designs throughout the year, with reference to execution in handicraft and by commercial processes. 3 cred. per qr.; prereq., 9 cred. in design or by permission. Mrs. Martin.

ASTRONOMY

15f,w,s. Descriptive Astronomy for Engineers. Fundamental facts of general and practical astronomy, illustrated by lantern slides, observatory equipment, and telescopic observations. Questions, problems, and naked eye observations are assigned. 3 cred.; prereq., M.&M. 12. Mr. Beal.

30s. Field Astronomy for Engineers. Elements of practical astronomy. Field work with the surveyor's transit and the sextant for determining latitude, longitude, clock error, and azimuth. 3 cred.; prereq., M.&M. 12, 1 qr. Surv., Astr. 11 or 15. Mr. Beal.

CHEMISTRY

GENERAL INORGANIC CHEMISTRY

1f-2w-3s. General Inorganic Chemistry. (Jr. archs.) 1. Study of the general laws of chemistry and of the metals and non-metals and their compounds. 4 cred. per qr.; no prereq. Mr. Reyerson.

4f-5w. General Inorganic Chemistry. Study of the general laws of chemistry and of the non-metals, the metals, and their compounds. 4 cred. per qr.; prereq., h.s. chem. Mr. Kirk.

9w-10s. General Inorganic Chemistry. 5 cred. per qr.; prereq., h.s. chem. Mr. Kirk.

12f. Qualitative Chemical Analysis. 5 cred. per qr.; prereq., 5 or 15. Mr. Maynard.

14f-15w. General Inorganic Chemistry. (Engineers and mines.) Includes a study of the general laws of chemistry and of the non-metals, the metals, and their compounds. 5 cred. per qr.; no prereq. Mr. Heisig.

16s. Qualitative Analysis. (Engineers and mines.) Laboratory work in systematic qualitative analysis with lectures on solution, ionization, chemical and physical equilibrium, oxidation and reduction, and other subjects pertinent to qualitative analysis. 5 cred.; prereq., 5 or 15. Mr. Kirk.

ANALYTICAL CHEMISTRY

28f,w. Quantitative Analysis. Short introductory course covering the general principles and methods of quantitative analysis, both gravimetric and volumetric. Typical problems are assigned and attention given to proper laboratory practice. 3 cred.; prereq., 16. Mr. Sarver.

TECHNOLOGICAL CHEMISTRY

60f,w,s. Power Plant Chemistry. Solid, liquid, and gaseous fuels. Proximate analysis and ultimate technical analysis and calorific determination of coal; technical analysis of liquid fuel, fuel and furnace gases. Significance of determinations and interpretation of results. 3 cred.; prereq., 16. Mr. Harding.

69w,s. Boiler Water and Petroleum Products. Testing and treatment of boiler waters; testing of petroleum products. 2 to 3 cred.; prereq., 60. Mr. Harding.

CHEMICAL ENGINEERING

76f-77w. Applied Electrochemistry. Application of electric current to chemical processes. Laws and phenomena of electrochemistry, batteries, electroplating, electric-furnace construction and operation, and electrochemical products. 4 cred.; prereq., jr., sr. Mr. Mann.

78f. Engineering Chemistry. Consideration of the chemistry and properties of materials used in engineering construction. Wood, iron and steel, alloys, cements, paints, bitumens, etc. Lectures and recitations. 3 cred.; prereq., 16. Mr. Mann.

186s. Gas Manufacture and Distribution. 3 cred.; prereq., 2 years of engineering. Mr. Montillon.

CIVIL ENGINEERING

SURVEYING

11f. Surveying. Field problems; use of chain, compass, transit, and level. Computation and platting of field surveys. Determination of areas. 3 cred.; prereq., M.&M. 13, Draw. 2. Mr. Cutler.

12w. Surveying. Lectures and drawing room. Platting of maps, profiles, and cross sections. Computation of earthwork. Public land surveys. Conventional signs. 3 cred.; prereq., 11. Mr. Cutler.

13s. Surveying. Adjustments of instruments, profile and differential leveling, transit surveys, circular curves. 3 cred.; prereq., 12. Mr. Cutler.

14f. Surveying. Complete topographical survey, stadia method, is made and platted. 3 cred.; prereq., 13. Mr. Zelner.

15w. Surveying. Classroom. Purpose and theory of triangulation, meridian determination, methods of angular measurement, base line measurements. Precise, trigonometric, and barometric leveling. Theory and use of sextant. 2 cred.; prereq., 14. Mr. Zelner.

16s. Surveying. Classroom and field. Hydrographic surveying. Soundings, purpose, methods, location. Measurement of stream flow. Use of sextant. Triangulation. Plane table surveys. Preparation for summer camp. 2 cred.; prereq., 15. Mr. Zelner.

17w. Surveying. Topographic drawing, platting of maps, conventional signs, contours, profiles, etc. Arranged especially for students in geology. Six hours in drawing room. 2 cred.; prereq., Math. 6. Mr. Zelner.

18s. Surveying. A short course in the use, care, and adjustment of surveying instruments. Leveling and transit surveys. For students other than civil engineers. 3 cred.; prereq., M.&M. 13, Draw. 2. Mr. Cutler.

19s. Surveying. Short course in the use, care, and adjustment of surveying instruments. Leveling, transit and stadia surveys, triangulation, plane table. Reduction of notes, mapping. Arranged especially for students in geology. 1 lect., 7 hrs. in field per wk. 3 cred.; prereq., Math. 6. Mr. Zelner.

23su. Summer Camp. Six weeks immediately preceding the beginning of the senior year. Extended railroad, topographic, hydrographic, and triangulation surveys. 9 cred.; prereq., 16, 22. Mr. Cutler.

RAILWAY ENGINEERING

21w. Railway Engineering. A general survey of the problems of railway location, including grades, curvature, rise and fall, etc. 2 cred.; prereq., 14. Mr. Boon.

22s. Railway Engineering. A study of the construction and maintenance of railway track and structures. Simple, compound, and spiral curves, and turnouts. 2 cred.; prereq., 21. Mr. Boon.

121f. 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 trade revision. 3 cred.; prereq., 23. Mr. Cutler.

122w. Railway Engineering. Lectures, office work, and field inspection. Design and operation of various types of yards and terminals, and terminal facilities, including the hump, engine house, coal and water station. Signalling and interlocking. 3 cred.; prereq., 23. Mr. Cutler.

123s. Railway Engineering. Design and construction of railroad buildings and structures; culverts, wooden trestles, switches, cross-overs, crossing frogs, etc. Earthwork, computation, estimates and reports. Distribution of material by mass diagram. 3 cred.; prereq., 23. Mr. Cutler.

124w. Transportation. Railway, highway, ocean, and inland waterway transport, motive power and car equipment, operating problems, railway, water, and joint terminal problems, typical design and equipment. Cost and value of service, valuation, regulation, present systems, and organizations. 3 cred.; prereq., 121. Mr. Cutler.

125s. Transportation. Specific illustrative problems: Twin City and Mississippi Valley traffic situation, Mississippi River experiment, New York Barge Canal, Great Lakes traffic, Panama Canal status. Rapid transit, motor transport. 3 cred.; prereq., 121. Mr. Cutler.

221f-222w-223s. Railway Administration. Analysis of railway organization and methods of management and operation. Principles of valuation and rate-making. 3 cred. per qr.; prereq., 122. Mr. Cutler.

224f. Railway Terminals and Yards. Continuation of Course 123. 3 cred.; prereq., 122. Mr. Cutler.

STRUCTURAL ENGINEERING

31f. Stress in Structures. Algebraic and graphic analysis of various types of roof and bridge trusses for fixed loading. 3 cred.; prereq., M.&M. 26, Draw. 23. Mr. Parcel.

32w. Stresses in Structures. Moving loads and influence lines. Standard engine loadings and equivalent uniform loads. 3 cred.; prereq., 31. Mr. Parcel.

33s. Elementary Structural Design. Designing principles and methods. Complete design and detail drawing of framed mill building bent. 3 cred.; prereq.; M.&M. 128, C.E. 32. Mr. Parcel.

37s. Structural Engineering. (For students other than civil engineers.) Analysis of stresses in simple structural frames. Roof trusses, crane trusses, mill building bent. 3 cred.; prereq., M.&M. 26 or 84. Mr. Lagaard.

38f. Stresses in Structures. (For architects.) Application of laws of equilibrium to simple structures. Special emphasis is placed on graphic methods. 3 cred.; prereq., M.&M. 93. Mr. Parcel.

39w. Structural Design. (For architects.) General principles of structural design. Girders, columns, and roof trusses. 3 cred.; prereq., 38. Mr. Parcel.

41s. Reinforced Concrete. (For architects.) Brief course in theory and designing methods with special reference to building. 3 cred.; prereq., M.&M. 93. Mr. Parcel.

131f. Bridge Analysis. Stresses in simple span railway bridge trusses of the larger type. Baltimore, Petit, Whipple, and "K" trusses. 3 cred.; prereq., 33. Mr. Parcel.

132w. Bridge Design. Design and detail drawing of railway plate girder viaduct. 3 cred.; prereq., 131. Mr. Parcel.

133s. Bridge Design. Complete design and detail drawing of railway pin truss span. 3 cred.; prereq., 132. Mr. Parcel.

134w,s. Statically Indeterminate Structures. General theory deflections and statically indeterminate stresses and their application to continuous girder, frames, swinging bridges, and redundant members. 3 cred.; prereq., 132, 142. Mr. Parcel.

135s. Reinforced Concrete Design. The structural layout of various types of buildings. Types of floor systems, columns, and footings calculated and studied for specific cases. 4 cred.; prereq., 33. Mr. Parcel.

141f. Reinforced Concrete. Principles of reinforced concrete. Theory of beams, slabs, and columns and the application to ordinary structures. 3 cred.; prereq., M.&M. 128. Mr. Maney.

141(a)f. Reinforced Concrete. Similar to 141 with problems of special interest to students in architectural engineering. 3 cred.; prereq., M.&M. 128. Mr. Maney.

142f,w. Reinforced Concrete Design. Continuation of 141 with especial emphasis on the practical features of the design of buildings, bridges, retaining walls, etc. 3 cred.; prereq., 141. Mr. Maney.

142(a)w. Reinforced Concrete Design. Similar to 142 with problems of special interest to students in architectural engineering. 3 cred.; prereq., 141(a). Mr. Maney.

143w,s. Reinforced Concrete Analysis. Advanced problems in design including reinforced concrete arch. 3 cred.; prereq., 142. Mr. Maney.

144f. A general course in plain and reinforced concrete for students other than civil engineers. Lectures, laboratory, and design. 3 cred., prereq., M.&M. 84 and 85, or 127 and 128. Mr. Lagaard.

146f,w,s. Cement and Concrete Laboratory. Laboratory technique and experimental investigation of special problems in cement, concrete, and reinforced concrete. 3 cred.; prereq., M.&M. 141. Mr. Lagaard.

147w,s. Foundations. Design and construction of footings, cofferdams, and caissons for bridges and buildings. Piers and abutments. Underpinnings of buildings. Exploration and testing of foundation sites. Excavation and removal of materials from foundation site. 2 cred.; prereq., 33. Mr. Maney.

234f-235w-236s. Advanced Structural Design. Application of fundamental theory of stresses. Stress distribution in girders, riveted joints. Bending of straight bars. Built-up compression members. Impact and fatigue. Relative economy in design. Comparative study of specifications. 3 cred. per qr.; prereq., 133, 142. Mr. Parcel.

237w-238s. Structural Laboratory. Experimental problems in structural steel. Strain gauge study of actual stress distribution in beams, columns, and riveted joints. 3 to 5 cred. per qr.; prereq., 133. Mr. Lagaard.

245f-246w-247s. Advanced Reinforced Concrete Analysis. Review of literature of reinforced concrete, study of theory. Test data and analysis of stresses in reinforced concrete structures. 3 cred. per qr.; prereq., 142. Mr. Maney.

HIGHWAY ENGINEERING

51f. Highways and Pavements. Elementary course with field inspection, relating to the economies, location, construction, and maintenance of highways and pavements. 3 cred.; prereq., 12. Mr. Lang.

52w. Highways and Pavements. Continuation of Course 51, with laboratory practice. 3 cred.; prereq., 51. Mr. Lang.

156w. Highway Transport. Development, economic field, relation to other forms of transportation. Highway transport surveys, economics of location, economics of selection of the type of surface, effect of vehicle on road and road on vehicle. 3 cred.; prereq., 52. Mr. Lang.

157s. Highway Transport. Motor vehicle as a common carrier, analysis of road legislation, taxation. Principles of successful operation. Selling motor transportation. 3 cred.; prereq., 156. Mr. Lang.

251s. Highway Laboratory. Investigations in co-operation with State Highway Department. 3 to 5 cred.; prereq., 52. Mr. Lang.

252s. Highway Design. Preparing of a plan and specification for short sections of highways and city streets, also making estimates of materials and cost. 3 cred.; prereq., 52. Mr. Lang.

HYDRAULIC ENGINEERING

164f,w. Water Power. Types of law, medium, and high-head developments. Details of developments. Dams. Turbine settings and characteristics. 3 cred.; prereq., M.&M. 129. Mr. Hill.

263s. Hydraulic Laboratory. Special hydraulic problems in laboratory, drafting room, and field. 3 to 5 cred.; prereq., 164.

MUNICIPAL AND SANITARY ENGINEERING

53s. Civil Engineering Practice. Greater problems of engineering. Contacts of the civil engineer with other engineers. Legal, financial, and business functions of the engineer. Relation of the engineer to government and public affairs. 3 cred.; no prereq. Mr. Bass.

161f. Hydrology. Rainfall, evaporation, transpiration, percolation, run-off. Flood and low water of streams. Storage for use in water supply, water power, irrigation and navigation. Mass curves and frequency curves. 3 cred.; prereq., sr. only. Mr. Bass.

162f,w. Water Supply and Sewerage. Sources of water supply; quality of water. Methods of testing water. Methods of collection, distribution, and purification. Selection of pumping machinery and motive power. Sewer systems and sewage disposal works. 3 cred.; prereq., 162. Mr. Bass.

163w,s. Water Supply and Sewerage. Continuation of 162. 3 cred.; prereq., M.&M. 129. Mr. Bass.

171w. Building Sanitation. The location and orientation of buildings; lighting, ventilation, water supply, plumbing, sewage, and refuse disposal. 2 cred.; prereq., sr. arch. only. Mr. Bass.

261f-262w. Water and Sewage Purification. Continuation of Course 163. Design of water purification and sewage disposal works. 3 to 5 cred. per qr.; prereq., 162. Mr. Bass.

272f. City-Planning. The physical elements of the city; topography, drainage, geology. Public works and structures. Internal and external transportation. Zoning. Subsurface structures. Esthetic features of the city. 3 to 5 cred.; prereq., 52. Mr. Bass.

280f-281w-282s. Civil Engineering Research. Original work in concrete, structural steel, hydraulics, municipal and transportation problems. Investigations, reports, tests, designs. 5 cred. per qr.; by permission. Mr. Bass.

DAIRY HUSBANDRY

D.H.1f,w,s. Elements of Dairying. Composition of milk. Causes of variation in composition; milk constituents and their uses in dairy manufacture and as food; Babcock test; sanitary handling of milk and cream on the farm; cream-separating and farm butter-making. 5 cred.; no prereq. Mr. Coombs.

DRAWING AND DESCRIPTIVE GEOMETRY

1f,w,su. Engineering Drawing. Elements of drafting including an introductory course in methods of representation, and constructive geometry. Graphs and formulas. Sketching, lettering, working drawings, conventions, standards, tracing, and blueprinting. 3 cred.; prereq., solid geometry. Mr. Kirchner.

2w,s,su. Engineering Drawing. Continuation of Course 1. 3 cred.; prereq., 1. Mr. Schuck.

3f,w,s,su. Descriptive Geometry. Elementary course in the methods of representation, correlated in part with analytical geometry. Graphical and algebraic solutions. Lectures, demonstrations, and drafting. 3 cred.; prereq., 2, M.&M. 12. Mr. Eggers.

4f,su-5w,su-6s,su. Engineering Drawing and Descriptive Geometry. (Chem. and chem. engr.) 2 cred. per qr.; prereq., solid geometry. Mr. Williams.

7w,su-8s,su. Engineering Drawing and Descriptive Geometry. (Chem. and chem. engr.) 3 cred. per qr.; prereq., solid geometry. Mr. Williams.

9f,w,s. Drafting. (Chem. engr.) 2 to 6 cred.; prereq., 6 or 8. Mr. Archibald.

M.&M. 10f,su. Solid Geometry. Lines and planes in space, dihedral and polyhedral angles, polyhedrons, surfaces, cylinders, cones, spheres. Numerical exercises in area, volumes, weights. 3 hrs. per wk.; no cred.; no prereq. Mr. Archibald.

11f. Engineering Drawing (Mines). 4 cred.; no prereq. Mr. Potter.

12w. Engineering Drawing (Mines). 3 cred.; prereq., 11. Mr. Potter.

13s. Engineering Drawing (Mines). 3 cred.; prereq., 12. Mr. Potter.

14w. Descriptive Geometry (Mines). 3 cred.; prereq., 13. Math. 5. Mr. Myers.

15w. Drafting (Mines). 2 cred.; prereq., reg. in 14. Mr. Potter.

21f,w,s,su. Drafting (C.E.). Drawing of structures and machines. Detail, assembly, and construction drawings. Graphical solution of simple problems. Applied descriptive geometry. 2 cred.; prereq., 3. Mr. Myers.

22w,s,su. Drafting (C.E.). Drafting problems in concrete, highway, and topographical work as met by the civil engineering draftsman in practice. Intersections, developments, and other practical geometric problems. 2 cred.; prereq., 21. Mr. French.

23s,su. Drafting (C.E.). Continuation of Course 22. 2 cred.; prereq., 22. Mr. Archibald.

26f,w,s,su. Drafting (E.E.). Application of descriptive geometry to drafting room problems. Sheet metal work, belting, conveyors, and connections. Working drawings and tracing. 2 cred.; prereq., 3. Mr. Myers.

27w,s,su. Drafting (E.E.). Application of elementary formulas in the proportioning of simple machine parts. Outline and assembly drawings, electrical conventions, circuit diagrams, the development of simple formulas, and graphical methods. 2 cred.; prereq., 26. Mr. Eggers.

28f,w,s,su. Drafting (M.E.). Application of descriptive geometry to drafting room problems. Forgings, castings, sheet metal work, belting, conveyors, and connections. Working drawings and tracing. 2 cred.; prereq., 3. Mr. Myers.

29w,s,su. Drafting (M.E.). Application of elementary formulas in the proportioning of simple machine parts. Outline and assembly drawings, structural drafting, the development of simple formulas, and graphical methods. 2 cred.; prereq., 28. Mr. Williams.

36w,s. Graphical Methods. General course in graphical methods of representation and computation, including a study of scales and the construction of various types of charts and diagrams. 3 cred.; prereq., M.&M. 11. Mr. Schuck.

37f,w,s. Lettering for Engineers. Analysis of the alphabets. Exercises in Roman and Gothic lettering. Design and composition of the paragraph and the title. 2 cred.; prereq., 2. Mr. Schuck.

38f-39w-40s. Graphs and Charts. Theory and construction of graphic charts and diagrams. This course can be entered at any quarter. 2 cred. per qr.; prereq., soph. drawing, M.&M. 26. Mr. Levens.

41f,w,s,su-42f,w,s,su-43f,w,s,su. Technical Drawing. (a) General course in the theory and practice of drawing. Sketching, lettering, tracing, conventions, renderings, and mechanical drawings. (b) Modification of the above course of particular interest to dental and medical students. 2 cred. per qr.; no prereq. Mr. Cederberg.

44f,w,s. Lettering. Practical course in plain lettering and the making of graphs and charts. 1 cred. per qr.; no prereq. Mr. French.

45f,w,s-46f,w,s. Alphabets. Construction and analysis of various types of letters and their arrangement. Demonstrations, exercises, and reference work. Open to soph., jr., and sr. 2 cred. per qr.; no prereq. Mr. Kirchner.

47f-48w-49s. Drawing, Engraving, and Decoration. Study of the graphic arts and processes with special emphasis on their application to the printing arts. Open to jr. and sr. 3 cred. per qr.; no prereq. Mr. Kirchner.

50w,s. Diagrams and Charts. Elementary course dealing with the construction of simple diagrams and charts. 2 cred.; no prereq. Mr. Eggers.

54f,w,s. Advanced Lettering. Course includes a study of lettering as applied to commercial advertising; analysis of advertisement; design of small space ads; trips to commercial firms where etching, engraving, lithographing, etc., can be observed. 1 cred.; prereq., any lettering course. Mr. Levens.

63s. Descriptive Geometry. Curves, surface, intersections, and developments. Shades and shadows, perspective, stereotomy, spherical projections. 3 cred.; prereq., 21, 26, or 28. Mr. French.

64f,w,s. Commercial Drafting Practice. Practical course for civil engineers, including structural and concrete drafting. Class organized and work subdivided as in a commercial drafting office. All drawings thoroly checked, re-checked, and revised by members of the class. 2 or 3 cred. per qr.; prereq., 22. Mr. French.

65f,w,s. Commercial Drafting Practice. Practical course for mechanical and electrical engineers including machine and general drafting problems. Class organized and work subdivided as in a commercial drafting office. Drawings thoroly checked, re-checked, and revised by members of the class. 2 or 3 cred. per qr.; prereq., 27 or 29. Mr. French.

69f,w,s,su. Exercises in Lettering. (Nurses.) See School of Nursing bulletin. 1 cred. per qr. Mr. French.

71f,w,s. Graphics for Electrical Engineers. Representation and computation of complex quantities, rotating vectors, hyperbolic functions, and their application to direct and alternating current circuits. 3 cred.; prereq., 27, E.E. 111. Mr. Eggers.

111f,w,s-112f,w,s. Advanced Descriptive Geometry. Methods of representation; parallel and central projection. Curves and surfaces, geometrography, axonometry, and phogrammetry. 2 cred. per qr.; prereq., 3, calculus. Mr. Kirchner.

113f,w,s. Perspective. Principles and practice of perspective, including shadows, reflections, distortions, corrections, systems, methods, the practical problem, and inverse construction. 3 cred.; prereq., 63. Mr. Kirchner.

115f-116w-117s. Geometry. Pure and applied. Transformations, perspective, kinematics, stereotomy, graphic statics, graphic calculus, monography. 3 cred. per qr.; prereq., calculus. Mr. Kirchner.

118f,w,s-119w-120s. Nomography. Technique and theory of computing charts. Equations of three and more variables. Determination of constants of empirical equations. 3 cred. per qr.; prereq., 3, M.&M. 128. Mr. Kirchner.

ECONOMICS

8f-9w-10s. General Economics. (For engineers.) Principles of economics with special emphasis upon their application to current problems such as money, banking, conservation, insurance, international commerce, monopolies, transportation, labor, socialism, public ownership, and finance. 3 cred. per qr.; no prereq. Mr. O'Hara.

25w-26s. Principles of Accounting. 4 cred. per qr.; prereq., 8-9. Mr. Heilman.

28f,s. Business Law. Business law arranged for engineers, including the law of contracts, suretyship, agency, partnership, corporations, negotiable instruments, conveyance patents, and riparian rights. 3 cred.; prereq., soph., jr., sr. with 6 cred. in Econ. Mr. Palmer.

29f. Principles of Accounting. (For engineers.) Purpose and principles of account classification; capital and revenue; accruals; valuation; depreciation; preparation and interpretation of balance sheets, income accounts, and other statements. 3 hrs. of lect. a wk. 3 cred.; no prereq. Mr. Heilman.

51f-52w-53s. Business Law. 3 cred. per qr.; prereq., 9 cred. in econ. or pol. sci. Mr. Young.

72f,s. Economics of Transportation. 3 cred.; prereq., 8-9. Mr. Cummings.

73w. Railway Traffic and Rates. Railway transportation from standpoint of the business man and shipper. Freight-shipping documents. Classification and tariffs, time and preference freight, private car lines, industrial trackage and terminal service, express rates and service, special passenger rates. 3 cred.; prereq., 8-9. Mr. Cummings.

85f,s. Principles of Marketing. General course dealing with the mechanics and operation of markets; classification, organization, market agencies as factors in production. Price-making process: control of supply, assumption of risk, incident of marketing costs. Wastes of competition. 3 cred.; prereq., 8-9. Mr. Vaile.

91w. Principles of Organization and Management. (For engineers.) Types of operating organization; specialization; co-ordination of men and departments, planning; delegation of authority; means of control; establishment and maintenance of standards for materials, operation, machinery; scientific management; personnel problems. 3 cred.; prereq., sr. without prerequisite or jr. with 8-9 or equiv. Mr. O'Hara.

92s. Business Finance. (For engineers.) Study of the principles of financing business concerns. Banking facilities from the view point of the business man. Organization and financial management of corporations with special reference to the various types of corporate securities. 3 cred.; prereq., 8-9, 91 or equiv. Mr. Stehman.

93s. Cost Accounting. (For engineers.) Principles of manufacturing cost accounting. Use of accounting records and reports to control materials, labor and indirect factory expenses. Special factory cost problems. 3 cred.; prereq., 29. Mr. Ostlund.

*131f-132w-133s. Cost Accounting. 3 cred. per qr.; prereq., 29. Mr. Ostlund.

154s. Public Utilities. Economic and legal bases of classification. Relative advantages of public ownership and regulation. Central and municipal regulation compared. Basis of rates; relative rates; rates and service. Summary of the theories of valuation. 3 cred.; prereq., 92. Mr. Reighard.

161f,w. Labor Problems and Trade Unionism. 3 cred.; jr. and sr. only; prereq., 8-9.

167w. Personnel Administration. Managerial policy, for various types of organization, on labor. Special attention to job analysis, employment, incentives, and regulation of employment. 3 cred.; prereq., 8-9, 161. Mr. Stead.

168s. Advanced Personnel Administration. 3 cred.; prereq., 167.

ELECTRICAL ENGINEERING†

DIRECT CURRENT

11f-13w-15s. Elements of Electrical Engineering. Introduction to the development, principles, materials, safety, and general application of electrical engineering. 3 cred. per qr.; prereq., reg. in phys., and not more than 1 qr. behind in math. Mr. Todd.

111f-113w-115s. Direct Current Machinery. Measuring instruments and their use. Units. Theory of dynamo electric machinery. Methods of regulation, construction, operation. Methods of testing. 3 cred. per qr.; prereq., 11, 13, 15. Mr. Springer.

112f-114w-116s. Direct Current Machinery Laboratory. Taken with Course 111-113-115. Measurements, calibration of instruments, operation and characteristic curves of generator and motor. 2 cred. per qr.; prereq., reg. in 111, 113, or 115. Mr. Springer.

ALTERNATING AND TRANSIENT CURRENTS

121f-123w-125s. Alternating Currents. Phenomena, measurement, and use of alternating currents. Theory of the transformer, generator, and motor. Types of apparatus. 3 cred. per qr.; prereq., 115, 116. Mr. Ryan.

122f-124w-126s. Alternating Current Laboratory. Taken with Course 121-123-125. Alternating current circuits. Regulation and efficiency tests of transformers, and machines. 2 cred. per qr.; prereq., 116 and reg. in 121, 123, or 125. Mr. Ryan.

* The entire course must be completed before credit is given for any quarter.

† In courses continuing through three quarters, the work of each quarter is prerequisite for following quarters.

127f. Transient Electrical Phenomena. Mathematical study of electric circuit with resistance, inductance, and capacitance. Abnormal currents and voltages upon switching circuits containing iron core inductance. 2 cred.; prereq., reg. in 121. Mr. Jansky.

128w. Transient Electrical Phenomena. Current and voltage distribution in circuits containing distributed resistance, inductance, and capacitance. Distortion in telephone lines and its correction. 2 cred.; prereq., 127. Mr. Jansky.

129s. Transient and High Frequency Phenomena. Transient phenomena in coupled circuits. Distribution of current and flux in conductors. Change of resistance with frequency. 2 cred.; prereq., 129. Mr. Jansky.

DESIGN

132f-134w-136s. Electrical Design. The design of direct current generators and motors, alternating current transformers, generators and synchronous motors. 2 cred. per qr.; prereq., for 132, 115; for 134 and 136, 121. Mr. Kuhlman.

232f-234w-236s. Electrical Design. Special problems. 2 cred. per qr.; prereq., 136. Mr. Kuhlman.

237s. Power Transmission Line Design. Preparation of detailed plans and specifications for the construction of high voltage transmission lines and distributing systems. 3 cred.; prereq., 134, 142. Mr. Ryan.

ELECTRIC POWER

40f. Electric Wiring and Equipment. Elements of direct and alternating current circuits. Interior wiring and electrical equipment of buildings. Elements of illumination. Sr. arch and arch. engr. 2 cred.; prereq., Phys. 43. Mr. Todd.

41f. Electric Power. Elementary principles of continuous and alternating currents, generators, and motors, transmission and distribution. Measurement of power. Sr. mines. 3 cred.; prereq., Phys. 43. Mr. Ryan.

42w,s. Electric Power. Similar to Course 41. Sr. C.E. 4 cred.; prereq., Phys. 43, 44. Mr. Liebeck.

43s-44f-45w. Electric Power. Elementary study of the generation, distribution, measurement, and utilization of electric power. Jr. and sr. chem. 3 cred. per qr.; prereq., Phys. 43, 44. Mr. Johnson.

46f-47w-48s. Electric Power. Similar to Course 43-44-45. Sr. M.E. 4 cred. per qr.; prereq., Phys. 43, 44. Mr. Johnson.

49w. Electric Motors. Elementary principles of direct and alternating current motors. Applications to elevators and ventilation equipment. Sr. arch. engr. 2 cred.; prereq., 40. Mr. Reed.

141f. 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. 2 cred.; prereq., reg. in 121. Mr. Ryan.

142w. Electrical Transmission. Considerations involved in the designing and building of transmission lines. Kelvin's law and its limitations.

Transmission line as a mechanical structure. Lightning arresters. 2 cred.; prereq., reg. in 123. Mr. Ryan.

143f,w,s. Power Plant Operation. Practice in operation and care of gas, steam, and electric apparatus of the university lighting plant. 1 cred.; prereq., 116 or 45 or 48. Mr. Dixon.

144w. Railway Electrical Engineering. Principles of mechanics applied to electric train movements. 2 cred.; prereq., 42 or 45 or 48 or 115. Mr. Johnson.

145s. Railroad Electrification. Reasons for electrification. Study of European and American systems. Results of electrification. 1 cred.; prereq., 144. Mr. Johnson.

146s. Storage Battery Engineering. Operation and performance of acid and alkaline storage batteries and their practical applications. Charging and regulating equipment. 2 cred.; prereq., 45 or 48 or 113. Mr. Todd.

ELECTRIC LIGHTING

151f. Electric Lighting. Nature of light. Laws of vision. Principles of illumination. Photometry. Sources of light and their characteristics. Lighting equipment. Illumination requirements and calculation for various fields of use. 2 cred.; prereq., Phys. 43. Mr. Johnson.

152f. Photometric Laboratory. Photometer practice. Distribution curves of lamps and reflectors. Measurement of lighting installations. 1 cred.; prereq., reg. in 151. Mr. Johnson.

153s. Illumination Design. Illumination calculations and specifications applied to problems in street, residence, factory, office, store, and other kinds of lighting. 2 cred.; prereq., 151, 152. Mr. Johnson.

COMMUNICATION

*61f-63w-65s. Elements of Communication. Importance of communication. Comparison of methods. General theory of telegraph apparatus and circuits. Simplex, duplex, and multiplex telegraphs. Location of opens and grounds. Care of batteries. Speech sounds. Essential parts of telephone systems. General theory of telephone apparatus. Switchboard practice. Telephone circuits. Interference and transpositions. Multiple uses of lines. Elements of transmission phenomena. 2 cred. per qr.; prereq., reg. in 111-113-115. Mr. Swenson.

*161f. Radio Communication. Damped-wave transmitting and receiving circuits. Inductance and capacitance measurements at high frequency. Frequency meters. Electron tube as detector and as amplifier. 3 cred.; prereq., reg. in 121. Mr. Jansky.

*162w. Radio Communication. Undamped-wave transmitting and receiving circuits. Heterodyne reception. Coupled circuits. Selective circuits for elimination of interference. 3 cred.; prereq., 161. Mr. Jansky.

163s. Radio Communication. Mathematical theory of electron tube. Design of electron tube amplifier and generator systems. Sources of high-frequency power. Radio and carrier-current telephony. 3 cred.; prereq., 162. Mr. Jansky.

* NOTE.—Courses 61, 63, 161, and 162 are required as part of military science Courses 51 to 54 for R.O.T.C. Signal Corps, and are open as electives to civilian students.

164f. Telegraph and Telephone Apparatus. Theoretical and experimental study of apparatus used for signaling, telegraphy, and telephony. 2 or 3 cred.; prereq., 63. Mr. Swenson.

165w-166s. Telegraph and Telephone Circuits. Theoretical and experimental study of telegraph and telephone circuits and the phenomena of long line transmission. Phantoms, loading, repeaters. Inductive disturbances, transpositions. Multiplex telephony. 2 or 3 cred. per qr.; prereq., reg. in 123. Mr. Swenson.

167f-168w-169s. Radio Station Operation. For men already proficient licensed radio operators. Includes construction of transmitting and receiving equipment, maintaining schedule in the radio station, and the interpretation of the data. Jr., sr. by permission. 1 or 2 cred. per qr.; 1 to 6 cred. total; prereq., reg. in 161. Mr. Jansky.

261f-263w-265s. Advanced Radio Communication. Theoretical study of the transmission of electromagnetic waves. Design and testing of radio transmitting and receiving apparatus. Theory of electron tubes and their use in radio circuits. High frequency measurements. Taken with 262-264-266. 2 cred. per qr.; reg. by permission. Mr. Jansky.

262f-264w-266s. Advanced Radio Laboratory. Special problems in radio laboratory and station, usually in connection with Courses 261-263-265. For students specializing in electrical communication. 1 or more cred.; reg. by permission. Mr. Jansky.

RESEARCH

171w-172s. Undergraduate Thesis. Investigation of some approved problem in electrical engineering. 3 to 6 cred. per qr.; prereq., 121. Mr. Shepardson and others.

275f-276w-277s. Electrical Engineering Research. Investigation of special problems in laboratory or library. 2 to 6 cred. per qr.; open to graduate students. Mr. Shepardson and others.

MEASUREMENTS

81w. Electrical Engineering Measurements. Principles of electrical measuring instruments, construction, limitations, sources of error, methods of calibration. Methods of measuring voltage, current, watts, watt hours, resistance, inductance, mutual inductance, capacity. 3 cred.; prereq., 111. Mr. Todd.

181s. Communication Frequency Measurements. Vector treatment of network. Bridge circuits for measuring of resistance, inductance, and capacity at audio and radio frequencies. 2 cred.; prereq., 126. Mr. Swenson.

183f-184w-185s. Special Electrical Laboratory. Efficiency tests and special problems. 2 cred. per qr.; 2 to 12 cred. total; prereq., 116. Mr. Springer.

186w,s. High Tension Testing. Low high frequency to several million voltage, applied to study of dielectric phenomena, such as testing high tension transmission cables, transformer oil, transmission line insulators. 2 cred.; prereq., 123, 124, or reg. in 123 or 124, and by permission. Mr. Springer.

187f-188w-189s. Special Communication Laboratory. Special problems in electrical communication. Includes a weekly seminar meeting. 1 to 2 cred. per qr.; 1 to 12 cred. total; prereq., jr., sr., grad. by permission. Mr. Swenson.

284w-285s-286f. Precise Electrical Engineering Measurements. Measurements of resistance, voltage, current, self-induction, and capacity; standardization of measuring instruments. 2 cred. per qr.; prereq., 122. Mr. Springer.

MISCELLANEOUS

91s,su. Inspection Trip. Personally conducted inspection of factories, power plants, and other places of engineering interest. During spring recess or in summer, costing about $50 for each person. 1 cred.; prereq., 11.

93s. Seminar. Weekly discussion of current engineering periodicals and reports on assigned topics. 1 cred.; prereq., jr. E.E. Mr. Shepardson.

191f-192w-193s. Seminar. Weekly discussion of current electrical periodicals. 1 cred. per qr.; prereq., 111. Mr. Shepardson.

291f-292w-293s. Graduate Seminar. Discussing problems and results of research work. 1 cred. per qr.; prereq., 126. Mr. Shepardson.

294f-295w-296s. Electrical Ignition and Automobile Electrical Accessories. Study of ignition apparatus; characteristics of automobile accessories, such as generators, starters, controllers, electrical transmitting devices, etc. 2 cred. per qr.; prereq., 124. Mr. Springer.

ENGLISH

4f-5w-6s. Rhetoric and Composition. Review of grammar; principles of composition; constant practice in writing. Studies in literature. 3 cred. per qr.; no prereq. Mr. Richardson.

7w-8s. Explorations in Literature. An attempt to introduce world literature to the student through a study of books and their authors. 3 cred. per qr.; prereq., 4, 5, 6, or equiv. Mr. Richardson.

31w,s. Technical Writing. Quarter course in business letters, reports, etc., planned to meet the professional needs of engineering students. 3 cred.; prereq., 4-5-6. Mr. Creamer.

41w,s. Public Speaking. Fundamentals of effective speaking; breathing, voice production, enunciation, and action; delivery of extracts from the works of well-known writers and speakers. 3 cred.; prereq., 6. Mr. Rarig.

FORESTRY

For. 27w. Groves and Windbreaks. Trees and their relation to the farm. Planning and planting farm windbreaks and shelter belts. Utilization and marketing of farm grove, or woodlot products. 3 cred.; no prereq. Mr. Burton.

GENERAL ENGINEERING

11f-12w. Orientation. General lectures for vocational guidance covering the various phases of engineering and allied professions. Introduction to the University. Duties and privileges of students. Illustrated by lantern slides and moving pictures. Given by various members of the university staff. No cred.; no prereq.; required of freshmen in Engineering and Architecture. Mr. Zelner.

81f,w,s. Estimating. Plan-reading and cost-estimating of buildings, bridges, culverts, roads, and pavements. Study of the costs of building timber, brick, concrete, and steel structures. Itemized analysis and tabulation of labor and material costs. 3 cred.; jr., sr. only. Mr. French.

101w. Contracts and Specifications. Study of engineering specifications. Classes of specifications; essential features; clauses, details. Bids and bidders, engineering contracts. Sr. only; 3 cred. Mr. Flather.

111s. Valuation of Public Utility Properties. Factors affecting value, depreciation, taxation, and regulation of public utility properties. Elements of engineering economics; cost analysis, economic investigations, rate-making. Sr. only; 2 cred. Mr. Ryan.

124w. Engineering Relations. Human side of engineering. Relations of the engineer to employer, employees, customers, and public. Engineering code of ethics. Bridging between college and business. Practical training of engineering graduates. Sr. only; 1 cred. Mr. Shepardson.

193s. Engineering Practice. Engineering relations, legal and ethical, collaboration and consultation; technical reports, investigation and estimates. Professional employment, ownership of plans, patents and rights of invention. Day labor and contract systems of construction; public and private works, arbitration. Sr. only; 2 cred. Mr. Flather.

GEOLOGY AND MINERALOGY

5f. Engineering Geology. Materials of the earth and geologic processes. Application of geology to engineering problems. Lectures, rock study, and reference work. 3 cred.; no prereq. Mr. Schwartz.

6w. Applied Geology for Civil Engineers. Occurrence, properties, production, and uses of building stones, cements, clay, fuels, and road materials. Lectures and reference work. 3 cred.; prereq., 5. Mr. Schwartz.

7s. Applied Geology for Civil Engineers. An introduction to ore deposits and a brief review of historical geology and the use of geologic maps. Lectures and reference work. 3 cred.; prereq., 6. Mr. Schwartz.

HORTICULTURE

Hort. Landscape Planning. 3 cred.; no prereq. Mr. Cary.

Hort. 6f. 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. 3 cred.; no prereq. Mr. Alderman.

Hort. 32s. Vegetable-Growing. The fundamental principles of vegetable-growing. Scope of the industry and its place in agriculture. Varieties, seed production, regional adaption, soils, fertilizers, equipment, storage, systems of production, and marketing. 3 cred.; no prereq. Mr. Burrell.

MATHEMATICS AND MECHANICS

MATHEMATICS

Entering freshmen will register for Course 11 if they have had high school higher algebra; otherwise for Course 9.

9f,w,su. Higher Algebra. (High school.) Fundamental rules, fractions, linear simultaneous equations, graphs, theory of exponents, surds, complex quantities, quadratic equations, numerical exercises. No cred.; no prereq. Mr. Brooke.

10f,w,su. Solid Geometry. See 10f,w under Department of Drawing and Descriptive Geometry.

11f,w,s. College Algebra. Theory of quadratic equations, interpretation of complex results, graphical representation, indeterminate equation, ratio, proportion, variation, progressions, series, undetermined coefficients, binomial theorem, logarithms, theory of equations, derivatives, Horner's method. 5 cred.; prereq., 9 or equiv. Mr. Holman.

12w,s(su). Trigonometry. Graphical representation of functions, computation by logarithms and slide rule. Trigonometric functions, plane right triangles, reduction formulas, fundamental relations, addition formulas, double angles, half angles, identities and equations, inverse functions, oblique triangles, De Moivre's theorem, spherical right triangles. 5 cred.; prereq., 11. Mr. McClintock.

13f,w,s,su. Analytical Geometry. Co-ordinate systems, locus and equation, straight line, circle, parabola, ellipse, hyperbola. Transformation of co-ordinates and simplification of equations. Polar co-ordinates, higher plane curves, tangents, normals. Empirical equations, solid analytic geometry. 5 cred.; prereq., 12. Mr. Warne.

24f,w. Differential Calculus. Limits for differentiating, simple applications of derivative, maxima and minima, differentials, rates, change of variables, radius of curvature, mean value, indeterminate forms, partial differentiation, series. 5 cred.; prereq., 13. Mr. Dalaker.

25w,s(su). Integral Calculus. Expansion of functions, Taylor's theorem. Standard elementary forms, definite integral, rational fractions, integration by substitution, by parts, reduction formulas, integration a process of summation, successive and partial integration, elementary ordinary differential equations. 5 cred.; prereq., 24. Mr. Siler.

91f. Calculus for Architects. Short course, derivatives, maxima and minima, integration of simple forms, definite integrals, areas. 4 cred.; prereq., 13. Mr. Holman.

150w. Advanced Mathematics for Electrical Engineers. Theory and application of complex numbers, hyperbolic functions, series, wave analysis, methods of approximation, empirical curves, etc. 3 cred.; prereq., 127. Mr. Herrmann.

151f. Differential Equation. Differential equations and their solutions. First order and first degree, first order and higher degree, singular solutions; total differential equations, linear differential equation, miscellaneous methods, system of simultaneous equations, integration in series. Partial differential equations. 3 cred.; prereq., 25. Mr. Hartig.

152w-153s. Advanced Calculus and Applications. 3 cred. per qr.; prereq., 151. Mr. Hartig.

157f-158w-159s. Determinants and Solid Analytical Geometry. An advanced course. 3 cred. per qr.; prereq., 151. Mr. Dalaker.

254f-255w-256s. Modern Analysis. Based on Whittaker and Watson's text. 3 cred. per qr.; prereq., 153. Mr. Dalaker.

261f-262w-263s. Functions of a Complex Variable. Elliptic functions and integrals with applications. 3 cred. per qr.; prereq., 153. Mr. Dalaker.

264f-265w-266s. Advanced Topics in Functions of Complex Variable. 3 cred. per qr.; prereq., 263. Mr. Dalaker.

MECHANICS

26f,s,su. Technical Mechanics: Statics. Characteristics of a force, parallelogram law, moments, couples, resultant of a force system, equilibrium of a force system, frictions, centroids, moments of inertia, catenary. 5 cred.; prereq., 25. Mr. Herrick.

84s. Technical Mechanics. (Chem. and Ag. Engr.) Statics, resolution of forces, conditions of equilibrium, center of gravity, moment of inertia, stresses in framed structures, and machines, kinematics, dynamics of a particle, Newton's laws of motion, work energy, power, impulse, and momentum. 5 cred.; prereq., 25. Mr. Hartig.

92w. Mechanics for Architects. Statics, resolution of forces, conditions of equilibrium, center of gravity, moment of inertia of plane sections, stresses in framed structures. 4 cred.; prereq., 91. Mr. Holman.

127f,w,s. Technical Mechanics: Dynamics. Force, mass, acceleration, translation and rotation, gyroscope, governors, work, energy, power, conservation of energy, impulse, momentum, loss of kinetic energy, conservation of momentum. 5 cred.; prereq., 26. Mr. Wilcox.

161f-162w-163s. Advanced Technical Mechanics. Special problems in the dynamics of machinery; vibration, balancing, whirling shafts, rapidly rotating disks, dynamical stability, gyroscope. 3 cred. per qr.; prereq., 127. Mr. Wilcox.

171f. Aerodynamics. Aeronautical terms, types of flying craft, study of air resistance in all phases connected with aviation, study of the aerodynamics of the air screw. 3 cred.; prereq., 26. Mr. Boehnlein.

172w. Aerodynamics. Analysis of air pressure on the skeleton of the airplane, motion in a resisting medium, stability of the airplane. It is not necessary to take Course 171 before Course 172, but is advisable. 3 cred.; prereq., 127. Mr. Boehnlein.

173s. Aerodynamics. Continuation of Course 172. Study of motion along a tube, planar motion, theory of dimensions, forces on an airplane, stream function, velocity potential, motion of a body in a liquid, motion in three dimensions. 3 cred.; prereq., 172. Mr. Boehnlein.

164f-165w-166s. Advanced Dynamics of a Particle. 3 cred. per qr.; prereq., 127. Mr. Brooke.

267f-268w-269s. Advanced Dynamics. Text, Routh's *Rigid Dynamics,* Vol. I. 3 cred. per qr.; prereq., 153. Mr. Brooke.

277f-278w-279s. Advanced Statics. Text, Routh's *Analytical Statics.* 3 cred. per qr.; prereq., 127. Mr. Brooke.

MATERIALS

85f. Strength of Materials with Laboratory. (Chem. and Ag. Engr.) Mechanical and elastic properties of materials of construction, beams, shafts, columns, combined stresses, dynamic stresses. 4 cred.; prereq., 84. Mr. Hartig.

93s. Strength of Materials. (Course in Architecture.) Mechanical and elastic properties of materials of construction, design of riveted joints, beam theory, columns, arches. 4 cred.; prereq., 91. Mr. Holman.

99f,w,s. Materials of Engineering. Use, origin, manufacture and treatment of iron and steel, non-ferrous metals and alloys, timber, concrete, brick and stone. Special attention is given to their application and use for engineering purposes. 3 cred.; prereq., 13. Mr. Priester.

128f,w,s. Strength of Materials. Mechanical and elastic properties of materials of construction, beams, shafts, columns, combined stresses, hollow cylinder rollers, plates, curved bars, springs, dynamic stresses, true stresses. 5 cred.; prereq., 26. Mr. Holman.

141f,w,s. Materials-Testing Laboratory. Investigation of the physical properties of various metals and engineering materials (wood, cement, ropes, etc.). Standard methods of testing. 1 cred.; prereq., 128 or reg. in 128. Mr. Priester.

144w. Materials-Testing Laboratory. (Course in Mining and Metallurgical Engineering.) Four laboratory hours. Mr. Priester.

180s. Advanced Strength of Materials. Special problems. 3 cred.; prereq., 128. Mr. Priester.

184f-185w-186s. Advanced Testing Materials Laboratory. Special problems relating to the physical properties of engineering materials. 2 cred. per qr.; prereq., 141. Mr. Priester.

294f-295w-296s. Mathematical Theory of Elasticity. 3 cred. per qr.; prereq., 128, 153. Mr. Brooke.

HYDRAULICS

86w. Hydraulics with Laboratory. (Chem. and Ag. Engr.) Hydrostatics, Bernoulli's theorem, flow through orifices, pipes, and over weirs, dynamic action of jets and streams, flow of gases through pipes. 3 cred.; prereq., 84. Mr. Hartig.

129f,w,s. 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. 4 cred.; prereq., 26. Mr. Jones.

143f,w,s. Hydraulics Laboratory. Experimental and demonstrational work. Pressure head, Piezometer tubes, gages, stability of flotation, Bernoulli's theorem. Venturi meter, flow through orifices, over weirs, and through pipes. Open channels, gaging, impact on vanes, pumps, and hydraulic machines. 1 cred.; prereq., 129 or reg. in 129. Mr. Jones.

191f. Hydraulic Motors and Pumps. A study of the hydraulic theory of the ram, impulse wheel, reaction turbine, and centrifugal pump. 3 cred.; prereq., 129. Mr. Jones.

192w. Hydraulic Motors Laboratory. An experimental study of the characteristics of the hydraulic ram, centrifugal pump, reaction turbine, and impulse wheel. 3 cred.; prereq., 129. Mr. Jones.

NOTE.—It is advisable but not necessary that this course be preceded by 191.

193s. Hydraulic Measurements. A detailed study of the current meter. Venturi meter, weir, orifice, traveling screen, chemical method of gaging, etc. 3 cred.; prereq., 129. Mr. Jones.

194f,w,s-195f,w,s-196f,w,s. Special Problems in Hydraulics. Experimental solution of special problems in hydraulics, involving precise measurements, requiring initiative in attack, ingenuity in devising apparatus, and special library reference work. Sr. and grad. only. 3 cred. per qr.; prereq., 129, 143. Mr. Jones.

291f-292w-293s. Hydrodynamics. Text, Besant and Ramsey. 3 cred. per qr.; prereq., 129, 153. Mr. Brooke.

MECHANICAL ENGINEERING

SHOP PRACTICE

11f,w,s. Pattern Practice. Construction and demonstration of various types of patterns used in the production of castings. Study of shop drawings, materials used, operation of woodworking tools and machinery. Inspection trips and reports. 2 cred.; no prereq. Mr. Richards.

12f,w,s. Foundry Practice. Floor and machine molding; iron, brass, and aluminum casting. Inspection trips and reports. 2 cred.; no prereq. Mr. Moffett.

13f,w,s. Forge Practice. Forging and welding wrought iron and steel; hardening, tempering, and annealing steel. Inspection trips and reports. 2 cred.; no prereq. Mr. Hughes.

14f,su. Machine Shop Practice. Care and operation of machine tools; screw cutting, taper turning, and gear cutting, including spur, helical, worm, and bevel gears. 4 cred.; prereq., 11, 12, 13. Mr. Rogers.

15w,su. Advanced Machine Practice. Manufacturing methods, quantity production; also carbonizing and heat treatment of steel, autogenous welding and brazing. 4 cred.; prereq., 14. Mr. Rogers.

16s. Machine Shop Practice. An elementary course in machine work arranged especially for students in electrical engineering. 2 cred.; prereq., 11, 12, 13. Mr. Rogers.

17f,w. Machine Shop Practice. (Chemists and chemical engineers.) 2 cred.; no prereq. Mr. Rogers.

18f,w,s. Industrial Education. For teachers desiring elementary or advanced practice in manual training, wood-turning, and pattern-making. Planning and layout of projects, materials used, care and operation of woodworking tools and machinery; selection and installation of equipment. 3 cred.; no prereq. Mr. Richards.

21s. Mechanical Technology. Study of mechanical processes involved in various manufacturing industries and in the development and utilization of power. Lectures by various specialists. 1 cred.; prereq., M.&M. 13. Mr. Shipley.

110f,w,s. Tool Design. The design of tools, jigs, dies, and fixtures for manufacturing interchangeable parts. Nine hours drafting. 3 cred.; prereq., 15, 31. Mr. Shipley.

111f,w,s. Tool Construction. The construction of tools, jigs, dies, and fixtures for manufacturing interchangeable parts. Nine hours laboratory. 3 cred.; prereq., 15. Mr. Shipley.

INDUSTRIAL ENGINEERING

120w. Industrial Plants. Factory organization and construction for economical manufacture. Organization of the industry. Location and type of buildings, power development. Layout of plant. Routing systems and machine layout. Heating and ventilating requirements. Lighting. Sanitation. Distribution of power. Welfare features. Lectures, recitations, and drawing room practice. 3 cred.; prereq., sr. with 15 or 16. Mr. Flather.

121s. Production Methods. Principles and practice involved in economical production. Standardization. Requirements for uniformity and interchangeability. Jigs, fixtures, and special equipment; gages and inspection systems. Divisions of labor. Conveying, handling, and stores control. Fatigue elimination. 3 cred.; prereq., sr. with 15 or 16. Mr. Shipley.

223f. Industrial Management. General principles. The Taylor system; wage, bonus, and profit-sharing systems. Maintenance and depreciation. Purchasing. Allocation of cost, overhead, and machine burden. Graphical representation. 3 cred.; prereq., 121. Mr. Flather.

224w. Industrial Management Laboratory. Planning department. Time and motion studies; rate-setting. Instruction cards. Production control. Shop practice with investigations in local factories. Lectures, assigned reading, practice, and reports. 3 cred.; prereq., 223. Mr. Shipley.

225s. Industrial Management. Labor administration. Foreman-training. Training the worker; job analysis. Employment and turnover; the

human element, service departments. Stabilization of labor. Lectures, reading, shop visits, and reports. 3 cred.; prereq., 224. Mr. Flather.

226f. Safety Engineering. Safety of the worker; fire and other hazards; prevention of industrial accidents. Compensation laws. Fire prevention: construction; automatic sprinkler systems. Effect of safety on production. Factory sanitation. Safety organization. Lectures, assigned reading, factory inspections, and reports. 3 cred.; prereq., 121. Mr. Shipley.

227w-228s. Industrial Engineering Problem. Special investigations of practical problems and suggested methods of procedure. Lectures, assigned reading, shop visits, and reports. 3 cred.; prereq., 223, 224, 225 or reg. in 224, 225, grad. Mr. Flather.

MACHINE DESIGN

31s. Elementary Machine Design. Empirical proportion and design of machine parts; tracings; working drawings from sketches; drawing room systems and conventional methods. Taken in conjunction with the work in engineering design. 2 cred.; prereq., Draw. 29. Mr. Campbell.

32f. Mechanism: Motion Studies. Revolving and oscillating bodies; flexible connectors; pure rolling contact; wheels in trains; epicyclic gear trains; screws; worm and wheel; linkages; straight-line mechanism; hoists; intermittent motions; pulley blocks. Recitations and lectures. 4 cred.; prereq., 31. Mr. Martenis.

33w. Mechanism and Kinematics: Transmission of Motion. Levers, linkwork, gearing, flexible connectors, screws, epicyclic trains, parallel motions, quick return motions, cams; graphical studies of velocities and point paths. 3 cred.; prereq., Draw. 27. Mr. Martenis.

34w. Kinematics and Machine Design. Gearing, tooth profiles, gear systems, cams and their construction; strength of gear teeth, spur, bevel, and helical. Riveted joints, screwed fastenings, rotating pieces, shafting, and bearings. 4 cred.; prereq., 32. Mr. Martenis.

35w. Machine Design. Calculation and design of pulleys, fly wheels, rope drives, steam piping, engine details, machine frame. Study and design of valves: D-slide, piston and double ported, reversing gears, governors. Lectures and drafting. 3 cred.; prereq., 34. Mr. Martenis.

37s. Machine Design. (E.E.) Calculation and design of machine parts: riveted joints, screwed fastenings, rotating pieces, bearings, belted connections, gearing, spur, bevel, and helical. Lectures and drafting room practice. 3 cred.; prereq., 33. Mr. Martenis.

38f. Machine Design. Arranged for students in Chemical and Agricultural Engineering. 3 cred.; prereq., M.&M. 84. Mr. Flodin.

131f-132w-133s. Advanced Engineering Design. Original design, including machinery for changing size and form, cranes, pumping, transmission machinery, and engineering appliances. Lectures, problems, and drawing room practice. 3 cred. per qr.; prereq., 35. Mr. Flather.

STEAM ENGINEERING

42f. Steam Engines. Types, details, mechanics, and elementary thermodynamics of the simple and compound engine. Principles of operation, indicator cards, valve study, governing. Condensers and related apparatus. Elementary study of steam turbine. To parallel 81. 3 cred.; prereq., Phys. 23, 24. Mr. Shoop.

43w. Steam Boilers, Combustions, Fuels. Generation of heat in furnaces, commercial fuels, smoke prevention. Principles of boiler economy and operation. Types and details of boiler construction. Boiler room equipment, mechanical stokers, feedwater heaters and purifiers, superheaters, economizers. To parallel 82. 3 cred.; prereq., 42. Mr. Shoop.

81f. Elementary Mechanical Laboratory. Calibration of gages, anemometers, indicator springs. Use of steam calorimeters, planimeters, indicators. Valve-setting, calculations from indicator cards. Tests of mechanical appliances, pipe coverings, lubricating oils. To parallel 42. 2 cred.; prereq., M.&M. 26. Mr. Tuve.

82w. Steam Laboratory. Tests of steam engines, steam and vacuum pumps, injectors, condensers, boilers, radiators, centrifugal fans. Calibration of steam, air, and water flow meters and instruments. Fuel calorimetry. Inspection trip, study of central heating and power plants. 2 cred.; prereq., 81. Mr. Tuve.

84f. Elementary General Laboratory. (Mines.) (a) Gages and anemometers. Tests of oils, steam calorimeters. Steam indicator practice, valve-setting. Test of simple steam engine and steam pump. (b) The use of hydraulic measuring devices, weirs, differential gages, venturimeters, etc., in tests for efficiency of centrifugal pumps, hydraulic turbines, and rams. 4 hrs.; prereq., mech. Mr. Shoop.

135f. Steam Engine Design. Design of a high speed automatic or Corliss steam engine. Theoretical indicator, force and turning moment diagrams. Weights of reciprocating and rotating parts. Determination of details and working drawings. Senior option. 3 cred.; prereq., 42. Mr. Flather.

144f. Heat Engines. (E.E.) Properties of steam, steam calorimetry. Use and calibration of engine room instruments. Types, details, and tests of simple and compound engines and turbines. Study and tests of condensers, pumps, and engine room equipment. 3 cred.; prereq., M.&M. 26. Mr. Rowley.

145w. Heat Engines. (E.E.) Combustion, fuels, mechanical stokers, smoke prevention. Construction and operation of boilers and boiler auxiliaries. Selection and testing of power equipment. 3 cred.; prereq., 144. Mr. Robertson.

147w. Heat Engines. Arranged for students in Chemical Engineering. 4 cred.; prereq., M.&M. 84. Mr. Shoop.

148s. Heat Engines. Arranged for students in Chemical Engineering. 3 cred.; prereq., 147. Mr. Shoop.

149f,w,s. Heat Engines. (C.E. & Arch.) Steam generation and properties. Fuels and combustion. Construction and operation of boilers, and

auxiliaries. Elementary thermodynamics. Types, details, and tests of steam engines, steam turbines, gas engines, and air compressors. Performance and adaptability of power equipment. 4 cred.; prereq., M.&M. 26. Mr. Tuve.

151s. Elementary Thermodynamics. Properties of heat media, heat transformation into work, throttling of gases, gas mixtures, flow of fluids. Application of the elementary principles of thermodynamics to heat motors and power plant equipment. Treatment of the actual and ideal cycles. 3 cred.; prereq., 43. Mr. Shoop.

152w. Steam Turbines. Theory and practice applied to various types. Thermodynamics and mechanical analysis of problems involved in the design of nozzles, blades, rotors, etc. Condition of operation; systems of transmission; lubrication; economy; field of service. Laboratory investigation. 3 cred.; prereq., 151. Mr. Shoop.

162f. Power Plant Machinery. Advanced study and application of engines, stokers, boilers, fans, purifiers, heaters, coal- and ash-handling equipment, etc. 3 cred.; prereq., 43. Mr. Shoop.

163w. Applied Thermodynamics. Laws of heat transmission, mean temperature difference, in condensers, boilers, brine coils, feed water heaters. Treatment of cooling towers, accumulators, multiple stills, stage evaporators, vapor refrigeration; air compressors, multi staging, intercooling, etc. 3 cred.; prereq., 151. Mr. Shoop.

164s. Design of Power Plant Units. Treatment of condensers, air pumps, boilers, cooling towers, stage evaporators, heaters, steam piping lubricating systems, etc. 3 cred.; prereq., 163. Mr. Flodin.

165s. Fuels and Combustion. Fuels: classification and analyses. Hand and stoker treatment; regulation. Pulverized and liquid fuels. Types of burners, controls. Combustion: generation of heat; furnace gases; stratification; flame way; smoke prevention. Furnaces. Lectures and recitations. 3 cred.; prereq, 43. Mr. Shoop.

181w. Advanced General Laboratory. Arranged for students in the School of Mines. 4 hr.; prereq., 84. Mr. Tuve.

182f,w. Advanced Steam Laboratory. Tests of steam turbines, uniflow and compound steam engines, condensers, and vacuum pumps. Tests of compound steam pump. Air compressor, boiler, superheater, and power plant. Studies of fluid flow meters and air-conditioning apparatus. 2 cred.; prereq., 151. Mr. Shoop.

251f. Advanced Thermodynamics. Reversible changes of state and efflux of wet and superheated vapors. Flow of compressible fluids in mains, moving channels, into receivers, and communicating vessels. Gas mixtures, critical points, liquefaction. Power plant cycles: regenerative, reheating, bleeding. 3 cred.; prereq., 163. Mr. Shoop.

267s. Power Plant Management. Operation and maintenance of boilers, engines, steam turbines, and accessory apparatus. Smoke prevention, lubricants and lubrication. Power plant finance. Daily logs and power costs. Study of recent power researches. 3 cred.; prereq., 164. Mr. Shoop.

HEATING, VENTILATION, AND REFRIGERATION

153f. Heating and Ventilation. Principles of heating and ventilation. Furnaces, steam, hot water, vapor, vacuum, and fan systems of heating; pipe systems; heat regulation. Ventilation, synthetic air chart, humidification, central station heating. Recitations, lectures, and designs. 3 to 4 cred.; prereq., M.&M. 127, 128, 129. Mr. Rowley.

154s. Heating and Ventilation. (Arch.) Principles of heating and ventilation. Heating systems; furnaces, steam, hot water, vapor, vacuum and fan blast. Piping systems. Ventilation: humidification, synthetic air chart. Temperature regulation. 2 cred.; prereq., M.&M. 92. Mr. Rowley.

156s. Compressed Air and Refrigerator Machinery. (a) Air compressors and motors; power transmission by compressed air. (b) Principles of refrigeration. Various types of refrigerating machines, refrigerants applications to ice-making, cold storage, cooling of air, liquids, and solids. Lectures and recitations. 3 cred.; prereq., 151. Mr. Rowley.

255f,w,s. Advanced Heating and Ventilating. Advanced course for graduates. To be taken in connection with research work in the laboratory, Course 287. 3 cred.; prereq., 153. Mr. Rowley.

257w. Mechanical Equipment of Buildings. Selection of heating, ventilating, and plumbing systems for various types of buildings. Piping layouts, piping for fire protection, air, gas, and vacuum cleaning, elevators. Design and layout of equipment. Lectures and drafting. 3 cred.; prereq., 153, Phys. 43. Mr. Martenis.

GAS ENGINES AND AUTOMOTIVES

40f,w,s. Automotives. Elementary study of mechanical problems involved in automobiles, trucks, and tractors, starting and ignition devices, carburetors, lubrication, cooling, and transmission. 2 cred.; prereq., 11, 12, 13. Mr. Hazen.

136f,w. Gas Engine Design. Calculations and working drawings of a gas motor for heavy duty tractor, truck, marine, or other service. Theoretical diagrams and details of parts. Senior option. 3 cred.; prereq., reg. in 150. Mr. Robertson.

137w. Advanced Gas Engine Design. Continuation of Course 136. 3 cred.; prereq., 136. Mr. Robertson.

138s. Advanced Gas Engine Design. Continuation of Course 137. 3 cred.; prereq., 137. Mr. Robertson.

141w. Automobile and Motor Truck Engines. Continuation of 150 with special reference to automobile and motor truck engines. Theoretical consideration of engine parts and accessories, carburetion of various fuels: the Diesel principle as applied to small high speed engines. 3 cred.; prereq., 150. Mr. Hazen.

142s. Automobile and Motor Trucks. Theory and design of the automobile and motor truck chassis, including frames, brackets, clutches, transmissions, axles, steering gears, and springs. Lectures, recitations, and problems. 3 cred.; prereq., 141. Mr. Hazen.

146s. Gas Engines and Producers. (E.E.) Laws of gases; gas cycles, Otto, semi-Diesel, and Diesel engines. Carburetion, cooling, lubrication, and governing. Gas producers and by-product gases. 3 cred.; prereq., 145. Mr. Robertson.

150f. Gas Engines and Producers. Laws of gases; gas cycles. Otto, semi-Diesel, and Diesel engines. Mechanism of various types. Carburetion, governing, cooling, lubrication. Principles of design. Gas producers; types, suction, pressure, blast furnace. By-products recovery. 3 cred.; prereq., 41, 43. Mr. Robertson.

183f,w. Power and Gas Engine Laboratory. Tests of gas and gasoline engines, and gas producers. Power and lighting plants. 2 cred.; prereq., reg. in 150. Mr. Robertson.

231f-232w-233s. Automobile and Motor Truck Design. Theory and design of the automobile and motor truck engine and chassis in which the design of the complete engine, transmission, and chassis is carried out. Lecture and drawing room. 3 cred.; grad. Mr. Robertson.

237s. Gas Tractor Design. Selection of wheel sizes; horse power weight and drawbar pull. Bearing pressures; ratios and strength of gearing. Details of principal parts. Senior option. 3 cred.; prereq., 136. Mr. Robertson.

293f,w,s. 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. 3 cred.; prereq., 150.

294f,w,s. Aeroplane Design. Calculations and drawings for a given aeroplane; stability, strength, propulsion, and motive power required. 3 cred.; prereq., 136.

281f-282w-283s. Automobile-Testing and Research. Dynamometer and road tests including overall efficiency of cars and motor trucks, transmission efficiencies, performance of cars at various speeds, fuel consumption, effect of road surface on traction, efficiencies, and general performances. Special research problems. 3 cred. per qr.; grad. Mr. Robertson.

295s. Motor Truck Transportation. Problems involving motor truck transportation, capacity of trucks, trailers, drawbar pull. Efficiencies. Effect of road surface. Freight-handling. Analysis of costs of truck operation and maintenance. Relative costs of transportation. 3 cred.; prereq., 142. Mr. Robertson.

POWER

61s. Measurement of Power. Methods employed in measuring power. Dynamometers, friction brakes, railway dynamometer cars, ship dynamometers. Power required to drive machine tools and shafting. Selection of motors, power layout. Lectures, recitations, laboratory. To parallel 83. 2 cred.; prereq., M.&M. 127. Mr. Tuve.

83s. Elementary Power Laboratory. Calibration of transmission and absorption dynamometers. Use of electric, hydraulic, and fan dynamometers. Economy test of stationary oil engine. Measurement of power

required to drive industrial machinery. Inspection trip relating to production and distribution of power. To parallel 61. 2 cred.; prereq., 81. Mr. Shoop.

166s. Water Turbines. The theory of operation, design, construction, and regulation of water turbines. Turbine-testing; characteristics, selection of type. Cost of turbines and water power. Senior option. 3 cred.; prereq., M.&M. 129.

265f-266w. Power Plant Design. Problems, designs, and estimates for power plants and central stations. Selection of motive powers, relative advantages of steam, and producers, gas plants. Choice of engines and boilers; pumps, piping, and accessories. 3 cred. per qr.; prereq., 164. Mr. Flather.

RAILWAY MECHANICAL ENGINEERING

271f. Railway Technology. Systematic course of visits to the various railroad shops in the vicinity to study locomotive details and classifications. Locomotive practice. Lectures and reports. 1 cred.; prereq., M.&M. 127, 128, 129. Mr. Martenis.

272f-273w-274s. Locomotive Design and Construction. Locomotive details. Design of boiler, cylinders, frame, springs, trucks, axles, wheels, running gear, equalizing arrangements, valve gears, lubrication. Lectures, assigned reading, and drafting. 3 cred. per qr.; prereq., 271. Mr. Martenis.

278s. Locomotive Road Tests. Tests on locomotives and trains. Dynamometer car and drawbar pull. 3 cred.; prereq., 271, 272. Mr. Flather.

NAVAL ARCHITECTURE

39f,w,s. Ships and Shipping. Types and sizes of ships, tonnage and classification requirements, factors governing choice of size and type of ship. Introductory course touching on the commercial side of ship design. 1 cred.; open to soph., jr., sr. Mr. Flodin.

170f,w,s. Theoretical Naval Architecture. Ship measurement; stability and trim; resistance, coefficients, speed, and powering. 2 cred.; jr., sr., preferably preceded by 39. Mr. Flodin.

171f,w,s. Theoretical Naval Architecture. Strength of ship as a whole, and of various parts of the ship under local stresses; effect of rolling, pitching, and vibration. 2 cred.; prereq., jr., sr. Mr. Flodin.

172f,w,s. Ship-Drawing. Preliminary design of commercial ships, including consideration of mechanical equipment, with special emphasis on river and lake transportation. 2 cred.; prereq., 138, 139. Mr. Flodin.

SEMINARS AND RESEARCH

90f-91w-92s. Seminar. Reading of assigned articles in current technical press. Preparation of synopsis, and classroom presentation of principal features of assigned articles. 1 cred.; jr. Mr. Shipley.

190f-191w-192s. Seminar. 1 cred. per qr.; sr. Mr. Rowley.

184s. Advanced Engineering Laboratory. Opportunity will be offered for carrying on investigations in connection with tests of power units, refrigerators, compressors, fans, etc. 2 cred.; prereq., 182, 183. Mr. Rowley.

287f-288w-289s. Mechanical Engineering Research. Courses may be elected which involve investigations in connection with lubrication, fuels, furnaces, power boilers, steam engines, and turbines, gas engines, heating and ventilation, and other problems as selected. Reports, special problems, and related tests. 3 cred. per qr.; prereq., 184 or reg. in 184. Mr. Flather.

290f-291w-292s. Seminar. Same as Course 90. 1 cred. per qr.; grad. Mr. Flather.

METALLURGY

109f. Metallurgy. Short course in metallurgy of base metals, special consideration being given to mechanical features. 3 cred.; prereq., Chem. 16. Mr. Christenson.

109w. Metallurgy. Short course in metallurgy of base metals, special consideration being given to electrical features. 3 cred.; prereq., Chem. 16. Mr. Christenson.

150f. Metallography for Electrical Engineers. Principles of metallography, including pyrometry, thermal analysis, constitution diagrams, microscopic and photomicrographic technique; study of typical alloys with special reference to electrical resistance, conductivity, magnets, etc. Laboratory work and demonstrations. 3 cred.; prereq., jr., sr., E.E. Mr. Dowdell.

151w. Advanced Metallography for Electrical Engineers. Continuation of 150. Study of iron and steel, alloy steels, metals and alloys used in electrical engineering practice. Special problems for outside reading and for research. Laboratory work. 3 cred.; prereq., 150. Mr. Dowdell.

156f. Metallography for Mechanical Engineers. Principles of metallography, including pyrometry, thermal analysis, constitution diagrams, microscopic and photomicrographic technique; metallography and heat treatment of iron and steel. Laboratory work. 3 cred.; prereq., sr. M.E. Mr. Harder.

157w. Advanced Metallography for Mechanical Engineers. Continuation of 156. Metallography of alloy steels, tool steels, high speed tool steels, and important non-ferrous alloys; metallography applied to engineering practice and specifications. Outside reading and special reports. Laboratory work. 3 cred.; prereq., 156. Mr. Harder.

162f-164w-165s. Advanced Metallography. Cred. ar.; prereq., 151, 157, or equiv. Mr. Harder.

MILITARY SCIENCE AND TACTICS

REQUIRED WORK

All physically fit male students are required to take instruction in military science for three hours each week during the first two undergraduate years of their course. Previous instruction in this subject at other institutions under an officer of the regular army detailed as professor of military science and tactics exempts the student from so much of this work as the length of his prior training justifies in each case. All students taking this course are given the instruction prescribed for the Basic Course, Senior Division, R.O.T.C. No credits are allowed for this work.

ELECTIVE WORK

Students who have completed the Basic Course, R.O.T.C., may be selected for advanced work by the professor of military science and tactics. Those who pursue the Advanced Course are required to sign an agreement with the government to continue the two years' course to completion. This includes attendance at a training camp, held normally during the summer following the first year's advanced work. The camp is conducted free of cost to the student, and in addition, while actually in camp, the student receives the pay prescribed for the seventh grade in the army. Students pursuing the Advanced Course are also furnished a special uniform and receive a fixed allowance per day. The total government compensation for the two years' advanced work amounts to something over $200. Students who satisfactorily complete the Advanced Course will be commissioned in the Officers' Reserve Corps of the United States Army.

The University allows 18 credits for the two years' Advanced Course, R.O.T.C., in all units except the Signal Corps, in which a total of 21 credits is allowed. These credits may be applied towards graduation.

The Advanced Course for the students of this college embraces three departments: Infantry, Coast (Heavy) Artillery, and Signal Corps, in any of which the student may be enrolled.

1f-2w-3s. First Year Basic Course, R.O.T.C.

Infantry. Practical and theoretical instruction in infantry drill, rifle marksmanship, scouting and patrolling, physical training, military courtesy, infantry equipment and ceremonies. No cred.; no prereq.

Coast Artillery. Duties of the Coast Artillery soldier, military customs and methods. Practical study of one anti-aircraft gun and carriage. Instruction for second-class gunner, Coast Artillery, with particular reference to anti-aircraft artillery. No cred.; no prereq.

Signal Corps. Infantry drill and physical training, rifle marksmanship, military courtesy, guard duty, military policy of the United States; basic signal communication; military telegraph apparatus; army organization and organization of signal corps. No credit; no prereq.

4f-5w-6s. Second Year Basic Course, R.O.T.C.

Infantry. Practical and theoretical instruction in infantry drill command and leadership, military topography, automatic rifle, bayonet, grenades, military hygiene and musketry. No cred.; prereq., 1-2-3.

Coast Artillery. Duties of non-commissioned officer of Coast Artillery; instruction for first class gunner, Coast Artillery Corps, with particular reference to anti-aircraft artillery. No cred.; prereq., 1-2-3.

Signal Corps. Infantry drill and physical training; military sketching and map reading; military hygiene; army organization and organization of signal troops; basic signal communication; military telegraph apparatus. No cred.; prereq., 1-2-3.

51f-52w-53s. First Year Advanced Course, R.O.T.C.

Infantry. Practical and theoretical instruction in command and leadership, infantry drill, minor tactics, field engineering, machine gun, light mortar, 37 mm. gun, military law, and rules of land warfare. 3 cred. per qr.; prereq., 4-5-6.

Coast Artillery. Duties of the Coast Artillery officer; guns; carriages and gunnery, orientation, instruction for expert gunner, with particular reference to anti-aircraft artillery. 3 cred. per qr.; prereq., 4-5-6.

Signal Corps. Command and leadership; minor tactics; field engineering; army administration; codes and ciphers; hippology; message centers; communication engineering (Electric Communication E.E. 61-63-65). 1 cred. per qr.; prereq., 4-5-6 and reg. in E.E. 61-63-65.

54f-55w-56s. Second Year Advanced Course R.O.T.C.

Infantry. Practical and theoretical instruction in command and leadership, infantry drill, military history, minor tactics, administration, and field engineering. 3 cred. per qr.; prereq., 51-52-53.

Coast Artillery. Duties of Coast Artillery officer; command and leadership. Advanced gunnery and methods of fire adjustment and analysis. Motor transport, completion of student's military education in preparation for his duties as a second lieutenant. 3 cred. per qr. Prereq., 51-52-53.

Signal Corps. Command and leadership; staff organization and duties; military law; tactics of all arms; military history and policy of the United States; radio communication (Electrical Communication E.E. 161-163-165). 1 cred. per qr.; prereq., 51-52-53 and reg. in E.E. 161-163-165.

PHYSICAL EDUCATION FOR MEN

General statement.—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.

For a special four-year professional course in physical education and athletic coaching, see bulletin of the College of Education. Students interested in this course should consult Professor L. F. Keller before registering.

1f-2w-3s. Freshman Physical Education. Mass activities, corrective exercise, apparatus work, swimming, games, and efficiency test. Cred.*; no prereq.

4f,w,s. Freshman Hygiene. Cred.*; no prereq. Dr. Cooke.

7f-8w-9s. Advanced Leaders. One hour of instruction; two hours leading squads in Physical Education 1-2-3 or 16-17-18 under supervision. 1 cred. per qr.; prereq., 1-2-3 or instructor's permission.

10f-11w-12s. Minor Sports. Study of nature and function of play; use of leisure time; rules, theory, technique, and values of different sports. Fall: golf, soccer, handball, boxing. Winter: winter sports, wrestling, tumbling. Spring: swimming, indoor baseball, volley-ball, tennis. Lecture one hour, practice three hours. 2 cred. per qr.; prereq., 1-2-3 or permission. Mr. Keller.

16f-17w-18s. Drill Substitution. By petition in substitution for military science. Examiner, Dr. L. J. Cooke. No cred.; no prereq. Mr. Iverson.

30s. Athletic Training and First Aid. Principles governing conditioning of men for various sports; diet, sleep, exercise, bathing, massage. Overtraining; its cause, diagnosis, prevention, and cure. Prevention and first aid treatment of common athletic injuries. 2 cred.; no prereq. Dr. Cooke.

PHYSICAL EDUCATION FOR WOMEN

This department aims to promote the physical efficiency 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 two years of residence; conducts yearly consultations with, and examines when necessary, all upper-class students; gives courses in hygiene; organizes neuromuscular activity leading toward organic strength, nervous stability, conscious motor control, correct bodily mechanics, skill in handling the body in physical recreation, and the development of that valuable social quality known as good sportsmanship; co-operates closely with the Women'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.

Work in this department is required of all newly entering students (see Courses 1-2-3 and 4) and of all sophomores, who are permitted as free a choice among the sophomore courses as their physical condition permits (see "sophomore" courses; students who can not swim must register for Course 22-23 during sophomore year). Physical examination or consultations are required annually of all students.

For the four-year professional course in Physical Education, see the bulletin of the College of Education.

* Courses 1-2-3 and 4 carries a total of three credits. The entire course must be completed before credit is received for any quarter. Preventive Medicine 12s may be offered as a substitute for 4.

Courses 1f-2w-3s carry no credit when taken in place of military science and tactics by foreign students and others in the College of Engineering and Architecture.

Statement of fees.—Elementary physical training $2.50 a quarter. All other exercise courses, including swimming, $2 a quarter. Maximum fee paid by a student in physical education, $3.50 a quarter.

1f-2w-3s. Elementary Physical Training. Lighter forms of gymnastics, apparatus work, orthopedic exercise, folk dancing, indoor and outdoor games. Individual health consultations. No credit; no prereq. Required of all new students.

4f,w. Preliminary Hygiene. One lecture a week. The most essential aspects of the care of personal health. No cred.; no prereq. Required of all new students. Dr. Norris.

7f-8w-9s. Sophomore Physical Training. Floor work, apparatus, and indoor and outdoor games. No cred.; prereq., 1-2-3. Miss Hazelton.

10f-11w-12s. Sophomore Orthopedic Gymnastics. For those who need more individual supervision than is possible in other classes. No cred.; prereq., 1-2-3. Dr. Tolg.

13f,s-14w-15s. Sophomore Interpretative Dancing. An art and a phase of physical education designed to develop a sense of beauty and body control through rhythmic movements prompted by the imagination. No cred.; prereq., 1-2-3. Miss Baker.

16f-17w-18s. Sophomore Games and Folk Dancing. Suitable in strength for C-D girls. Conducted outdoors when weather permits. No cred.; prereq., 1-2-3. Miss Hazelton.

19f-20w-21s. Sophomore Major Sports. Hockey in autumn, basket-ball in winter, baseball in spring. Suitable in strength for A-B girls. No cred.; prereq., 1-2-3. Miss Clayton.

22f,s-23w. Sophomore Elementary Swimming. 22, elementary; 23, low intermediate. No cred.; prereq., 1-2-3.

25f,s-26w. Sophomore Intermediate Swimming. Wide range of strokes, elementary diving. No cred.; prereq., 1-2-3, elementary swimming test.

28f,s-29w. Sophomore Advanced Swimming. Advanced strokes and diving, life-saving. No cred.; prereq., 1-2-3, intermediate swimming test.

30w. Sophomore Figure Skating. Practice of stroke on the rink, or when rink is usable, practice of balance and co-ordination exercises indoors. No cred.; prereq., 1-2-3, and ability to skate. Mr. Iverson.

31f,w,s. Life-Saving. Red Cross life-saving leading to membership in the life-saving division of the American Red Cross. No cred.; no prereq.

32f,w,s. General Swimming. For both beginners and advanced swimmers and divers. Shower bath tickets may be bought of the matron. No cred.; no prereq. No registration required.

33f,34w,35s. Hockey, Basket-Ball and Baseball. Hockey in the autumn; basket-ball in the winter; baseball in the spring. No cred.; prereq., permission of director.

36w. Winter Sports. Study of figure skating and ice games on the rink; technique of activities outdoors, or in the gymnasium in unfavorable weather; study of an all-round winter sport program, its activities, equipment, and necessary facilities. No cred.; prereq., 1-2-3, and ability to skate. Mr. Iverson.

PHYSICS

3f,w,s,su. Elements of Mechanics and Sound. Mechanics of solids, fluids, wave motion, and sound. Study of the simpler fundamental principles. First part of a general course 3, 23, 35, 43. Course 4 should be taken in conjunction with this course. 3 cred.; prereq., M.&M. 12 or equiv. Mr. Erikson.

4f,w,s,su. Elements of Mechanics and Sound Laboratory. Measurements in the mechanics of solids, fluids, wave motion, and sound; the laboratory part supplementing Course 3. 1 cred.; prereq., 3 or reg. in 3. Mr. Erikson.

23f,w. Heat. Study of the principles underlying heat phenomena. Course 24 should be taken in conjunction with this course. 3 cred.; prereq., 3. Mr. Miller.

24f,w. Heat Laboratory. Laboratory part supplementing Course 23. 1 cred.; prereq., 4, 23, or reg. in 23. Mr. Miller.

35w,s. Optics. Experimental demonstrations of optical phenomena and a brief study of the fundamental optical principles. Designed for those who can not take the longer course. Two lectures and one quiz hour a week. 2 cred.; prereq., 3. Mr. Valasek.

43w,s. Electricity. Study of the principles underlying electric phenomena. Course 44 should be taken in conjunction with this course. 3 cred.; prereq., 3. Mr. Zeleny.

44w,s. Electricity Laboratory. Laboratory part supplementing Course 43. 1 cred.; prereq., 4, 43, or reg. in 43. Mr. Zeleny.

123s. Pyrometry and Heat. Experimental study of pyrometry, heat, transfer, hygrometry, and gas liquefaction. One lecture, two three-hour sessions in the laboratory a week. 3 cred.; prereq., 23, 24. Mr. Miller.

144f. Electrical Measurements. Devoted mainly to the study of potentiometer methods, capacity, inductance, magnetic flux. One lecture, one quiz hour and two two-hour laboratory periods a week. 3 cred; prereq., 43, 44. Mr. Zeleny.

For other electives in the Department of Physics see the bulletin of the College of Science, Literature, and the Arts.

PREVENTIVE MEDICINE AND PUBLIC HEALTH

12s. Hygiene and First Aid. No cred.; no prereq. Dr. Cady.

50f,w,su. Public and Personal Health. 3 cred.; prereq., An. Biol. 1, 2, Psy. 1, 2. Dr. O'Brien.

53f,su. Elements of Preventive Medicine. 3 cred.; prereq., Psy. 1-2; Bact. 51 or equiv.; or by permission. Dr Diehl.

73w. Occupational Hygiene and Disease. 2 cred.; prereq., 53. Dr. Meyer.

PSYCHOLOGY

1f-6w.† General Psychology for Business Students. Offered only to pre-business students. 3 cred.; no prereq. Mr. Elliott.

† Both quarters of the course must be completed before credit is received for any quarter.

SOILS

4f. Soils. Origin, formation, composition, and classification of soils; physical properties, moisture relations; principles of tillage. Lecture, laboratory, and field work. 3 cred.; prereq. 10 cred. in chem. Mr. Rost.

108w. Physical Property of Soils. The determination of physical constants of soils, including chemical composition, moisture equivalent, and hygroscopic coefficient. 3 cred.; prereq., 4. Mr. Miller.

The Bulletin *of the* University *of* Minnesota

College of Engineering and Architecture

Part II

Announcement of Program for the Year 1926-1927

Vol. XXIX No. 44 July 31 1926

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

Accepted for mailing at special rate of postage provided for in section 1103, Act of October 3, 1917, authorized July 12, 1918

FRESHMAN WEEK

Every student entering any department of the University for the first time as a freshman in the fall of 1926 is required to be here throughout the week before the opening of classes. Every new freshman must present himself at the registrar's office either Friday, September 17, Saturday, September 18, or Monday, September 20, to begin the process of registration. Those coming later than 5:00 p.m. Monday, September 20, will be subject to the usual penalty for late registration. See Penalty Fees, page 50 of the bulletin of general information.

During the week September 21 to 25, in addition to carrying out their registration, freshmen will meet for lectures on such subjects as how to study, the use of the library, important university and college regulations, and will visit the library, the scientific laboratories, and other points of interest to them in connection with their choice of studies and of their future occupations.

During this week there will be the usual physical examinations and psychological tests and such other examinations as will enable the faculty to place the students in classes for which they are best fitted.

The general purpose of the Freshman Week is to help the student to make a good start on his work and to adjust himself to the new and perplexing conditions of university life.

NOTICE THAT ATTENDANCE THROUGHOUT FRESHMAN WEEK IS A REQUIREMENT

It is recommended that as many as possible present themselves for registration on Friday, September 17, in order to avoid the inconvenience and delay incident to the congestion on the last day.

1926

JULY

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AUGUST

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OCTOBER

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1927

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JULY

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AUGUST

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SEPTEMBER

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OCTOBER

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NOVEMBER

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DECEMBER

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UNIVERSITY CALENDAR
1926-27

1926

Fall Quarter

September	16	Thursday	Payment of fees closes, except for new students
September	16-18		Entrance examinations (for removal of entrance deficiencies)
September	17-20		All new students entering the freshman class report for assignment
September	20-24		Examinations for removal of conditions
September	20-25		Freshman week
September	24	Friday	Payment of fees for new students closes
September	23-24		Registration in the College of Engineering and Architecture and the School of Chemistry[1]
September	27	Monday	Fall quarter classes begin, 8:30[2] a.m.
October	21	Thursday	Senate meeting, 4:30 p.m.
November	2	Tuesday	General Election Day; a holiday
November	11	Thursday	Armistice Day; a holiday
November	20	Saturday	Homecoming Day
November	25	Thursday	Thanksgiving Day; a holiday
December	2	Thursday	State Day Convocation
December	15-18		Final examination period
December	16	Thursday	Commencement Convocation Senate meeting, 4:30 p.m.
December	18	Saturday	Fall quarter ends, Christmas vacation begins, 5:20 p.m.
December	22	Wednesday	Payment of fees closes for all students in residence fall quarter[3]

Winter Quarter

December	27-29		Entrance examinations
December	31	Friday	Registration in the College of Engineering and Architecture and the School of Chemistry[1]

[1] Registration subsequent to the date specified will necessitate the approval of the college concerned. See also penalty fees for late registration, page 50, bulletin of general information.

No student will be allowed to register in the University after one week from the beginning of the quarter excepting in unusual cases wherein special circumstances shall justify the appropriate committee of the college concerned permitting registration at a later date.

[2] First hour classes begin at 8:00 in the Medical School and at 8:15 at University Farm.

[3] New students must pay fees on dates announced for registration.

1927			
January	3	Monday	Christmas vacation ends, winter quarter classes begin, 8:30 a.m.[2]
February	12	Saturday	Lincoln's Birthday; a holiday
February	17	Thursday	Charter Day Convocation Senate meeting, 4:30 p.m.
February	22	Tuesday	Washington's Birthday; a holiday
March	16-19		Final examination period
March	17	Thursday	Payment of fees closes for all students in residence winter quarter[3]
March	19	Saturday	Winter quarter ends, spring vacation begins, 5:20 p.m.
			Spring Quarter
March	21-23		Entrance examinations
March	25	Friday	Registration in the College of Engineering and Architecture and the School of Chemistry[1]
March	28	Monday	Spring vacation ends, spring quarter classes begin, 8:30[2] a.m.
April	15	Friday	Good Friday; a holiday
May	12	Thursday	Cap and Gown Day Convocation
May	19	Thursday	Senate meeting, 4:30 p.m.
May	30	Monday	Memorial Day; a holiday
June	8-11		Final examination period
June	11	Saturday	Spring quarter closes, 5:20 p.m.
June	12	Sunday	Baccalaureate service
June	13	Monday	Fifty-fifth annual commencement
			Summer Session
June	17-18		Summer Session first term begins, registration and payment of fees
June	20	Monday	Classes begin, 8:00 a.m.
July	4	Monday	Independence Day; a holiday
July	30	Saturday	Registration and payment of fees for second term closes
August	1	Monday	Second term classes begin
September	3	Saturday	Second term Summer Session closes

[1] Registration subsequent to the date specified will necessitate the approval of the college concerned. See also penalty fees for late registration, page 50, bulletin of general information.

No student will be allowed to register in the University after one week from the beginning of the quarter excepting in unusual cases wherein special circumstances shall justify the appropriate committee of the college concerned permitting registration at a later date.

[2] First hour classes begin at 8:00 in the Medical School and at 8:15 at University Farm.

[3] New students must pay fees on dates announced for registration.

DIRECTORY OF ADMINISTRATIVE AND DEPARTMENTAL OFFICES

O. M. Leland, Dean of the College of Engineering and Architecture and the School of Chemistry ..... 133E and 127C

William F. Holman, Chairman of Advanced Standing Committee 222E
Carl A. Herrick, Chairman of Registration and Schedule Committees 105E
Robert W. French, Chairman of Students' Work Committee 133E

Agricultural Economics ..... 318Ad(F)
Agricultural Engineering ..... 201En(F)
Agronomy ..... 21Ad(F)
Animal Husbandry ..... 8St(F)
Architecture 315E
Art Education 414F
Astronomy 123F
Chemistry 127C
Civil Engineering 123E
Dairy Husbandry ..... 202DH(F)
Drawing and Descriptive Geometry 208E
Economics 113B
Electrical Engineering 137EE
English 108E
Forestry ..... 205Hr(F)
Geology and Mineralogy 108P
Horticulture ..... 103Hr(F)
Mathematics and Mechanics 114E
Mechanical Engineering 100ME
Metallurgy 103M
Military Science and Tactics ..... A
Physical Education for Men 106A
Physical Education for Women 101WGm
Physics 20Ph
Preventive Medicine and Public Health ..... MH
Psychology 112Psy
Rhetoric (Agriculture) ..... 309En(F)
Soils ..... 153Ch(F)

EXPLANATIONS

Course numbering.—A course is designated by a department name, a number, and a letter. It has the same number in whatever quarter it is offered. The quarter is indicated by the letter f, fall; w, winter; s, spring; su, summer.

Examples:

1f, a one-quarter course given in the fall.
1w, the same course given in the winter.
1f-2w-3s, a three-quarter course given in the fall, winter, and spring.
1f,w,s, a one-quarter course given each quarter.
1f,w,s-2f,w,s-3f,w,s, a three-quarter course in which each quarter's work is given each quarter.

Course titles which are followed by a department name, in parentheses, are designed especially for the students in the division indicated; viz., Drawing 21f, Drafting (C.E.), a course in drafting for civil engineering students.

Abbreviations used.—Departmental names: Architecture, Arch.; Art Education, Art Ed.; Astronomy, Ast.; Chemistry, Chem.; Civil Engineering, C.E.; Drawing and Descriptive Geometry, Dr. or Draw.; Economics, Econ.; Electrical Engineering, E.E.; English, Engl.; Geology, Geol.; Mathematics and Mechanics, M.&M.; Mechanical Engineering, M.E.; Metallography, Met.; Military Science and Tactics, Mil. Sci.; Physical Education, Ph.Ed.; Physics, Phys.; Preventive Medicine and Public Health, P.H.; Psychology, Psy.; Science, Literature, and the Arts, S.L.A.; Agricultural Economics, Ag. Econ.; Agricultural Engineering, Ag. En.; Agricultural Rhetoric, Rhet.; Agronomy, Agron.; Animal Husbandry, A.H.; Dairy Husbandry, D.H.; Forestry, For.; Horticulture, Hort.; Soils, Soils.

Buildings.—Main Engineering, E.; Experimental Engineering, Ex.; Electrical Engineering, E.E.; Mechanical Engineering, M.E.; Power Plant, P.Pl.; Armory, A.; Business, B.; Chemistry, C.; Folwell Hall, F.; Old Library, OL.; Physics, Ph.; Pillsbury Hall, P.; Psychology, Psy.; Women's Gymnasium, W.Gm.; Administration, University Farm, Ad(F).; Engineering, University Farm, En(F).; Chemistry, University Farm, Ch(F).; Horticultural, University Farm, Hr(F).; Stock Pavilion, University Farm, St(F).

Other abbreviations and symbols.—I, II, III, etc., First hour (8:30-9:20), second hour (9:30-10:20), third hour (10:30-11:20), fourth hour (11:30-12:20), fifth hour (12:30-1:20), sixth hour (1:30-2:20), seventh hour (2:30-3:20), eighth hour (3:30-4:20), ninth hour (4:30-5:20).

Ar.	To be arranged or assigned
Lab.	Laboratory
Lect.	Lecture
MTWThFS	Monday, Tuesday, etc.
Rec.	Recitation
Sec.	Section

OUTLINES OF CURRICULA

The required courses in each curriculum in this college are listed below with the quarters in which they regularly occur. In addition, the necessary number of approved elective courses must be taken to complete the requirements for the separate degrees.

CIVIL, ELECTRICAL, MECHANICAL, AND AGRICULTURAL ENGINEERING AND ENGINEERING PRE-BUSINESS

REGULAR FRESHMAN YEAR

Fall	Credits	Winter	Credits	Spring	Credits
M. & M. 12	5	M. & M. 11	5	M. & M. 13	5
Inorg. Chem. 4 or 14	4 or 5	Inorg. Chem. 5 or 15	4 or 5	Inorg. Chem. 16	5
Engl. 4	3	Engl. 5	3	Engl. 6	3
Draw. 1	3	Draw. 2	3	Draw. 3	3
M.E. 11, 12, or 13	2	M.E. 11, 12, or 13	2	M.E. 11, 12, or 13	2
G.E. 11	0	G.E. 12	0	P.H. 12	0
Mil. Sci. 1	0	Mil. Sci. 2	0	Mil. Sci. 3	0

CIVIL ENGINEERING

SOPHOMORE YEAR

Fall	Credits	Winter	Credits	Spring	Credits
M. & M. 24	5	M. & M. 25	5	M. & M. 26	5
Phys. 3	3	Phys. 23	3	Phys. 43	3
Phys. 4	1	Phys. 24	1	Phys. 44	1
Draw. 21	2	Draw. 22	2	Draw. 23	2
C.E. 11	3	C.E. 12	3	C.E. 13	3
Mil. Sci. 4	0	Mil. Sci. 5	0	Mil. Sci. 6	0

JUNIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
M. & M. 128	5	M. & M. 129	4	M. & M. 127	5
M. & M. 141	1	M. & M. 143	1	C.E. 16	2
C.E. 14	3	C.E. 15	2	C.E. 22	2
C.E. 31	3	C.E. 21	2	C.E. 33	3
C.E. 51	3	C.E. 32	3	C.E. 53	3
		C.E. 52	3		
		Summer	**Credits**		
		C.E. 23	9		

SENIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
C.E. 121	3	C.E. 124	3	C.E. 134	3
C.E. 131	3	C.E. 132	3	C.E. 163	3
C.E. 141	3	C.E. 142	3	C.E. 146	3
C.E. 161	3	C.E. 162	3	or	
C.E. 146	3	E.E. 42	4	C.E. 164	3
or		or		E.E. 42	4
C.E. 164	3	M.E. 149	4	or	
				M.E. 149	4

Together with 12 elective credits.

ELECTRICAL ENGINEERING

SOPHOMORE YEAR

Fall	Credits	Winter	Credits	Spring	Credits
M. & M. 24	5	M. & M. 25	5	M. & M. 26	5
Phys. 3	3	Phys. 23	3	Phys. 35	2
Phys. 4	1	Phys. 24	1	Phys. 43	3
Draw. 26	2	Draw. 27	2	Phys. 44	1
E.E. 11	3	E.E. 13	3	M.E. 16	2
Mil. Sci. 4	0	Mil. Sci. 5	0	E.E. 15	3
				Mil. Sci. 6	0

JUNIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
M. & M. 129	4	M. & M. 127	5	M. & M. 128	5
M. & M. 143	1	E.E. 113	3	M. & M. 141	1
E.E. 111	3	E.E. 114	2	E.E. 115	3
E.E. 112	2	M.E. 33	3	E.E. 116	2
Phys. 144	3			M.E. 37	3

SENIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
E.E. 121	3	E.E. 123	3	E.E. 125	3
E.E. 122	2	E.E. 124	2	E.E. 126	2
E.E. 132	2	E.E. 134	2	E.E. 136	2
M.E. 144	3	M.E. 145	3	M.E. 146	3

Together with 38 elective credits.

MECHANICAL ENGINEERING

SOPHOMORE YEAR

Fall	Credits	Winter	Credits	Spring	Credits
M. & M. 24	5	M. & M. 25	5	M. & M. 26	5
Phys. 3	3	Phys. 23	3	Phys. 43	3
Phys. 4	1	Phys. 24	1	Phys. 44	1
Draw. 28	2	Draw. 29	2	M.E. 21	1
M.E. 14	4	M.E. 15	4	M.E. 31	2
Mil. Sci. 4	0	Mil. Sci. 5	0	Mil. Sci. 6	0
Tech. Chem. 60	3	Tech. Chem. 60	3	Tech. Chem. 60	3
or		or		or	
M.E. 40	2	Phys. 35	2	Phys. 35	2
		or		or	
		M.E. 40	2	M.E. 40	2

JUNIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
M. & M. 127	5	M. & M. 128	5	M. & M. 129	4
M.E. 32	4	M. & M. 141	1	M. & M. 143	1
M.E. 42	3	M.E. 34	2	M.E. 36	3
M.E. 81	2	M.E. 35	3	M.E. 61	2
		M.E. 43	2	M.E. 83	2
		M.E. 82	2	M.E. 151	3

SENIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
M.E. 150	3	M.E. 183	2	M.E. 184	2
M.E. 182	2	M.E. 191	1	M.E. 192	1
M.E. 190	1	E.E. 47	4	E.E. 48	4
E.E. 46	4			G.E. 193	2
One of the following courses:		One of the following courses:		One of the following courses:	
M.E. 131	3	M.E. 132	3	M.E. 133	3
M.E. 135	3	M.E. 136	3	M.E. 137	3
M.E. 136	3	M.E. 137	3	M.E. 138	3
M.E. 265	3	M.E. 266	3	M.E. 164	3
				M.E. 237	3
				C.E. 37	3

Together with 24 elective credits.

AGRICULTURAL ENGINEERING

SOPHOMORE YEAR

Fall	Credits	Winter	Credits	Spring	Credits
M. & M. 24	5	M. & M. 25	5	M. & M. 84	5
Ag.E. 13	3	Ag.E. 24	4	Ag.E. 20	3
Ag.E. 19	3	Ag.E. 31	3	Ag.E. 25	4
Hort. 6	3	Agron. 1	3	Ag.E. 40	3
Soils 4	3	Soils 8	3	Hort. 32	3
Mil. Sci. 4	0	Mil. Sci. 5	0	Mil. Sci. 6	0

JUNIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
M. & M. 85	4	M. & M. 86	3	C.E. 37	3
Geol. 5	3	Ag.Econ. 2	3	Ag.E. 134	3
M.E. 38	3	Ag.E. 7	3	Agron. 11	3
C.E. 51	3	Ag.E. 42	3	A.H. 8	3
Ag.Econ. 1	5	Ag.E. 54	5	D.H. 1	5

SENIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
C.E. 144	3	G.E. 101	3	Econ. 85	3
Ag.E. 37	3	Ag.E. 121	3	G.E. 193	2
Ag.E. 122	4	Agron. 103	3	Ag.E. 126	3
Agron. 102	3			Ag.E. 150	2

Together with 21 elective credits.

ARCHITECTURE AND ARCHITECTURAL ENGINEERING

REGULAR FRESHMAN YEAR

Fall	Credits	Winter	Credits	Spring	Credits
M. & M. 12	5	M. & M. 11	5	M. & M. 13	5
Engl. 4	3	Engl. 5	3	Engl. 6	3
Arch. 21	2	Arch. 22	2	Arch. 23	2
Arch. 31	5	Arch. 32	5	Arch. 33	5
Arch. 61	2	Arch. 62	2	Arch. 63	2
G.E. 11	0	G.E. 12	0	P.H. 12	0
Mil. Sci. 1	0	Mil. Sci. 2	0	Mil. Sci. 3	0

ARCHITECTURE

SOPHOMORE YEAR

Fall	Credits	Winter	Credits	Spring	Credits
M. & M. 91	4	M. & M. 92	4	M. & M. 93	4
Phys. 3	3	Phys. 23	3	Phys. 43	3
Arch. 14	2	Arch. 15	2	Arch. 16	2
Arch. 24	2	Arch. 25	2	Arch. 26	2
Arch. 34	4	Arch. 35	4	Arch. 36	4
Arch. 44	2	Arch. 45	2	Arch. 46	2
Mil. Sci. 4	0	Mil. Sci. 5	0	Mil. Sci. 6	0

JUNIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
Arch. 17	2	Arch. 18	2	Arch. 19	2
Arch. 27	2	Arch. 28	2	Arch. 29	2
Arch. 37	7	Arch. 38	7	Arch. 39	7
C.E. 38	3	C.E. 39	3	C.E. 41	3
Econ. 8	3	Econ. 9	3	Econ. 28	3
or		or		or	
Inorg. Chem. 1	4	Inorg. Chem. 2	4	Inorg. Chem 3	4

SENIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
Arch. 131	10	Arch. 132	10	Arch. 133	10
Arch. 141	2	Arch. 142	2	Arch. 143	2
Arch. 151	1	Arch. 152	1	Arch. 153	2
Arch. 161	2	Arch. 162	2	Arch. 163	2
E.E. 40	2	C.E. 171	2	M.E. 154	2

ARCHITECTURAL ENGINEERING

SOPHOMORE YEAR

Fall	Credits	Winter	Credits	Spring	Credits
M. & M. 24	5	M. & M. 25	5	M. & M. 26	5
Phys. 3	3	Phys. 23	3	Phys. 43	3
Phys. 4	1	Phys. 24	1	Phys. 44	1
Arch. 34	4	Arch. 35	4	Arch. 36	4
Inorg. Chem. 4 or 14	4 or 5	Inorg. Chem. 5 or 15	4 or 5	Inorg. Chem. 16	5
Mil. Sci. 4	0	Mil. Sci. 5	0	Mil. Sci. 6	0

JUNIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
M. & M. 127	5	M. & M. 128	5	M. & M. 129	4
C.E. 31	3	M. & M. 141	1	M. & M. 143	1
Arch. 14	2	C.E. 32	3	C.E. 33	3
Arch. 47	4	Arch. 15	2	Arch. 16	2
Econ. 8	3	Arch. 48	4	Arch. 49	4
		Econ. 9	3	Econ. 28	3

SENIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
Arch. 17	2	Arch. 18	2	Arch. 19	2
Arch. 141	2	Arch. 142	2	Arch. 153	2
M.E. 153	4	Arch. 152	1	C.E. 18	3
C.E. 141a	3	C.E. 142a	3	C.E. 135	4
E.E. 40	2	C.E. 171	2	M.E. 149	4
		E.E. 49	2		

Together with 9 elective credits.

INTERIOR DECORATION

Courses Required in the First Two Years	Credits
English A-B-C	15
Mathematics 6 (with prerequisite)	5 or 10
French (see Junior College Requirements, page 6. S.L.A. bulletin)	0 to 20
History 11-12-13	10
Architecture 31-32-33	15
Physics 3 and 4 and any one of the continuations, 23, 33, 43, with laboratory	8
or	
Inorganic Chemistry 1-2-3 or 4-5	8 to 12
Architecture 21-22-23	6
Architecture 31-32-33	12
Architecture 61-62-63	6

For Those Who Enter with Higher Algebra and Two Years of French

Freshman Year

Fall	Credits	Winter	Credits	Spring	Credits
Freshman English	5	Freshman English	5	Freshman English	5
Mathematics	5	French	5	French	5
Elective	5	Elective or physics	5	Elective or physics	5

Sophomore Year

	Credits
Architecture 21-22-23	6
Architecture 31-32-33	15
History 11-12-13	10
Chemistry or physics	8 to 12
Architecture 61-62-63	6

Electives to complete a total of 90 for the two years.

NOTE.—Students who intend to take physics should elect Physics 1 and 2 during the freshman year.

JUNIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
Arch. 14	2	Arch. 15	2	Arch. 16	2
Arch. 34	4	Arch. 35	4	Arch. 36	4
Arch. 51	2	Arch. 52	2	Arch. 53	2
Arch. 74	3	Arch. 75	3	Arch. 76	3
Art. Ed. 20	3	Art Ed. 21	3	Art Ed. 22	3

SENIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
Arch. 17	2	Arch. 18	2	Arch. 19	2
Arch. 27	2	Arch. 28	2	Arch. 29	2
Arch. 134	7	Arch. 135	7	Arch. 136	7
Arch. 151	1	Arch. 183	3	Arch. 163	2
Arch. 182	3				

Together with 18 elective credits.

ENGINEERING PRE-BUSINESS

SOPHOMORE YEAR

Fall	Credits	Winter	Credits	Spring	Credits
M. & M. 91	4	M. & M. 92	4	M. & M. 93	4
Phys. 3	3	Phys. 23	3	Phys. 43	3
Phys. 4	1	Phys. 24	1	Phys. 44	1
Econ. 8	3	Econ. 9	3	Econ. 10	3
M.E. 14	4	Econ. 25	4	Econ. 26	4
Psy. 1	3	Psy. 6	3	M.E. 21	1
Mil. Sci. 4	0	Mil. Sci. 5	0	M.E. 40	2
				Mil. Sci. 6	0

JUNIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
Econ. 85	3	Econ. 73	3	Econ. 155	3
Econ. 51	3	Econ. 52	3	Econ. 53	3
Econ. 143	4	Econ. 144	4	Econ. 149	3
				Econ. 14	3

SENIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
Econ. 103	3	Econ. 104	3	Econ. 168	3
Econ. 131	3	Econ. 132	3	Econ. 133	3
Econ. 161	3	Econ. 167	3		

I. CHANGES IN CURRICULA

MATHEMATICS

M. & M.12, Trigonometry, will be given to all engineering and architectural freshmen during the fall quarter in place of M. & M. 11, College Algebra. M. & M. 11, College Algebra, will be given during the winter quarter, replacing M. & M. 12, Trigonometry.

Entering freshmen who have not had higher algebra in high school will register for M. & M. 9, Higher Algebra. Those who have had higher algebra will register for M. & M. 12, Trigonometry. All freshmen are given a review in algebra during the first two weeks. Those students who do not show sufficient ability to proceed in Trigonometry will be transferred for the balance of the quarter to Course 9 (Higher Algebra), which carries no credit towards graduation.

Students who do not complete Trigonometry in the fall quarter should plan to take M. & M. 12, 11, and 13 in the winter and spring quarters and Summer Session, respectively.

Those who have had solid geometry but do not complete Trigonometry in the fall quarter will have to postpone Drawing 3 until the Summer Session since they cannot complete its prerequisities. M. & M. 11 and 12 (College Algebra and Trigonometry) until the spring quarter.

CHEMISTRY

Numbers in chemistry courses have been rearranged and grouped under divisions. In all curricula, Chem. 1, 2, 3, 4, 5, or 16 are changed to Inorg. Chem. 1, 2, 3, 4, 5, or 16. Courses 1, 2, 3, 4, and 5 will be titled Inorganic Chemistry.

Chem. 60. Changed to Tech. Chem. 60.

MECHANICAL ENGINEERING

In the junior year, winter quarter, M.E. 34 should read Kinematics instead of Kinematics and Machine Design and the credits should be 2 instead of 4, 1 lecture and 4 laboratory hours.

M.E. 35w, Machine Design, 3 credits, 2 lectures and 6 laboratory hours, is added.

M.E. 43, Steam Engines and Boilers. Title changed to Steam Boilers, Combustions, Fuels. Credits are changed from 3 to 2 with 2 recitations per week in place of 3.

M.E. 35s. Machine Design. Renumbered M.E. 36s.

Under fifth year groups of courses, Econ. 91, Organization and Management, is replaced by Econ. 89, Production Management, in the senior year of the Industrial Management, Automotive Engineering, and General Mechanical Engineering options.

Econ. 92, Business Finance, is replaced by Econ. 155, Corporation Finance, and Econ. 93, Cost Accounting (for engineers), is replaced by Econ. 130, Cost Accounting (General Survey), in the Industrial Management option.

M.E. 163, Power Engineering. Changed to Applied Thermodynamics in the Power Engineering option.

AGRICULTURAL ENGINEERING

Soils 108, Physical Properties of Soils. Renumbered 8.

ENGINEERING ADMINISTRATION

Econ. 91. Principles of Organization and Management. Replaced by Econ. 89, Production Management.

Econ. 92, Business Finance. Replaced by Econ. 155, Corporation Finance.

Econ. 93, Cost Accounting. Replaced by Econ. 130.

II. CHANGES IN LIST OF ELECTIVE COURSES

Draw. 36w,s. Renumbered 51w,s and title changed to Graphs and Charts. Prereq., M. & M. 12, Draw. 1.

Draw. 44f,w,s. Renumbered 34f,w,s.

Draw. 54w,s. Renumbered 35w,s.

Econ. 35. Changed to 3s.

P.H. 3f,w,s. Personal Hygiene, 2 cred.; prereq., none, is added.

Chem. 28f,w. Renumbered Anal. Chem. 9w; prereq., Inorg. Chem. 16.

Chem. 60w,s. Changed to Tech. Chem. 60w,s; prereq., Inorg. Chem. 16.

Chem. 69w,s. Changed to Tech. Chem. 69w,s; prereq., Inorg. Chem. 16.

Chem. 76f-77w, Prerequisites. Changed to include soph. Inorg. Chem. 16.

Chem. 78f, Engineering Chemistry. Replaced by Chem. Eng. 31f, Chemistry of Engineering Materials, 3 cred.; prereq., Inorg. Chem. 16.

Econ. 6f,w,s-7f,w,s. Changed to 6w,s-7f,s.

Econ. 25f,w-26f,w,s. Changed to 25f,w-26w,s.

Econ. 29f. Changed to 29f,s.

Rhet. 31w,s. Changed to Engl. 31w,s.

Pub. Spk. 41w,s. Changed to Engl. 35w,s.

Geol. 1f,w,s-2w,s. Changed to Geol. 1f,w,s-2f,w,s.

M. & M. 99f,w,s. Changed to M. & M. 99f,s.

P.H. 53f. Changed to P.H. 53f,s,su.

Chem. 186s. Changed to Chem. Engr. 41s.

Draw. 38f-39w-40s. Graphs and Charts. Replaced by Draw. 57f-58w-59s, Graphical Methods.

Draw. 111f,w,s-112f,w,s. Changed to 111f,w,s-112f,w,s-113f,w,s.

Draw. 113f,w,s. Changed to 114f,w,s, Perspective.

Draw. 115f-116w-117s. Changed to 215f-216w-217s.

Econ. 72f,s. Changed to Econ. 172f,w,s.

Econ. 91w, Principles of Organization and Management. Replaced by Econ. 89w, Production Management, with the same credits and prerequisites.

Econ. 92w, Business Finance. Replaced by Econ. 155, Corporation Finance, with same credits and prerequisites.

Econ. 93s, Cost Accounting. Renumbered Econ. 130.

E.E. 151f, 152f, Electric Lights. Prerequisites changed to Phys. 35, 43-44.

G.E. 193s, Engineering Practice. Credits changed from 1 to 2.

III. CHANGES IN DESCRIPTION OF COURSES

AGRICULTURAL ENGINEERING

24f,w. Changed to 24w.
25w,s. Changed to 25s.

CHEMISTRY

Chem. Engr. 76f-77w, Applied Electrochemistry. Credits changed from 4 to 3; prereq., soph., jr., Inorg. Chem. 16.

Chem. Engr. 78f, Engineering Chemistry. Number and title changed to Chem. Engr. 31f, Chemistry of Engineering Materials.

Chem. Engr. 186s. Number changed to Chem. Engr. 41s.

CIVIL ENGINEERING

C.E. 11f. Prerequisite changed from M. & M. 13 to M. & M. 12, Draw. 2.

DRAWING

Draw. 3, Descriptive Geometry. Prerequisite changed to M. & M. 11 and 12.

The following courses will not be offered:

Draw. 36, Graphical Methods.
Draw. 38f-39w-40s, Graphs and Charts.
Draw. 47f-48w-49s, Drawing, Engraving, and Decoration.
Draw. 113f,w,s, Perspective.

The following courses will be offered:

Draw. 34f,w,s, Lettering. Study and analysis of single stroke lettering with particular emphasis as applied to engineering drawing. 1 cred.; prereq., Draw. 1. Mr. Quaid.

Draw. 35f,w,s, Advanced Lettering. Will replace Draw. 54f,w,s.

Draw. 44f,w.s, Lettering. Will not be offered for credit to engineering students.

Draw. 51w,s, Graphs and Charts. Will replace Draw. 36w,s, Graphical Methods.

Draw. 57f-58w-59s, Graphical Methods. Will replace Draw. 38f-39w-40s.

Draw. 113f,w,s, Advanced Descriptive Geometry.

Draw. 114f,w,s, Perspective.

Draw. 123f,w,s-124f,w,s-125f,w,s. The Graphic Arts and Sciences. A survey of the development of the method and the process of the graphic arts and sciences. Special reference to the practical application. 9 cred.; open to jr., sr., grad. Mr. Kirchner.

115f-116w-117s, Geometry. Numbers are changed to 215f-216w-217s.

118f,w,s-119w-120s, Nomography. Numbers are changed to 218f,w,s-219w-220s.

ECONOMICS

The following courses will not be given:

Econ. 91w, Principles of Organization and Management. (For engineers.)
Econ. 92s, Business Finance. (For engineers.)
Econ. 93s, Cost Accounting. (For engineers.)

The following courses will replace those given above:

Econ. 89, Production Management. Administration of business enterprises; co-ordination of men and departments; delegation of authority; planning, production control; scientific management. 3 cred.; prereq., 8-9. Mr. O'Hara.

Econ. 130s, Cost Accounting (General survey). 3 cred.; prereq., 29. Mr. Ostlund.

Econ. 155, Corporation Finance. 3 cred.; prereq., 8-9. Mr. Stehman.

72f,s, Economics of Transportation. Changed to 172f,s.

ELECTRICAL ENGINEERING

E.E. 145s. Credits should be 2 cred.

153s. Should be 153w.

HORTICULTURE

The following course will be offered:

Hort. 37w, Principles of Landscape Design. (For senior professional agricultural engineers.) A study of the principles underlying the arranging of land and landscape for human use and enjoyment. 3 cred.; prereq., sr. in Ag. Engr. Mr. Cary.

MATHEMATICS AND MECHANICS

11f,w,s. Changed to 11w,s.

12w,s(su). Changed to 12f,w,s(su).

24f,w. Changed to 24f,w,s.

25w,s(su). Changed to 25f,w,s(su).

26f,s(su). Changed to 26f,w,s(su).

99f,w,s. Changed to 99f,s.

MECHANICAL ENGINEERING

31s, Elementary Machine Design. Changed to 31f,s; credits changed from 2 to 3.

34w, Kinematics and Machine Design. Title changed to Kinematics; credits changed from 4 to 2.

35w, Machine Design. Strength of gear teeth, fly wheels, steam piping, engine details, machine frames. Study and design of valves: D-slide valves, piston and double ported; reversing gears, governors. Lectures and drafting. 3 cred.; prereq., 32. Mr. Martenis.

Old number 35w, Machine Design. Changed to 36s.

43w, Steam Boilers, Combustion, Fuels. Credits changed from 3 to 2; prereq., to Phys. 23 and 24.

137w. Changed to read 137w,s.

MILITARY SCIENCE AND TACTICS

54f-55w-56s, Coast Artillery. Insert after Motor Transport, M.E. 40; prereq., (M.E. 11, 12, 13).

PREVENTIVE MEDICINE AND PUBLIC HEALTH

The following course will be offered:

37f,w,s, Personal Hygiene and Elementary Sanitation. Elementary principles of normal body function. Predisposing and actual causes of disease; ways in which disease may be avoided. 2 cred.; 36 hours; prereq., none. (Students electing this course will be excused from P.H. 12.) Dr. Lees.

SOILS

108w. Changed to 8w.

PROGRAM

AGRICULTURAL ENGINEERING

No.	Title	Hour	Day	Room	Instructor
13f	Tractor and Auto Work I..... (3 cred.; no prereq.)	VI-VIII	TTh	216,37En(F)	Mr. Torrance
19f	Elementary Surveying ..... (3 cred.; prereq., Draw. 3, M.&M. 12)				
	Lect.	VI	M	215En(F)	Mr. Roe
	Lab.	VI-VIII	WF	215, 305En(F)	Mr. Neal
20s	Advanced Surveying ..... (3 cred.; prereq., Ag.E. 19)				
	Lect.	VI	M	215(F)	Mr. Roe
	Lab.	VII-IX	MF	305En(F)	Mr. Neal
23f	General Physics ..... (5 cred.; no prereq.)				
	Lect.	III	TThS	101En(F)	Mr. Stewart
	Lab. Sec. 1	I-II	TS	102En(F)	Mr. Romness
	2	VI-VII	TTh	102En(F)	Mr. Stewart
	3	VI-VII	MW	102En(F)	Mr. Romness
24w	Agricultural Physics I..... (4 cred.; prereq., M.&M. 13 or equiv.)				
	Lect.	II	TThS	101En(F)	Mr. Romness
	Lab.	VII-IX	W or F	103En(F)	Mr. Romness
25s	Agricultural Physics II..... (4 cred.; prereq., Ag.E. 24)				
	Lect.	II	TThS	101En(F)	Mr. Romness
	Lab.	VII-IX	W	103En(F)	Mr. Romness
31f,w,s	Principles of Drainage..... (3 cred.; no prereq.)	III	TThS	215En(F)	Mr. Neal
40f	Mechanical Training I..... (3 cred.; no prereq.)	I-II	MWF	56,106En(F)	Mr. Dent
40s	Mechanical Training I..... (Same as 40f)	V-VI	WF	106,56En(F)	Mr. Dent

AGRONOMY AND FARM MANAGEMENT

No.	Title	Hour	Day	Room	Instructor
1f,w,s	Farm Crops ..... (3 cred.; no prereq.)	III-IV	MWF	2Ad(F)	Mr. Steinmetz

ARCHITECTURE

No.	Title	Hour	Day	Room	Instructor
14f-15w-16s	Architectural History ..... (2 cred. per qtr.; prereq., 33)	III	WF	320E	Mr. Mann
17f-18w-19s	Architectural History ..... (2 cred. per qtr.; prereq., 16)	III	TTh	320E	Mr. Mann
21f,w,s-22f,w,s-23f,w,s	Freehand Drawing ..... (2 cred. per qtr.; no prereq.)				
	Sec. 1	VII-VIII	MWF	417E	Mr. Young
	2	II-III	MWF	417E	

No.	Title	Hour	Day	Room	Instructor
24f,w,s-25f,w,s-26f,w,s	Freehand Drawing ..... (2 cred. per qtr.; prereq., 23)	II-IV	TS	417E	Mr. Burton, Mr. Young
27f,w-28f,w-29f,w	Freehand Drawing ..... (2 cred. per qtr.; prereq., 26)	I-III	MW	417E	Mr. Burton
27s-28s-29s	Freehand Drawing ..... (See 27f,w-28f,w-29f,w)	II-IV	MW	417E	Mr. Burton
31f-32w-33s	Elements of Architecture ..... (5 cred. per qtr.; no prereq.)				
	Lect.	IV	T	320E	Mr. R. T. Jones
			S	320E	
	Lab. Sec. 1	I-III	MWF	309E	Mr. Heath
	2	VII-IX	MWF	309E	
31w-32s	Elements of Architecture..... (5 cred. per qtr.; no prereq.)				
	Lect.	IV	TS	320E	Mr. R. T. Jones
	Lab.	I-III	TThS	309E	Mr. Heath
34f-35f-36f	Architectural Design, Grade I..... (4 cred.; prereq., 33)				
	Sec. Arch.	VI-VIII	MTThF	401E	Mr. Robertson
	Arch. Engr.	VI-VII	M		
		VI-IX	T		
		VI-VIII	WTh	401E	
34w-35w-36w	Architectural Design, Grade I..... (See 34f-35f-36f)				
	Sec. Arch.	VI-VIII	MTThF	401E	Mr. Robertson
	Arch. Engr.	VI-VIII	TTh	401E	
		VI-IX	W		
		VI-VII	F		
34s-35s-36s	Architectural Design, Grade I..... (See 34f-35f-36f)				
	Sec. Arch.	VI-VIII	MWThF	401E	Mr. Robertson
	Arch. Engr.	VI-VII	MW		
		II-V	T		
		VI-IX	Th	401E	
37f,w,s-38f,w,s-39f,w,s	Architectural Design, Grade II..... (7 cred. per qtr.; prereq., 36)	VI-VIII	MWF		
		VI-IX	TTh		
		I-IV	S	317E	Mr. R. C. Jones
44f-45w-46s	Building Construction ..... (2 cred. per qtr.; prereq., 33)	I	TTh	320E	Mr. R. T. Jones
47f-48w-49s	Building Construction ..... (4 cred. per qtr.; prereq., 33)				
	Lect.	I	TTh	320E	Mr. R. T. Jones
	Lab.	VI-VIII	MW	317E(f)	
		VI-VIII	MT	317E(w,s)	
51f-52w-53s	Building Construction ..... (2 cred. per qtr.; prereq., 33)	II	WF	22E(f) 7E(w) 5E(s)	Mr. R. T. Jones
61f	Projection ..... (2 cred.; no prereq.)				
	Lab. Sec. 1	I-III	Th	309E	
	2	VII-IX	T	309E	
62w	Shades and Shadows..... (2 cred.; prereq., 61)				
	Lab. Sec. 1	I-III	Th	309E	
	2	VI-VIII	T	309E	

No.	Title	Hour	Day	Room	Instructor
63s	Perspective ..... (2 cred.; prereq., 61)				
	Lab. Sec. 1	VII-IX	Th	309E	
	2	I-III	Th	309E	
64s	Interior Perspective ..... (1 cred.; prereq., 33)	Ar	Ar	Ar	
74f-75w-76s	Freehand Drawing ..... (3 cred.; prereq., 23)	II-IV	MTS	417E	Mr. Burton
81f,w	Stage Design ..... (2 cred.; no prereq.)	VI-VIII	TTh	405E	Mr. Burton
82w	Advanced Stage Design..... (2 cred.; prereq., 81)	VI-VIII	TTh	405E	Mr. Burton
84f,w,s-85f,w,s-86f,w,s	Modeling ..... (2 cred. per qtr.; prereq., 29)				
	Sec. 1	VI-VIII	M	405E	Mr. Burton
	2	VI-VIII	W	405E	
87f,w,s-88f,w,s-89f,w,s	Hand Print Process..... (1 cred. per qtr.; prereq., 29)	VI-VIII	T	405E	Mr. Burton, Mr. Young
90f,w,s-91f,w,s-92f,w,s	Illustration ..... (1 cred. per qtr.; prereq., 29)	VI-VIII	T	405E	Mr. Young
121f,w,s-122f,w,s-123f,w,s	Freehand Drawing ..... (2 cred. per qtr.; prereq., 29)	Ar	Ar	Ar	Mr. Burton
131f,w,s-132f,w,s-133f,w,s	Architectural Design, Grade III... (10 cred. per qtr.; prereq., 39)	III-IV	MTWF		
		VI-IX	MTWThF		
		III	Th	302E	Mr. Arnal
134f,w,s-135f,w,s-136f,w,s	Interior Decoration Design..... (7 cred. per qtr.; prereq., 36)	VI-VIII	MWF		
		VI-IX	TTh		
		I-IV	S	302E	Mr. Arnal
141f-142w-143s	Building Construction ..... (2 cred. per qtr.; prereq., C.E. 41 or M.&M. 26)	II	TTh	320E	Mr. R. T. Jones
151f	Architectural Seminar ..... (1 cred.; prereq., sr. standing)	II	F	320E	Mr. Mann
152w	Estimating ..... (1 cred.; prereq., sr. standing)	I	F	320E	Mr. Sault
153s	Business Relations ..... (2 cred.; prereq., sr. standing)	II	F	320E	Mr. Mann
160f	History of Landscape Design..... (2 cred.; prereq., 16)	Ar	Ar	Ar	Mr. Mann
161f	Decoration and Applied Arts..... (2 cred.; prereq., 16, 26)	II	MW	320E	Mr. Mann
162w	Landscape Design ..... (2 cred.; prereq., 39)	II	MW	320E	Mr. Nichols
163s	History of Sculpture and Painting.. (2 cred.; prereq., sr. standing)	I	WF	320E	Mr. Burton
164s	Landscape Design ..... (2 cred.; prereq., 162)	Ar	Ar	Ar	Mr. Mann
182f-183w	Furniture and Decoration..... (3 cred. per qtr.; prereq., 16, 26)	IV	MWF	135E	Mr. Burton
184s	Furniture and Decoration..... (1 cred.; prereq., 183)	III	M	320E	Mr. Mann

ART EDUCATION

No.	Title	Hour	Day	Room	Instructor
20f-21w-22s	Principles of Design in Form and Color ..... (3 cred. per qtr.; prereq., 9 cred. in design)	(I) II (III)	TThS	404F	Mr. Hilpert

ASTRONOMY

No.	Title	Hour	Day	Room	Instructor
15f,w,s	Descriptive Astronomy for Engineers (3 cred.; prereq., M.&M. 12)	II	MWF	135E	Mr. Beal
30s	Field Astronomy for Engineers..... (3 cred.; prereq., M.&M. 12, 1 qtr. surv., Ast. 11 or 15)	IV	MWF	135E	Mr. Beal

INORGANIC CHEMISTRY

No.	Tit'e	Hour	Day	Room	Instructor
1f-2w-3s	Inorganic Chemistry ..... (4 cred. per qtr.; prereq., jr. arch. only)				
	Lect.	VI	MWF	225C	Mr. Reyerson
	Lab. Sec. 1	VI-VII	TTh	110C	Mr. Reyerson
	Sec. 2	VIII-IX	TTh	110C	
4f	Inorganic Chemistry ..... (4 cred.; prereq., h.s. chem.)				
	Lect. Sec. 1	I	TThS	100C	Mr. Heisig
	2	IV	TS		
		VI	Th	100C	
	3	I	TThS	100C	Mr. Heisig
	Quiz	VIII	M	100C	
	Lect. Sec. 1	VI-VIII	F	110C	Mr. Heisig
	2	II-IV	M	110C	
	3	III-V	T	110C	Mr. Heisig
5w	Inorganic Chemistry ..... (4 cred.; prereq., Inorganic 4)				
	Lect. Sec. 1	IV	TS		
		VI	Th	100C	
	2	I	TThS	100C	Mr. Heisig
	Quiz Sec. 1	VII	M	490C	
	2	VIII	F	100C	Mr. Heisig
	Lab. Sec. 1	VI-VIII	F	110C	
	2	II-IV	S	110C	Mr. Heisig
9w-10s	Inorganic Chemistry ..... (5 cred.; prereq., h.s. chemistry)				
	Lect.	III	MWF	100C	
	Lab. Sec. 1	V-VI	MWF	290C	
	2	VIII-IX	MWF	290C	
12f	Qualitative Chemical Analysis..... (5 cred.; prereq., Inorganic 5 or 15)				
	Lect.	I	TThS	325C	Mr. Maynard
	Lab.	VI-VIII	MW	290C	

No.	Title	Hour	Day	Room	Instructor
14f	Inorganic Chemistry				
	(5 cred.; no prereq.)				
	Lect.	II	TThS	100C	Mr. Heisig
	Lab.	VI-IX	T		
		II-III	F	110C	Mr.Heisig
	Quiz	VIII	M	490C	
15w	Inorganic Chemistry				
	(5 cred.; prereq., Inorganic 14)				
	Lect.	II	TThS	100C	Mr. Heisig
	Lab.	VI-IX	T		
		VI-VII	Th	110C	Mr. Heisig
	Quiz	VIII	M	100C	
16s	Qualitative Analysis				
	(5 cred.; prereq., Inorganic 5 or 15)				
	Lect. Sec. 1	VII	MWF	100C	
	2	I	TThS	100C	Mr. Heisig
	3	II	TThS	100C	Mr. Heisig
	Lab. Sec. 1	IV-V	T		
		VI-IX	Th	110C	
	2	VI-IX	M		
		VI-VII	W	110C	Mr. Heisig
	3	VIII-IX	W		
		VI-IX	F	110C	Mr. Heisig

ANALYTICAL CHEMISTRY

9w	Analytical Chemistry				
	(3 cred.; prereq., Inorganic 16)				
	Lect.	VI	T	325C	Mr. Geiger
	Lab.	VII-IX	T		
		VI-IX	Th	310C	

TECHNOLOGICAL CHEMISTRY

60f,w,s	Power Plant Chemistry.....				
	(3 cred.; prereq., Inorganic 16)				
	Lect.	IV	W	215C	Mr. Brewer
	Lab.	VI-IX	MW	10C	
69w	Boiler Water and Petroleum Products				
	(2 to 3 cred.; prereq., Technological 60)				
	Lect.	I	T	215C	Mr. Harding
	Lab.	VI-IX	T	10C	
	or				
		VI-IX	TTh	10C	
69s	Boiler Water and Petroleum Products				
	(See 69w)				
	Lect.	IV	M	215C	Mr. Harding
	Lab.	VI-IX	M	10C	
	or				
		VI-IX	MF	10C	

CHEMICAL ENGINEERING

No.	Title	Hour	Day	Room	Instructor
31f	Chemistry of Engineering Materials (3 cred.; prereq., Inorganic 16)	IV	MWF	115C	Mr. Montonna
41s	Gas Manufacture and Distribution.. (3 cred.; prereq., 2 yrs. of engineering)	Ar	Ar	Ar	Mr. Montillon
76f-77w	Applied Electrochemistry ..... (3 cred.; soph., jr., or sr.; prereq., ar.)	Ar	Ar	Ar	Mr. Montillon

CIVIL ENGINEERING

No.	Title	Hour	Day	Room	Instructor
11f	Surveying ..... (3 cred.; prereq., M.&M. 12, Dr. 2)				
	Lect. Sec. 1	III	M	21E	Mr. Boon
	2	VI	Th	21E	
	Lab. Sec. 1	I-IV	T		
		VII-IX	Th	1E	Mr. Boon
	2	VI-VIII	M		
		VI-IX	T	1E	
	3	VII-VIII	W		
		I-IV	S	225E	
12w	Surveying ..... (3 cred.; prereq., 11)				
	Lect. Sec. 1	III	M	21E	Mr. Boon
	2	II	T	21E	
	Lab. Sec. 1	I-IV	T		Mr. Cutler
		VII-IX	Th	1E	Mr. Zelner
	2	VI-IX	T		Mr. Zelner
		VI-VIII	M	1E	Mr. Cutler
	3	VI-VIII	W		Mr. Cutler
		I-IV	S	217E	Mr. Zelner
13s	Surveying ..... (3 cred.; prereq., 12)				
	Lect. Sec. 1	I	Th	21E	Mr. Cutler
	2	III	Th	21E	
	Lab. Sec. 1	I-IV	T		Mr. Cutler
		VI-VIII	Th	217E	Mr. Boon
	2	VII-IX	W		Mr. Boon
		VI-IX	Th	1E	Mr. Cutler
	3	I-III	T		Mr. Boon
		I-IV	S	101E	Mr. Cutler
14f	Surveying ..... (3 cred.; prereq., 13)				
	Sec. 1	VI-IX	TW	229E	Mr. Zelner
	2	VI-IX	F		
		I-IV	S	217E	
	3	VI-IX	M	229E	
		I-IV	T	229E	
15w	Surveying ..... (2 cred.; prereq., 14)				
	Sec. 1	VII-VIII	W		Mr. Zelner
		II-III	Th	21E	
	2	II-III	WF	21E	

No.	Title	Hour	Day	Room	Instructor
16s	Surveying				
	(2 cred.; prereq., 15)				
	Sec. 1	III-IV	W		Mr. Zelner
		VI-IX	Th	225E	
	2	VI-VII	T		
		I-IV	S	229E	
17w	Surveying	Ar	Ar	Ar	Mr. Zelner
	(2 cred.; prereq., trig.)				
18s	Surveying	VI-IX	MF	21E	Mr. Cutler, Mr. Zelner
	(3 cred.; prereq., M.&M. 13, Dr. 2)				
19s	Surveying	Ar	Ar	Ar	Mr. Cutler, Mr. Zelner
	(3 cred.; prereq., trig.)				
21w	Railway Engineering				
	(2 cred.; prereq., 14)				
	Lect.	I	T	136E	Mr. Boon
	Lab. Sec. 1	I-IV	S	229E	
	2	VI-IX	M	229E	
	3	VI-IX	F	225E	
22s	Railway Engineering				
	(2 cred.; prereq., 21)				
	Lect.	IV	T	215E	Mr. Boon
	Lab. Sec. 1	VI-IX	F	225E	Mr. Cutler
	2	VI-IX	M	229E	
23su	Summer Camp.....	About Aug. 15			Mr. Boon, Mr. Cutler, Mr. Zelner
	(9 cred.; prereq., 16, 22)				
31f	Stresses in Structures.....				
	(3 cred.; prereq., M.&M. 26, Dr. 23)				
	Lect. Sec. 1	III	Th	205E	Mr. Parcel
	2	I	F	106E	
	Lab. Sec. 1	III-IV	T	Ex	Mr. Lagaard
		I-IV	S	229E	
	2	VI-IX	M	217E	
		VI-VII	Th	Ex	Mr. Lagaard
	3	II-III	W	Ex	Mr. Lagaard
		VI-IX	F	229E	
32w	Stresses in Structures.....				
	(3 cred.; prereq., 31)				
	Lect. Sec. 1	VI	W	205E	Mr. Parcel
	2	III	Th	107E	
	Lab. Sec. 1	VI-IX	T	229E	
		III-IV	W	Ex	Mr. Lagaard
	2	I-II	W	Ex	
		VI-IX	F	229E	Mr. Lagaard
	3	VI-IX	Th	229E	
		II-III	S	Ex	Mr. Lagaard
33s	Elementary Structural Design.....				
	(3 cred.; prereq., M.&M. 128, C.E. 32)				
	Lect.	VI	W	136E	Mr. Parcel
	Lab. Sec. 1	III-IV	M	Ex	Mr. Lagaard
		VI-IX	T	225E	
	2	VI-VII	Th	Ex	Mr. Lagaard
		VI-IX	F	229E	
37s	Structural Engineering	VI-IX	WTh	229E	Mr. Lagaard
	(3 cred.; prereq., M.&M. 26)				

No.	Title	Hour	Day	Room	Instructor
38f	Stresses in Structures (Arch.).....	I-II	TThF	401E	Mr. Parcel
	(3 cred.; prereq., M.&M. 93)				
39w	Structural Design (Arch.).....	I-II	TThF	401E	Mr. Parcel
	(3 cred.; prereq., 38)				
41s	Reinforced Concrete (Arch.).....	II-III	F		Mr. Parcel
	(3 cred.; prereq., M.&M. 93)	I-II	TTh	401E	
51f	Highways and Pavements.....				
	(3 cred.; prereq., 12)				
	Lect. Sec. 1	I	Th	215Ex	Mr. Lang
		II	Th	215Ex	
	Lab. Sec. 1	VI-IX	MF	215Ex	Mr. Lang, Mr. Hill
		VI-VIII	F		
	2	VI-IX	T	215Ex	
		VI-VIII	W		
	3	VI-IX	Th		
		II-IV	S	215Ex	
52w	Highways and Pavements.....				
	(3 cred.; prereq., 51)				
	Lect.	IV	T	215Ex	Mr. Lang
	Lab. Sec. 1	VI-IX	M		Mr. Lang, Mr. Hill
		VI-VII	F	215Ex	
	2	VI-IX	Th		
		I-II	S	215Ex	
	3	VI-VII	W		
		VI-IX	T	215Ex	
53s	Civil Engineering Practice.....				
	(3 cred.; no prereq.)				
	Sec. 1	I	TTh	136E	Mr. Bass
		VII	W	215E	
	2	I	TTh	136E	
		I	M	215E	
121f	Railway Engineering				
	(3 cred.; prereq., 23)				
	Lect.	III	F	21E	Mr. Cutler
	Lab. Sec. 1	II-IV	TW	227E	Mr. Cutler
	2	VI-VIII	MTh	225E	
122w,s	Railway Engineering				
	(3 cred.; prereq., 23)				
	Lab.	Ar	Ar	Ar	Mr. Cutler
123s	Railway Engineering				
	(3 cred.; prereq., 23)				
	Lab.	Ar	Ar	Ar	Mr. Cutler
124w	Transportation	II	WS		
	(3 cred.; prereq., 121)	VI	Th	136E	Mr. Cutler
125s	Transportation	Ar	Ar	Ar	Mr. Cutler
	(3 cred.; prereq., 121)				
131f	Bridge Analysis				
	(3 cred.; prereq., 33)				
	Sec. 1	VI-VIII	Th		
		I-III	S	227E	Mr. Parcel
	2	II-IV	T		
		II-IV	W	217E	

No.	Title	Hour	Day	Room	Instructor
132w	Bridge Design				
	(3 cred.; prereq., 131)				
	Sec. 1	II-IV	T		
		VI-VIII	F	227E	Mr. Parcel
	2	VI-VIII	M		
		II-IV	F	227E	
133s	Bridge Design	Ar	Ar	Ar	Mr. Parcel
	(3 cred.; prereq., 132)				
134s	Statically Indeterminate Structures.				
	(3 cred.; prereq., 132, 142)				
	Lect.	III	Th	203E	
	Lab.	VI-IX	M		
		VI-VII	T	227E	Mr. Parcel
135s	Reinforced Concrete Design.....	III-IV	M		
	(4 cred.; prereq., 33)	VI-IX	T	217E	Mr. Parcel
141f	Reinforced Concrete				
	(3 cred.; prereq., M.&M. 128)				
	Sec. 1	VI-IX	M		
		I-III	Th	227E	Mr. Maney
	2	VI-VIII	T		
		VI-IX	F	225E	
141(a)f	Reinforced Concrete (Arch. Engr.)	VI-IX	T		
	(3 cred.; prereq., M.&M. 128)	VI-IX	F	227E	Mr. Maney
142w	Reinforced Concrete Design.....				
	(3 cred.; prereq., 141)				
	Sec. 1	VI-IX	M		
		II-IV	F	225E	Mr. Maney
	2	VI-IX	W		
		VII-IX	Th	225E	
142(a)w	Reinforced Concrete Design (Arch. Engr.)	VI-IX	W		
	(3 cred.; prereq., 141a)	VI-IX	Th	225E	Mr. Maney
143s	Reinforced Concrete Analysis.....	Ar	Ar	Ar	Mr. Maney
	(3 cred.; prereq., 142)				
144f	Reinforced Concrete	Ar	Ar	Ar	Mr. Lagaard
	(3 cred.; prereq., M.&M. 127, 128)				
146f	Cement and Concrete Laboratory...	III-IV	M		
	(3 cred.; prereq., M.&M. 141)	VI-IX	W	Ex	Mr. Lagaard
146w	Cement and Concrete Laboratory...	VI-IX	T		
	(See 146f)	VI-VII	F	Ex	Mr. Lagaard
146s	Cement and Concrete Laboratory...	VI-IX	Th		
	(See 146f)	VI-VII	F	Ex	Mr. Lagaard
147w	Foundations				
	(2 cred.; prereq., 33)				
	Lect.	Ar	Ar	Ar	Mr. Maney
	Lab.	Ar	Ar	Ar	
147s	Foundations				
	(See 147w)				
	Lect.	Ar	Ar	Ar	Mr. Maney
	Lab.	Ar	Ar	Ar	
156w	Highway Transport	Ar	Ar	Ar	Mr. Lang
	(3 cred.; prereq., 52)				
157s	Highway Transport	Ar	Ar	Ar	Mr. Lang.
	(3 cred.; prereq., 156)				

No.	Title	Hour	Day	Room	Instructor
161f	Hydrology				
	(3 cred.; prereq., sr. only)				
	Lect.	II	MF	107E	Mr. Bass
	Lab. Sec. 1	VI-VIII	T	227E	
	2	I-III	Th	225E	
162f	Water Supply and Sewerage.....				
	(3 cred.; prereq., 162)				
	Lect.	III	M	135E	Mr. Bass
	Lab.	I-IV	T	225E	
		II-III	W		
162w	Water Supply and Sewerage.....				
	(See 162f)				
	Lect.	III	MW	135E	Mr. Bass
	Lab.	VI-IX	T	225E	
163w	Water Supply and Sewerage.....				
	(3 cred.; prereq., M.&M. 129)				
	Lect.	I	F	22E	Mr. Bass
		IV	W	7E	
	Lab.	II-III	Th		
		VII-IX	Th	227E	
163s	Water Supply and Sewerage.....				
	(See 163w)				
	Lect.	II	Th	107E	Mr. Bass
	Lab.	II-III	WF		
		II-IV	S	227E	
164f	Water Power				
	(3 cred.; prereq., M.&M. 129)				
	Lect.	I	T	106E	Mr. Hill
	Lab.	III-IV	M		
		VI-IX	W	227E	
164w	Water Power				
	(See 164f)				
	Lect.	I	M	203E	Mr. Hill
	Lab.	VI-IX	W		
		III-IV	S	227E	
164s	Water Power				
	(See 164f)				
	Lect.	VI	Th	215E	Mr. Hill
	Lab.	VII-VIII	Th		
		VI-IX	F	227E	
171w	Building Sanitation	II	FS	320E	Mr. Bass
	(2 cred.; prereq., sr. Arch. only)				
221f-222w-223s	Railway Administration	Ar	Ar	Ar	Mr. Cutler
	(3 cred.; prereq., 122)				
224f	Railway Terminals and Yards.....	Ar	Ar	Ar	Mr. Cutler
	(3 cred.; prereq., 122)				
234f-235w-236s	Advanced Structural Design	Ar	Ar	Ar	Mr. Parcel
	(3 cred. per qtr.; prereq., 133, 142)				
237w-238s	Structural Laboratory	Ar	Ar	Ar	Mr. Lagaard
	(3 to 5 cred. per qtr.; prereq., 133)				
245f-246w-247s	Advanced Reinforced Concrete Analysis	Ar	Ar	Ar	Mr. Lagaard, Mr. Maney
	(3 cred. per qtr.; prereq., 142)				
251s	Highway Laboratory	Ar	Ar	Ar	Mr. Lang
	(3 to 5 cred. per qtr.; prereq., 52)				
252s	Highway Design	Ar	Ar	Ar	Mr. Lang
	(3 cred.; prereq., 52)				

No.	Title	Hour	Day	Room	Instructor
261f-262w	Water and Sewage Purification..... (3 to 5 cred. per qtr.; prereq., 162)	Ar	Ar	Ar	Mr. Bass
263s	Hydraulic Laboratory ..... (3 to 5 cred.; prereq., 164)	Ar	Ar	Ar	
272f	City Planning ..... (3 to 5 cred.; prereq., 52)	Ar	Ar	Ar	Mr. Bass, Mr. Mann
280f-281w-282s	Civil Engineering Research..... (5 cred. per qtr.; prereq., by permission)	Ar	Ar	Ar	Mr. Bass, Mr. Cutler, Mr. Lagaard, Mr. Lang, Mr. Maney, Mr. Parcel

DRAWING AND DESCRIPTIVE GEOMETRY

No.	Title		Hour	Day	Room	Instructor
1f	Engineering Drawing ..... (3 cred.; prereq., Solid Geometry)					Mr. Kirchner, Mr. Archibald, Mr. Potter, Mr. Schuck, Mr. Cruzen, Mr. Levens, Mr. Quaid, Mr. Schultz, Mr. Williams
		Sec. 1	I-II	MWF		
			VI-VII	T	411C	
		2	I-II	MWF		
			VI-VII	T	415C	
		3	I-II	MWF		
			VI-VII	T	417C	
		4	I-II	MWF		
			VI-VII	T	443C	
		5	I-II	TThS		
			VIII-IX	T	411C	
		6	I-II	TThS		
			VIII-IX	T	415C	
		7	I-II	TThS		
			VIII-IX	T	417C	
		8	I-II	TThS		
			VIII-IX	T	443C	
		9	III-IV	MWFS	411C	
		10	III-IV	MWFS	415C	
		11	III-IV	MWFS	417C	
		12	III-IV	MWFS	443C	
		13	VI-VII	MWThF	411C	
		14	VI-VII	MWThF	415C	
		15	VI-VII	MWThF	417C	
		16	VI-VII	MWThF	443C	
1w	Engineering Drawing ..... (See 1f)					
		Sec. 1	I-II	MWTh		
			VI-VII	T	411C	
		2	I-II	MWTh		
			VI-VII	T	415C	
		3	I-II	TS		
			VIII-IX	T		
			VI-VII	Th	411C	
		4	I-II	TS		
			VIII-IX	T		
			VI-VII	Th	415C	
		5	III-IV	MTWF	411C	
		6	III-IV	MTWF	415C	
		7	VI-VII	MWF		
			I-II	F	411C	
		8	VI-VII	MWF		
			I-II	F	415C	

No.	Title	Hour	Day	Room	Instructor
2w	Engineering Drawing				
	(3 cred.; prereq., 1)				Mr. Archibald,
	Sec. 1	I-II	MWTh		Mr. Myers,
		VI-VII	T	417C	Mr. Potter,
	2	I-II	MWTh		Mr. Schuck,
		VI-VII	T	443C	Mr. Cruzen,
	3	I-II	MWTh		Mr. Levens,
		VI-VII	T	445C	Mr. Quaid,
	4	VIII-IX	T		Mr. Schultz,
		VI-VII	Th		Mr. Williams
		I-II	TS	417C	
	5	VIII-IX	T		
		VI-VII	Th		
		I-II	TS	443C	
	6	VIII-IX	F		
		VI-VII	Th		
		I-II	TS	445C	
	7	III-IV	MTWF	417C	
	8	III-IV	MTWF	443C	
	9	III-IV	MTWF	445C	
	10	VI-VII	MWF		
		I-II	F	417C	
	11	VI-VII	MWF		
		I-II	F	443C	
	12	VI-VII	MWF		
		I-II	F	445C	
2s	Engineering Drawing				
	(See 2w)				
	Sec. 1	I-II	MTWTh	411C	
	2	I-II	MTWTh	415C	
	3	VIII-IX	MWTh		
		I-II	S	411C	
	4	VIII-IX	MWTh		
		I-II	S	415C	
	5	III-IV	MTWS	411C	
	6	III-IV	MTWS	415C	
	7	VI-VII	MWTh		
		I-II	F	411C	
	8	VI-VII	MWTh		
		I-II	F	415C	
3f	Descriptive Geometry				Mr. Kirchner,
	(3 cred.; prereq., 2, M.&M. 11, 12)				Mr. Archibald,
	Sec. 1	II	MWF	139EE	Mr. French,
	2	VIII	MWF	205E	Mr. Eggers,
	3	III	MWF	209Ex	Mr. Myers,
3w	Descriptive Geometry	VII	MWF	205E	Mr. Potter,
	(See 3f)				Mr. Schuck,
					Mr. Levens,
					Mr. Williams

No.	Title	Hour	Day	Room	Instructor
3s	Descriptive Geometry				
	(See 3f)				
	Sec. 1	I-II	MTWTh	417C	
	2	I-II	MTWTh	443C	
	3	VIII-IX	MWTh		
		I-II	S	417C	
	4	VIII-IX	MWTh		
		I-II	S	443C	
	5	III-IV	MTWS	417C	
	6	III-IV	MTWS	443C	
	7	VI-VII	MWTh		
		I-II	F	417C	
	8	VI-VII	MWTh		
		I-II	F	443C	
4f	Engineering Drawing (Chem.).....				
	(2 cred.; prereq., Solid Geometry)				
	Sec. 1	VIII-IX	MW		Mr. Schuck,
		III-IV	T	445C	Mr. Williams
	2	VIII-IX	MW		
		III-IV	T	443C	
5w	Engineering Drawing (Chem.).....	VIII-IX	MT		
	(2 cred.; prereq., 4)	III-IV	T	217E	Mr. Williams
6s	Engineering Drawing and Descriptive Geometry (Chem.).....	VIII-IX	MTh		
	(2 cred.; prereq., 5)	I-II	T	1E	Mr. Williams
7w	Engineering Drawing (Chem.).....	VI-VIII	MT		
	(3 cred.; prereq., M.&M. 10)	VIII-IX	W	101E	Mr. Schuck
8s	Engineering Drawing and Descriptive Geometry (Chem.).....	VIII-IX	MTh		
		I-II	T		
	(3 cred.; prereq., 7)	VII-VIII	F	445C	Mr. Schuck
9f,w,s	Drafting (Chem. Engr.).....	Ar	Ar	Ar	Mr. French
	(2 to 6 cred.; prereq., 6 or 8)				
M.&M.10f	Solid Geometry				
	(No cred.; no prereq.)				
	Sec. 1	II	MWF		Mr. Archibald,
		VI	T	7E	Mr. Schuck,
	2	I	TThS		Mr. Levens,
		II	S	104E	Mr. Quaid
	3	III	MWFS	139EE	
	4	VII	MWTh		
		VIII	W	136E	
11f	Engineering Drawing (Mines).....	III-IV	MTWFS	101E	Mr. Potter
	(4 cred.; no prereq.)				
12w-13s	Engineering Drawing (Mines).....	III-IV	TWFS	201E	Mr. Potter
	(3 cred.; prereq., 11)				
14w	Descriptive Geometry (Mines).....	I	MWF	206E	Mr. Myers
	(3 cred.; prereq., 13, Math. 5)				
15w	Drafting (Mines)	III-IV	WF	229E	Mr. Myers
	(2 cred.; prereq., reg. in 14)				
21f	Drafting (C.E.)				
	(2 cred.; prereq., 3)				
	Sec. 1	III-IV	WFS	1E	Mr. French,
	2	II-III	Th		Mr. Myers
		I-II	S		
		VI-VII	F	1E	
	3	VI-VII	T		
		II-III	Th		
		VII-VIII	Th	217E	

No.	Title	Hour	Day	Room	Instructor
21w	Drafting (C.E.)	III-IV	WFS	1E	Mr. Levens
	(See 21f)				
21s	Drafting (C.E.)	VI-VII	MWF	101E	Mr. Archibald
	(See 21f)				
22w	Drafting (C.E.)				
	(2 cred.; prereq., 21)				
	Sec. 1	I-II	ThS		Mr. French
		VI-VII	F	1E	Mr. Myers
	2	I-II	Th		
		VI-VII	TF	217E	
22s	Drafting (C.E.)	VI-VII	MWF	217E	Mr. Levens
	(See 22w)				
23s	Drafting (C.E.)				
	(2 cred.; prereq., 22)				
	Sec. 1	III-IV	MWF	1E	Mr. Archibald
	2	III-IV	MWF	101E	Mr. Levens
26f	Drafting (E.E.)				
	(2 cred.; prereq., 3)				
	Sec. 1	VI-VII	TTh		Mr. Quaid
		III-IV	S	201E	
	2	II-III	MWF	201E	
	3	I-II	TThS	101E	
	4	VI-VII	TThF	101E	
26w	Drafting (E.E.).....	I-II	TThS	101E	Mr. Schultz
	(See 26f)				
26s	Drafting (E.E.)	VIII-IX	MWF	101E	Mr. Quaid
	(See 26f)				
27w	Drafting (E.E.)				
	(2 cred.; prereq., 26)				
	Sec. 1	III-IV	MTW	101E	Mr. Eggers,
	2	II-III	MWF	217E	Mr. Schultz
	3	VI-VII	Th		
		III-IV	FS	101E	
27s	Drafting (E.E.)	VIII-IX	MWF	201E	Mr. Williams
	(See 27w)				
28f	Drafting (M.E.)				
	(2 cred.; prereq., 3)				
	Sec. 1	VIII-IX	TTh		Mr. Potter,
		I-II	S	201E	Mr. Williams
	2	I-II	TTh		
		VI-VII	F	201E	
28w	Drafting (M.E.)	VI-VII	MW		
	(See 28f)	I-II	Th	201E	Mr. Williams
28s	Drafting (M.E.)	VIII-IX	MWF	217E	Mr. Schultz
	(See 28f)				
29w	Drafting (M.E.)				
	(2 cred.; prereq., 28)				
	Sec. 1	III-IV	M		Mr. Potter,
		VIII-IX	Th		Mr. Williams
		I-II	S	201E	
	2	I-II	T		
		VI-VII	ThF	201E	
29s	Drafting (M.E.)	VI-VII	MWF	201E	Mr. Williams
	(See 29w)				
34fw,s,	Lettering				
	(1 cred.; prereq., Draw. 1)				
	Sec. 1	IV	T	203E	Mr. Quaid
		II	Th	203E	

No.	Title	Hour	Day	Room	Instructor
35f,w,s	Advanced Lettering ..... (1 cred.; prereq., any Lettering course)	II	F	136EE	Mr. Levens
37f,w,s	Lettering for Engineers..... (2 cred.; prereq., 2)	I	WF	215E	Mr. Schuck
41f,w,s-42f,w,s-43f,w,s	Technical Drawing ..... (2 cred. per qtr.; no prereq.)				
	Sec. 1	III-IV	MWF	455C	Mr. Kirchner
	2	VI-VII	MWF	455C	
	3	VIII-IX	MWF	455C	
44f,w,s	Lettering ..... (1 cred.; no prereq.)				
	Sec. 1	IV	T	7E	Mr. Levens,
	2	II	Th	7E	Mr. Schuck
45f,w,s-46f,w,s	Alphabets ..... (2 cred. per qtr.; no prereq.)	II	TTh	206E	Mr. Kirchner, Mr. Schuck
50w,s	Diagrams and Charts ..... (2 cred.; no prereq.)	I	TTh	203E	Mr. Kirchner, Mr. Eggers, Mr. Myers, Mr. Levens
51w	Graphs and Charts..... (3 cred.; prereq., Dr. 1, M.&M. 12)	II	TW		Mr. Schuck
		VII	Th	139EE	
51s	Graphs and Charts..... (See 51w)				
	Sec. 1	VIII	MWF	7E	Mr. Schuck
	2	III	TThS	36EE	
57f-58w-59s	Graphical Methods ..... (2 cred. per qtr.; prereq., Soph. Draw., M.&M. 26)	I	WF	203E	Mr. Levens
63s	Descriptive Geometry ..... (3 cred.; prereq., 21, 26, or 28)	Ar	Ar	Ar	Mr. French
64f.w,s	Commercial Drafting Practice (C.E.) (2 or 3 cred. per qtr.; prereq., 22)	Ar	Ar	Ar	Mr. French
65f,w,s	Commercial Drafting Practice (E.E. and M.E.) ..... (2 or 3 cred. per qtr.; prereq., 27 or 29)	Ar	Ar	Ar	Mr. French
69f,w,s	Exercises in Lettering..... (1 cred.; see School of Nursing bulletin)				Mr. Myers
71f,w,s	Graphics for Electrical Engineers... (3 cred.; prereq., 27, E.E. 111)	I	MWF	7E	Mr. Eggers
111f,w,s-112f,w,s-113f,w,s	Advanced Descriptive Geometry.... (3 cred. per qtr.; prereq., 3, Calculus)	Ar	Ar	Ar	Mr. Kirchner
114f,w,s	Perspective ..... (3 cred.; prereq., 63)	Ar	Ar	Ar	Mr. Kirchner
123f-124w-125s	The Graphic Arts and Sciences.... (3 cred. per qtr.; open to jr., sr., grad.)	II	MWF	206E	Mr. Kirchner
215f-216w-217s	Geometry ..... (3 cred. per qtr.; prereq., Calculus)	Ar	Ar	Ar	Mr. Kirchner
218f,w,s-219w-220s	Nomography ..... (3 cred. per qtr.; prereq., 3, M.&M. 128)	Ar	Ar		Mr. Kirchner, Mr. Levens

ECONOMICS

No.	Title	Hour	Day	Room	Instructor
8f-9w-10s	General Economics				
	(3 cred. per qtr.; no prereq.)				
	Sec. 1	I	MWF	107E	Mr. O'Hara
	2	I	MWF	21E	
	3	III	MWF	135E	
	4	IV	MWF	205E	
	5	IV	MWF	329EE	
				206E (winter)	
25w-26s	Principles of Accounting.....				
	(4 cred. per qtr.; prereq., 8-9)				
	Lect. Sec. 1	II	MWF	303B	Mr. Heilman
	2	I	TThS	301B (winter)	
				302B (spring)	
	3	III	MWF	303B	
	4	IV	MWF	301B (winter)	
			-	302B (spring)	
	5	VI	MWF	302B (winter only)	
	(Laboratory sections to be arranged)				
28f,s	Business Law	I	MWF	135E	Mr. Palmer
	(3 cred.; prereq., 8-9)				
29f	Principles of Accounting.....				
	(3 cred.; no prereq.)				
	Sec. 1	I	MWF	22E	Mr. Heilman
	2	IV	MWF	136EE	
29s	Principles of Economics.....	I	MWF	206E	Mr. Heilman
	(See 29f)				
51f-52w-53s	Business Law				
	(3 cred. per qtr.; prereq., 9 cred. in econ. or pol. sci.)				
	Lect.	II	WF	OLAud	Mr. Young
	Sec. 1	I	M	217F	
	2	II	M	217F	
	3	IV	M	108F	
	4	VI	M	304F	
	5	I	T	217F	
	6	II	T	217F	
	7	IV	T	217F	
	8	VI	T	108F	
73w	Railway Traffic and Rates.....	VII	MWF	202B	Mr. Cummings
	(3 cred.; prereq., 8-9)				
85f	Economics of Marketing.....				
	(3 cred.; prereq., 8-9)				
	Lect.	I	T	202B	Mr. Vaile
	Sec. 1	I	ThS	202B	
	2	I	WF	209B	
	3	III	ThS	213B	
85s	Economics of Marketing.....				
	(See 85f)				
	Lect.	I	T	202B	Mr. Vaile
	Sec. 1	I	ThS	202B	
	2	I	WF	209B	
	3	III	ThS	213B	
89w	Production Management	I	TThS	6B	Mr. O'Hara
	(3 cred.; prereq., jr. with 8-9, sr. no prereq.)				

No.	Title	Hour	Day	Room	Instructor
130s	Cost Accounting (General survey).. (3 cred.; prereq., 29)	I	TThS	303B	Mr. Ostlund
131f-132w-133s†	Cost Accounting ..... (3 cred. per qtr.; prereq., 29)	II	TThS	303B	Mr. Ostlund
154s	Public Utilities ..... (3 cred.; prereq., 155)	(Not offered in 1926-27)			
155s	Corporation Finance ..... (3 cred.; jr., sr., grad.; prereq., 4 or 6-7)				
	Lect.	III	Th	301F	Mr. Stehman and others
	Sec. 1	II	MW	109B	
	2	III	MW	6B	
	3	III	MW	202B	
	4	IV	MW	209B	
	5	VI	TTh	102B	
	6	VII	TTh	102B	
161f	Labor Problems and Trade Unionism (3 cred.; prereq., jr., sr., 8-9)				
	Lect.	IV	MW	202B	Mr. Hansen
	Sec. 1	III	F	213B	
	2	IV	F	202B	
161w	Labor Problems and Trade Unionism (See 161f)				
	Lect.	III	TTh	209B	Mr. Hansen
	Sec. 1	III	S	209B	
	2	IV	S	202B	
167w	Personnel Administration ..... (3 cred.; prereq., 8-9)				
	Sec. 1	I	TThS	202B	Mr. Stead
	2	II	TThS	213B	
168s	Advanced Personnel Administration (3 cred.; prereq., 167)	I	TThS	209B	Mr. Stead
172f	Economics of Transportation..... (3 cred.; prereq., 8-9)	VI	MWF	202B	Mr. Cummings
172w	Economics of Transportation..... (See 172f)	VI	MWF	102B	Mr. Cummings
172s	Economics of Transportation..... (See 172f)	VII	MWF	202B	Mr. Cummings

ELECTRICAL ENGINEERING

No.	Title	Hour	Day	Room	Instructor
11f	Elements of Electrical Engineering. (3 cred.; prereq., reg. in phys., M.&M. 11)				
	Lect. All Sec.	VIII	T	33EE	Mr. Todd
	Sec. 1	I	ThS	238EE	
	2	I	ThS	237EE	
	3	III	ThS	237EE	
	4	II	ThS	237EE	
	Lab. Sec. 1	III-IV	M	21EE	Mr. Todd,
	2	III-IV	W	21EE	Mr. Benson,
	3	VIII-IX	M	21EE	Mr. Reed
	4	I-II	T	21EE	
	5	III-IV	T	21EE	
	6	VII-VIII	F	21EE	
	7	VI-VII	W	21EE	
	8	VIII-IX	W	21EE	

No.	Title	Hour	Day	Room	Instructor
13w	Elements of Electrical Engineering (3 cred.; prereq., 11, M.&M. 13)				
	Lect. All Sec.	VIII	T	335EE	Mr. Todd
	Sec. 1	I	ThS	237EE	
	2	III	ThS	238EE	
	3	III	ThS	237EE	
	4	I	ThS	238EE	
	Lab. Sec. 1	VI-VII	T	21EE	Mr. Todd,
	2	III-IV	S	21EE	Mr. Benson,
	3	VIII-IX	M	21EE	Mr. Reed
	4	III-IV	T	21EE	
	5	VII-VIII	Th	21EE	
	6	III-IV	F	21EE	
	7	VIII-IX	T	21EE	
	8	VIII-IX	F	21EE	
15s	Elements of Electrical Engineering. (3 cred.; prereq., 13, M.&M. 24)				
	Lect. All Sec.	III	T	335EE	Mr. Todd
	Sec. 1	I	ThS	237EE	
	2	III	ThS	238EE	
	3	III	ThS	237EE	
	4	II	ThS	238EE	
	Lab. Sec. 1	III-IV	W	21EE	Mr. Todd
	2	VII-VIII	F	21EE	
	3	I-II	T	21EE	
	4	I-II	S	21EE	
	5	I-II	Th	21EE	
	6	III-IV	F	21EE	
	7	VI-VII	W	21EE	
	8	VIII-IX	W	21EE	
40f	Electric Wiring and Equipment.... (2 cred.; prereq., Phys. 43)	I	MW	138EE	Mr. Todd
41f	Electric Power (Mines)..... (3 cred.; prereq., Phys. 43)				
	Lect.	II	TTh	238EE	
	Lab.	I-III	F	107EE	Mr. Swenson
42w,s	Electric Power (C.E.)..... (4 cred.; prereq., Phys. 43, 44)				
	Lect.	I	TThS	138EE	
	Lab. Sec. 1	II-IV	M	107EE	
	2	II-IV	T	107EE	
43f-44w-45s	Electric Power (Chem.) ..... (3 cred. per qtr.; prereq., Phys. 43, 44)				
	Lect.	II	TTh		
		III	S	138EE	Mr. Johnson
	Lab.	I-II	S	107EE	Mr. Johnson
46f-47w	Electric Power (M.E.)..... (4 cred. per qtr.; prereq., Phys. 43, 44)				
	Lect.	III	M		
		I	(f) ThS	138EE	Mr. Johnson
			(w)	139EE	
	Lab. Sec. 1	II-III	W	107EE	Mr. Johnson
	2	II-III	F	107EE	

No.	Title	Hour	Day	Room	Instructor
48s	Electric Power (M.E.)..... (4 cred.; prereq., 47)				
	Lect.	III	Th		
		II	S	139EE	Mr. Johnson
	Lab. Sec. 1	II-III	W	107EE	Mr. Johnson
	2	II-III	F	107EE	
49w	Electric Motors ..... (2 cred.; prereq., 40)	II	MW	138EE	Mr. Reed
61f-63w-65s	Elements of Communication..... (2 cred. per qtr.; prereq., reg. in 111)				
	Lect	III	T	138EE	Mr. Swenson
	Lab. Sec. 1	VI-IX	W	307EE	Mr. Swenson
	2	VI-IX	Th	307EE	
	3	VI-IX	F	307EE	
81w	Electrical Engineering Measurements (3 cred.; prereq., 111)				
	Lect.	IV	MW	339EE	Mr. Todd
	Lab. Sec. 1	VI-VIII	M	107EE	Mr. Todd
	2	VI-VIII	Th	107EE	
91s,su	Inspection Trip ..... (1 cred.; prereq., 11)	Spring vacation or summer time			
93s	Seminar ..... (1 cred.; jr. E.E.)	VI-VII	Th	237EE	
111f-113w-115s	Direct Current Machinery..... (3 cred. per qtr.; prereq., 11, 13, 15)	II	MWF	335EE	Mr. Springer
112f-114w-116s	Direct Current Machinery Laboratory ..... (2 cred. per qtr.; prereq., reg. in 111, 113, 115)				
	Sec. 1	VI-IX	M	107EE	Mr. Springer
	2	VI-IX	T	107EE	
	3	VI-IX	W	107EE	
	4	VI-IX	Th	107EE	
	5	VI-IX	F	107EE	
121f-123w-125s	Alternating Currents ..... (3 cred. per qtr.; prereq., 115, 116)				
	Sec. 1	III	MWF	237EE	Mr. Ryan
	2	IV	MWF	237EE	Mr. Ryan
122f-124w-126s	Alternating Current Laboratory.... (2 cred. per qtr.; prereq., 116 and reg. in 121, 123, or 125)				
	Sec. 1	VI-IX	T	107EE	Mr. Ryan
	2	VI-IX	W	107EE	
	3	VI-IX	Th	107EE	
	4	VI-IX	F	107EE	
127f-128w	Transient Electrical Phenomena.... (2 cred. per qtr.; prereq., reg. in 121)	I	TTh	339EE	Mr. Jansky
129s	Transient and High Frequency Phenomena ..... (2 cred.; prereq., 128)	I	TTh	339EE	Mr. Jansky

No.	Title	Hour	Day	Room	Instructor
132f-134w-136s	Electrical Design ..... (2 cred. per qtr.; prereq., 115 for 132; 121 for 134, 136)				
	Lect.	IV	T	335EE	Mr. Kuhlman
	Lab. Sec. 1	VI-VIII	M	227EE	Mr. Kuhlman
	2	VI-VIII	T	227EE	
	3	VI-VIII	W	227EE	
	4	VI-VIII	Th	227EE	
141f	Central Stations ..... (2 cred.; prereq., reg. in 123)	III	TTh	335EE	Mr. Ryan
142w	Electric Transmission ..... (2 cred.; prereq., reg. in 123)	III	TTh	335EE	Mr. Ryan
143f,w,s	Power Plant Operation..... (1 cred.; prereq., 116 or 45 or 48)	Any three consecutive hours		PPl	Mr. Ryan, Mr. Haley
144w	Railway Electrical Engineering..... (2 cred.; prereq., 42 or 45 or 48 or 115)	I	WF	138EE	Mr. Johnson
145s	Railroad Electrification ..... (1 cred.; prereq., 144)	IV	MW	138EE	Mr. Johnson
146s	Storage Battery Engineering..... (2 cred.; prereq., 45 or 48 or 113)	II	TTh	139EE	Mr. Todd
151f	Electric Lighting ..... (2 cred.; prereq., Phys. 35, 43, 44)	IV	MW	238EE	Mr. Johnson
152f	Photometric Laboratory ..... (1 cred.; prereq., reg. in 151)				
	Sec. 1	VI-VII	Th	Ar	Mr. Johnson
	2	VIII-IX	Th	Ar	
153w	Illuminating Design ..... (2 cred. per qtr.; prereq., 151)	Ar	Ar	238EE	Mr. Johnson
161f-162w-163s	Radio Communication ..... (3 cred.; prereq., reg. in 121, 123, 125)				
	Lect.	II	MW	238EE	Mr. Jansky
	Lab. Sec. 1	VI-VII	M	308EE	
	2	VIII-IX	M	308EE	
	3	VI-VII	T	308EE	
	4	VIII-IX	T	308EE	
	5	VI-VII	W	308EE	
164f	Telegraph and Telephone Apparatus. (2 or 3 cred.; prereq., 63)				
	Lect.	IV	MW	139EE	Mr. Swenson
	Lab.	VI-VIII	F	307EE	Mr. Swenson
165w-166s	Telegraph and Telephone Circuits.. (2 or 3 cred. per qtr.; prereq., reg. in 123)				
	Lect.	IV	MW	139EE	Mr. Swenson
	Lab.	VI-VIII	F	307EE	Mr. Swenson
167f-168w-169s	Radio Station Operation..... (1 or 2 cred. per qtr.; prereq., jr. and sr. by permission)	Ar	Ar	318EE	Mr. Jansky
171w-172s	Undergraduate Theses ..... (3 to 6 cred. per qtr.; prereq., 121)	Ar	Ar	Ar	Mr. Springer, Mr. Jansky, Mr. Ryan, Mr. Swenson
181s	Communication Frequency Measurements ..... (2 cred. per qtr.; prereq., 126)	Ar	Ar	Ar	Mr. Swenson

No.	Title	Hour	Day	Room	Instructor
183f-184w-185s	Special Electric Laboratory ..... (2 cred. per qtr.; prereq., 116)	Ar	Ar	Ar	Mr. Springer
186w,s	High Tension Testing..... (2 cred.; prereq., 123, 124, or reg. in 123, 124)	Ar	Ar	Ar	Mr. Springer
187f-188w-189s	Special Communication Laboratory.. (1 or 2 cred. per qtr.; prereq., jr., sr., grad. by permission)	Ar	Ar	Ar	Mr. Swenson
191f-192w-193s	Seminar ..... (1 cred. per qtr.; prereq., 111)	VII-VIII	T	136EE	
232f-234w-236s	Electrical Design ..... (2 cred. per qtr.; prereq., 136)	Ar	Ar	227EE	Mr. Kuhlman
237s	Power Transmission Line Design... (3 cred.; prereq., 134, 142)	Ar	Ar	227EE	Mr. Ryan
261f-263w-265s	Advanced Radio Communication.... (2 cred. per qtr.; prereq., sr., grad. by permission)	II	TTh	339EE	Mr. Jansky
262f-264w-266s	Advanced Radio Laboratory..... (1 or more cred. per qtr.; prereq., sr., grad. by permission)	Ar	Ar	308EE	Mr. Jansky
275f-276w-277s	Electrical Engineering Research.... (2 to 6 cred. per qtr.; open to grad.)	Ar	Ar	Ar	Ar
284w-285s-286f	Precise Electrical Engineering Measurements ..... (2 cred. per qtr.; prereq., 122)	Ar	Ar	Ar	Mr. Springer
291f-292w-293s	Graduate Seminar ..... (1 cred. per qtr.; prereq., 126)	Ar	Ar	Ar	
294f-295w-296s	Electrical Ignition ..... (2 cred. per qtr.; prereq., 124)	Ar	Ar	Ar	Mr. Springer

ENGLISH

No.	Title	Hour	Day	Room	Instructor
4f	Rhetoric and Composition..... (3 cred.; no prereq.)				
	Sec. 1	IV	MWF	107E	Mr. Richardson,
	2	IV	MWF	215E	Mr. Ambler,
	3	IV	MWF	206E	Mr. Briggs,
	4	III	TThS	107E	Mr. Creamer
	5	III	TThS	135E	
	6	III	TThS	21E	
	7	VI	MWF	107E	
	8	VI	MWF	205E	
	9	VI	MWF	7E	
	10	I	TThS	107E	
	11	I	TThS	135E	
	12	I	TThS	7E	
4w	Rhetoric and Composition..... (See 4f)				
	Sec. 1	V	MWF	107E	
	2	VIII	MW		
		IX	Th	107E	

No.	Title	Hour	Day	Room	Instructor
5w	Rhetoric and Composition.....				
	(3 cred.; prereq., 4)				
	Sec. 1	IV	MWF	107E	Mr. Richardson,
	2	IV	MWF	335EE	Mr. Ambler,
	3	IV	MWF	206E	Mr. Briggs,
	4	II	MWF	107E	Mr. Creamer
	5	II	MWF	339EE	
	6	VI	MWF	107E	
	7	VI	MWF	104E	
	8	I	TThS	107E	
	9	I	TThS	4E	
	10	I	TThS	104E	
5s	Rhetoric and Composition.....				
	(See 5w)				
	Sec. 1	I	MWF	3E	
	2	V	MWF	107E	
6s	Rhetoric and Composition.....				
	(3 cred.; prereq., 5)				
	Sec. 1	VI	MWF	107E	Mr. Richardson,
	2	VI	MWF	205E	Mr. Ambler,
	3	II	MWF	107E	Mr. Briggs,
	4	II	MWF	7E	Mr. Creamer
	5	I	MWF	107E	
	6	I	MWF	136EE	
	7	I	MWF	5E	
	8	I	TThS	107E	
	9	I	TThS	22E	
	10	I	TThS	4E	
7w	Explorations in Literature.....	I	MWF	139EE	Mr. Richardson
	(3 cred.; prereq., 4-5-6 or equiv.)				
8s	Explorations in Literature.....	IV	MWF	339EE	Mr. Richardson
	(3 cred.; prereq., 6 or equiv.)				
31w	Technical Writing	I	MWF	3E	Mr. Creamer
	(3 cred.; prereq., 6)				
31s	Technical Writing	IV	MWF	7E	Mr. Creamer
	(See 31w)				
35w,s	Public Speaking	IV	MWF	238EE	Mr. Rarig
	(3 cred.; prereq., 6)				

GENERAL ENGINEERING

No.	Title	Hour	Day	Room	Instructor
11f-12w	Orientation	VIII	Th	100C	Mr. Zelner
	(No cred.; no prereq.)				
81f,w,s	Estimating.....	I	MWF	36EE	Mr. French
	(3 cred.; jr., sr.; prereq., M.&M. 26)				
101w	Contracts and Specifications.....	III	TThS	102ME	
	(3 cred.; prereq., sr. standing)				
111s	Valuation of Public Utility Properties	III	T	238EE	
	(2 cred.; prereq., sr. standing)		Th	335EE	Mr. Ryan
124w	Engineering Relations	II	M	139EE	
	(1 cred.; prereq., sr. standing)				
193s	Engineering Practice				
	(2 cred.; prereq., sr. standing)				
	Sec. 1	II	MTh	204ME	Mr. Martenis
	2	II	MS	204ME	

GEOLOGY AND MINERALOGY

No.	Title	Hour	Day	Room	Instructor
5f	Engineering Geology ..... (3 cred.; no prereq.)	I	MWF	210P	Mr. Schwartz
6w-7s	Applied Geology for Civil Engineers (3 cred. per qtr.; prereq., 5)	I	MWF	210P	Mr. Schwartz

HORTICULTURE

No.	Title	Hour	Day	Room	Instructor
6f	Fruit Growing ..... (3 cred.; no prereq.) (Laboratory sections limited to 20 each)				
	Lect. Sec. 1	II	MW	102Hr	Mr. Alderman
	2	IV	WF	8aHr	Mr. Alderman
	Lab. 1	I-II	T or F	8Hr	Mr. Alderman
	2	VII-VIII	M	8Hr	Mr. Alderman
32s	Vegetable Growing ..... (3 cred.; no prereq.)				
	Lect. Sec. 1	II	MW	102Hr	Mr. Burrell
	2	IV	TS	102Hr	
	Lab. 1	I-II	T or F	8Hr	Mr. Walker
	2	VII-VIII	M	8Hr	

MATHEMATICS AND MECHANICS

No.	Title	Hour	Day	Room	Instructor
9f	Higher Algebra (high school)..... (No cred.; no prereq.)				
	Sec. 1	III	MWThFS	22E	Mr. Brooke,
	2	III	MWThFS	104E	Mr. Dalaker,
	3	VII	MTWThF	22E	Mr. Hartig,
	4	VII	MTWThF	104E	Mr. Herrick
	5	II	MTWThF	106E	Mr. Herrmann,
	6	II	MTWThF	104E	Mr. Holman,
	7	IV	MTWFS	22E	Mr. Jones,
	8	IV	MTWFS	104E	Mr. McClintock,
	9	VI	MTWThF	4E	Mr. Priester,
	10	VI	MTWThF	203E	Mr. Siler
					Mr. Wilcox,
					Mr. Doeringsfeld,
					Mr. Miller,
					Mr. Warne,
					Mr. Wells
9w	Higher Algebra (high school)..... (See 9f)				
	Sec. 1	III	MTWThF	136E	
	2	VII	MWF		
		V	TS	3E	
10f	Solid Geometry (See Department of Drawing and Descriptive Geometry)				

No.	Title		Hour	Day	Room	Instructor
11w	College Algebra					
	(5 cred.; prereq., 12)					
		Sec. 1	III	MTWThF	3E	Mr. Holman,
		2	III	MTWThF	4E	Mr. Brooke,
		3	VII	MTWF		Mr. Dalaker,
			III	S	4E	Mr. Hartig,
		4	VII	MTWF		Mr. Herrick,
			III	S	5E	Mr. Herrmann,
		5	II	MTWThF	3E	Mr. Jones,
		6	II	MTWThF	4E	Mr. McClintock,
		7	IV	MTWFS	3E	Mr. Priester,
		8	IV	MTWFS	4E	Mr. Siler,
		9	VI	MTWThF	3E	Mr. Wilcox,
		10	VI	MTWThF	5E	Mr. Doeringsfeld,
						Mr. Miller,
						Mr. Warne,
						Mr. Wells
11s	College Algebra					
	(See 11w)					
		Sec. 1	III	MTWThF	4E	
		2	III	MTWThF	136E	
		3	VII	MWThF		
			III	S	4E	
		4	VII	MWThF		
			III	S	136E	
		5	II	MTWThF	3E	
		6	II	MTWThF	4E	
		7	IV	MTWFS	3E	
		8	IV	MTWFS	21E	
		9	VI	MTWThF	4E	
		10	VI	MTWThF	22E	
12f	Trigonometry					
	(5 cred.; prereq., higher algebra)					
		Sec. 1	III	MWThFS	3E	Mr. Holman,
		2	III	MWThFS	4E	Mr. Brooke,
		3	III	MWThFS	136E	Mr. Dalaker,
		4	VII	MTWThF	3E	Mr. Hartig,
		5	VII	MTWThF	4E	Mr. Herrick,
		6	VII	MTWThF	106E	Mr. Herrmann,
		7	II	MTWThF	3E	Mr. Jones,
		8	II	MTWThF	4E	Mr. McClintock,
		9	II	MTWThF	215E	Mr. Priester,
		10	IV	MTWFS	3E	Mr. Siler,
		11	IV	MTWFS	4E	Mr. Wilcox,
		12	IV	MTWFS	21E	Mr. Doeringsfeld,
		13	VI	MTWThF	3E	
		14	VI	MTWThF	215E	Mr. Miller,
						Mr. Warne,
						Mr. Wells

No.	Title		Hour	Day	Room	Instructor
12w	Trigonometry					
	(See 12f)					
		Sec. 1	III	MTWThF	22E	
		2	III	MTWThF	104E	
		3	VII	MTWF		
			III	S	22E	
		4	VII	MTWF		
			III	S	104E	
		5	II	MTWThF	215E	
		6	II	MTWThF	22E	
		7	II	MTWThF	104E	
		8	IV	MTWFS	21E	
		9	IV	MTWFS	22E	
		10	IV	MTWFS	104E	
		11	VI	MTWThF	3E	
		12	VI	MTWThF	22E	
13f	Analytical Geometry					
	(5 cred.; prereq., 12)					
		Sec. 1	V	MTWFS	203E	Mr. Warne,
		2	III	MTWThF	206E	Mr. Brooke,
		3	VII	MTWThF	215E	Mr. Dalaker,
						Mr. Hartig,
						Mr. Herrick,
						Mr. Herrmann,
						Mr. Holman
						Mr. Jones,
						Mr. McClintock,
						Mr. Priester,
						Mr. Siler,
						Mr. Wilcox,
						Mr. Doeringsfeld,
						Mr. Miller,
						Mr. Wells
13w	Analytical Geometry					
	(See 13f)					
		Sec. 1	II	MTWThF	209Ex	
		2	III	MWThFS	7E	
13s	Analytical Geometry					
	(See 13f)					
		Sec. 1	III	MTWThF	22E	
		2	III	MTWThF	104E	
		3	VII	MWThF		
			III	S	22E	
		4	VII	MWThF		
			III	S	104E	
		5	II	MTWThF	215E	
		6	II	MTWThF	22E	
		7	II	MTWThF	104E	
		8	IV	MTWFS	22E	
		9	IV	MTWFS	104E	
		10	VI	MTWThF	3E	
		11	VI	MTWThF	205E	

No.	Title		Hour	Day	Room	Instructor
24f	Differential Calculus ..... (5 cred.; prereq., 13)					
		Sec. 1	VI	MTWThF	104E	Mr. Dalaker,
		2	IV	MTWFS	106E	Mr. Hartig,
		3	IV	MTWFS	205E	Mr. McClintock,
		4	II	MTWFS	203E	Mr. Siler,
		5	VII	MTWThF	203E	Mr. Miller,
		6	VI	MTWThF	106E	Mr. Warne,
		7	III	MTWThF	106E	Mr. Wells
		8	VII	MTWThF	205E	
		9	III	MTWThF	203E	
		10	III	MTWThF	7E	
		11	III	MTWThF	5E	
24w	Differential Calculus ..... (See 24f)					
		Sec. 1	VI	MTWThF	106E	
		2	VII	MTWThF	203E	
		3	III	MWThFS	106E	
		4	III	MTWThF	5E	
24s	Differential Calculus ..... (See 24f)					
		Sec. 1	I	MWThFS	205E	
		2	V	MTWFS	215E	
		3	VIII	MWF		
			II	Th		
			V	S	106E	
25f	Integral Calculus ..... (5 cred.; prereq., 24)		V	MTWFS	215E	
25w	Integral Calculus ..... (See 25f)					
		Sec. 1	IV	MTWFS	106E	Mr. Siler,
		2	III	MTWFS	215E	Mr. Dalaker,
		3	II	MTWFS	203E	Mr. Hartig,
		4	VI	MTWThF	203E	Mr. McClintock,
		5	II	MTWThF	106E	Mr. Miller,
		6	III	MTWThF	203E	Mr. Warne, Mr. Wells
25s	Integral Calculus ..... (See 25w)					
		Sec. 1	VII	MWThF		
			IV	T	106E	
		2	VII	MWThF		
			IV	T	205E	
		3	III	MWThFS	106E	
		4	I	MWThFS	104E	
26f	Technical Mechanics (Statics)..... (5 cred.; prereq., 25)					
		Sec. 1	V	MTWFS	136E	Mr. Herrick,
		2	VI	MTWThF	136E	Mr. Herrmann, Mr. McClintock, Mr. Siler, Mr. Wilcox, Mr. Doeringsfeld, Mr. Miller

No.	Title	Hour	Day	Room	Instructor
26w	Technical Mechanics (Statics).....	V	MTWFS	106E	
	(See 26f)				
26s	Technical Mechanics (Statics).....				
	(See 26f)				
	Sec. 1	III	MWThFS	215E	
	2	II	MTWFS	106E	
	3	II	MTWFS	203E	
	4	VII	MWThF		
		IV	S	203E	
	5	VII	MWThF		
		IV	S	5E	
	6	III	MWThFS	5E	
84s	Technical Mechanics (Chem.).....	III	MWThFS	7E	Mr. Hartig
	(5 cred.; prereq., 25)				
85f	Strength of Materials (Chem.).....				
	(4 cred.; prereq., 84)				
	Lect.	I	MWF	104E	Mr. Hartig
	Lab.	VI-VII	M	Ex	
86w	Hydraulics (Chem.)				
	(3 cred.; prereq., 84)				
	Lect.	I	MF	104E	Mr. Hartig
	Lab.	VI-VII	W	Ex	
91f	Calculus (Arch.)	II	MWThF	5E	Mr. Holman
	(4 cred.; prereq., 13)				
92w	Mechanics (Arch.)	II	MWThF	5E	Mr. Holman
	(4 cred.; prereq., 91)				
93s	Strength of Materials (Arch.).....	I	MWFS	136E	Mr. Holman
	(4 cred.; prereq., 92)				
99f,s	Materials of Engineering.....	I	MWF	110E	Mr. Priester
	(3 cred.; prereq., 13)				
127f	Technical Mechanics (Dynamics)...				
	(5 cred.; prereq., 26)				
	Sec. 1	II	MTWThF	205E	Mr. Wilcox,
	2	I	MWThFS	205E	Mr. Herrick, Mr. Herrmann, Mr. McClintock, Mr. Siler, Mr. Doeringsfeld
127w	Technical Mechanics (Dynamics)...				
	(See 127f)				
	Sec. 1	I	MWThFS	106E	
	2	III	MTWThF	205E	
	3	IV	MTWFS	136E	
127s	Technical Mechanics (Dynamics)...				
	(See 127f)				
	Sec. 1	II	MTWThF	136E	
	2	III	MTWThF	205E	
	3	II	MTWThF	21E	
128f	Strength of Materials.....				
	(5 cred.; prereq., 26)				
	Sec. 1	II	MTWThF	136E	Mr. Holman,
	2	III	MTWThF	215E	Mr. Hartig,
	3	I	MWThFS	136E	Mr. Herrmann, Mr. McClintock, Mr. Priester, Mr. Siler, Mr. Doeringsfeld, Mr. Miller

No.	Title		Hour	Day	Room	Instructor
128w	Strength of Materials..... (See 128f)					
		Sec. 1	II	MTWThF	205E	
		2	I	MWThFS	205E	
128s	Strength of Materials..... (See 128f)					
		Sec. 1	I	MTWThF	106E	
		2	III	MTWThF	209Ex	
		3	IV	MTWFS	136E	
129f	Hydraulics ..... (4 cred.; prereq., 26)					
		Lect.	I-II	T	110Ex	
		Rec. Sec. 1	I	ThS	106E	Mr. Jones,
		2	III	MF	205E	Mr. Hartig,
		3	IV	MF	136E	Mr. Doeringsfeld, Mr. Miller
129w	Hydraulics ..... (See 129f)					
		Lect.	II-III	T	110Ex	
		Rec. Sec. 1	II	MF	136E	
		2	III	MF	209Ex	
		3	I	ThS	136E	
129s	Hydraulics ..... (See 129f)					
		Lect.	III-IV	T	110Ex	
		Rec. Sec. 1	II	ThS	215Ex	
		2	I	ThS	215E	
141f	Materials Testing Laboratory..... (1 cred.; prereq., 128 or reg. in 128)					
		Sec. 1	VI-VII	Th	Ex	Mr. Priester,
		2	VIII-IX	Th	Ex	Mr. Hartig,
		3	I-II	T	Ex	Mr. Herrmann,
		4	I-II	W	Ex	Mr. Holman,
		5	VIII-IX	T	Ex	Mr. McClintock,
		6	VI-VII	W	Ex	Mr. Doeringsfeld, Mr. Miller
141w	Materials Testing Laboratory..... (See 141f)					
		Sec. 1	VI-VII	M	Ex	
		2	I-II	S	Ex	
		3	VI-VII	W	Ex	
		4	VIII-IX	W	Ex	
141s	Materials Testing Laboratory..... (See 141f)					
		Sec. 1	VI-VII	T	Ex	
		2	VIII-IX	W	Ex	
		3	VI-VII	W	Ex	
		4	VIII-IX	F	Ex	
		5	I-II	T	Ex	
		6	VI-VII	F	Ex	

No.	Title	Hour	Day	Room	Instructor
143f	Hydraulics Laboratory ..... (1 cred.; prereq., 129 or reg. in 129)				
	Sec. 1	VIII-IX	Th	Ex	Mr. Jones,
	2	VIII-IX	F	Ex	Mr. Hartig,
	3	VI-VII	Th	Ex	Mr. Herrmann,
	4	II-III	S	Ex	Mr. Holman,
	5	VI-VII	M	Ex	Mr. McClintock,
	6	VIII-IX	T	Ex	Mr. Priester, Mr. Doeringsfeld, Mr. Miller
143w	Hydraulics Laboratory ..... (See 143f)				
	Sec. 1	VI-VII	Th	Ex	
	2	VIII-IX	F	Ex	
	3	VI-VII	T	Ex	
	4	I-II	F	Ex	
	5	VI-VII	M	Ex	
	6	VIII-IX	M	Ex	
143s	Hydraulics Laboratory ..... (See 143f)				
	Sec. 1	VI-VII	M	Ex	
	2	II-III	W	Ex	
	3	VI-VII	W	Ex	
	4	VI-VII	Th	Ex	
144w	Materials Testing Laboratory (Mines) ..... (4 hrs. lab.; prereq., with Mech. 10)	VI-IX	Th	Ex	
150w	Advanced Mathematics (Electrical engineers) ..... (3 cred.; prereq., 127)	I	TThS	139EE	Mr. Herrmann
151f	Differential Equations ..... (3 cred.; prereq., 25)	IV	MWF	5E	Mr. Dalaker
152w-153s	Advanced Calculus and Applications (3 cred. per qtr.; prereq., 151)	IV	MWF	5E	Mr. Dalaker
157f-158w-159s	Determinants and Solid Analytical Geometry ..... (3 cred. per qtr.; prereq., 151)	Ar	Ar	Ar	Mr. Dalaker
161f-162w-163s	Advanced Technical Mechanics.... (3 cred. per qtr.; prereq., 127)	IV	MWF	36EE	Mr. Wilcox
164f-165w-166s	Advanced Dynamics of a Particle.. (3 cred. per qtr.; prereq., 127)	Ar	Ar	Ar	Mr. Brooke
171f	Aerodynamics ..... (3 cred. per qtr.; prereq., 26)	Not offered in 1926-27.			
172w-173s	Aerodynamics ..... (3 cred. per qtr.; prereq., 127)	Not offered in 1926-27.			
180s	Advanced Strength of Materials.... (3 cred.; prereq., 128)	IV	MWF	206E	Mr. Priester
184f-185w-186s	Advanced Testing Materials Laboratory ..... (2 to 6 cred. per qtr.; prereq., 141)	Ar	Ar	Ex	Mr. Priester
191f	Hydraulic Motors and Pumps..... (3 cred.; prereq., 129)	I	MWF	209Ex	Mr. Jones
192w	Hydraulic Motor Laboratory..... (3 cred.; prereq., 129)				
	Lect.	I	MW	209Ex	Mr. Jones
	Lab.	Ar	Ar	Ex	

No.	Title	Hour	Day	Room	Instructor
193s	Hydraulic Measurements ..... (3 cred.; prereq., 129)	Ar	Ar	Ex	Mr. Jones
194f,w,s-195f,w,s-196f,w,s	Special Problems in Hydraulics.... (3 cred. per qtr.; prereq., 129, 143)	Ar	Ar	Ex	Mr. Jones
254f-255w-256s	Modern Analysis ..... (3 cred. per qtr.; prereq., 153)	Not offered in 1926-27.			Mr. Dalaker
261f-262w-263s	Functions of a Complex Variable.. (3 cred. per qtr.; prereq., 153)	Not offered in 1926-27.			Mr. Dalaker
264f-265w-266s	Advanced Topics in Functions of a Complex Variable ..... (3 cred. per qtr.; prereq., 263)	Ar	Ar	Ar	Mr. Dalaker
267f-268w-269s	Advanced Dynamics ..... (3 cred. per qtr.; prereq., 153)	Ar	Ar	Ar	Mr. Brooke
277f-278w-279s	Advanced Statics ..... (3 cred. per qtr.; prereq., 127)	Not offered in 1926-27.			Mr. Brooke
291f-292w-293s	Hydrodynamics ..... (3 cred. per qtr.; prereq., 129, 153)	Ar	Ar	Ar	Mr. Brooke
294f-295w-296s	Mathematical Theory of Elasticity.. (3 cred. per qtr.; prereq., 128, 153)	Not offered in 1926-27.			Mr. Brooke

MECHANICAL ENGINEERING

No.	Title	Hour	Day	Room	Instructor
11f	Elementary Shop Practice (Pattern Shop)* ..... (2 cred.; no prereq.)				
	Lect. Sec. 1	VI	W	204ME	Mr. Richards
	2	VI	F	204ME	
	3	III	Th	204ME	
	4	I	F	204ME	
	(Pre-dent)	IX	W	204ME	
	Lab. Sec. 1	II-IV	T		
		III-IV	S	Pattern Shop	
	2	III-IV	W		
		II-IV	F	Pattern Shop	
	3	VII-IX	T		
		VI-VII	Th	Pattern Shop	
	4	I-III	M		
		I-II	W	Pattern Shop	
	(Pre-dent)	VII-IX	M		
		VII-VIII	W	Pattern Shop	
11w	Elementary Shop Practice (Pattern Shop)* ..... (See 11f)				
	Lect. Sec. 1	VI	W	204ME	Mr. Richards
	2	IV	S	204ME	
	3	IX	T	204ME	
	4	III	W	204ME	
	(Pre-dent)	IX	W	204ME	
	Lab. Sec. 1	I-II	F		
		I-III	S	Pattern Shop	
	2	III-IV	T		
		I-III	Th	Pattern Shop	
	3	VI-VIII	T		
		VI-VII	Th	Pattern Shop	
	4	I-III	M		
		I-II	W	Pattern Shop	
	(Pre-dent)	VII-IX	M		
		VII-VIII	W	Pattern Shop	

* Students must register for all their shop hours in the same section.

No.	Title	Hour	Day	Room	Instructor
11s	Elementary Shop Practice (Pattern Shop)*				
	(See 11f)				
	Lect. Sec. 1	VI	M	204ME	Mr. Richards
	2	VI	T	204ME	
	3	IX	Th	204ME	
	4	III	W	204ME	
	(Pre-dent)	IX	F	204ME	
	Lab. Sec. 1	I-II	F		
		II-IV	S	Pattern Shop	
	2	I-II	T		
		I-III	Th	Pattern Shop	
	3	VI-VIII	Th		
		III-IV	F	Pattern Shop	
	4	I-III	M		
		I-II	W	Pattern Shop	
	(Pre-dent)	VII-IX	M		
		VII-VIII	W	Pattern Shop	
12f	Elem. Shop Practice (Foundry)*..				
	(2 cred.; no prereq.)				
	Lect. Sec. 1	VI	W	102ME	Mr. Moffett
	2	VI	F	102ME	
	3	III	Th	102ME	
	4	I	F	201PPI	
	(Chem.)	I	S	204ME	
	(Pre-dent)	VII	W	102ME	
	Lab. Sec. 1	II-IV	T		
		III-IV	S	Foundry	
	2	III-IV	W		
		II-IV	F	Foundry	
	3	VII-IX	T		
		VI-VII	Th	Foundry	
	4	I-III	M		
		I-II	W	Foundry	
	(Chem.)	VIII-IX	Th		
		VII-IX	F	Foundry	
	(Pre-dent)	VII-IX	M		
		VIII-IX	W	Foundry	
12w	Elem. Shop Practice (Foundry)*..				
	(See 12f)				
	Lect. Sec. 1	VI	W	102ME	Mr. Moffett
	2	IV	S	102ME	
	3	VI	T	102ME	
	4	I	M	204ME	
	(Chem.)	I	S	204ME	
	(Pre-dent)	VII	M	102ME	
	Lab. Sec. 1	I-II	F		
		I-III	S	Foundry	
	2	III-IV	T		
		I-III	Th	Foundry	
	3	VII-IX	T		
		VI-VII	Th	Foundry	
	4	II-III	M		
		I-III	W	Foundry	
	(Chem.)	VIII-IX	Th		
		VII-IX	F	Foundry	
	(Pre-dent)	VIII-IX	M		
		VII-IX	W	Foundry	

* Students must register for all their shop hours in the same section.

No.	Title	Hour	Day	Room	Instructor
12s	Elem. Shop Practice (Foundry)*.. (See 12f)				
	Lect. Sec. 1	VI	M	102ME	Mr. Moffett
	2	VI	T	102ME	
	3	VI	Th	102ME	
	4	I	M	204ME	
	(Chem.)	I	S	204ME	
	(Pre-dent)	VII	M	204ME	
	Lab. Sec. 1	I-II	F		
		II-IV	S	Foundry	
	2	I-II	T		
		I-III	Th	Foundry	
	3	VII-IX	Th		
		III-IV	F	Foundry	
	4	II-III	M		
		I-III	W	Foundry	
	(Chem.)	III-IV	T		
		VII-IX	W	Foundry	
	(Pre-dent)	VIII-IX	M		
		VII-IX	F	Foundry	
13f	Elementary Shop Practice (Forge)* (2 cred.; no prereq.)				
	Lect. Sec. 1	VI	W	202PPl	Mr. Hughes
	2	VI	F	202PPl	
	3	III	Th	202PPl	
	4	I	F	202PPl	
	(Chem.)	I	S	202PPl	
	(Pre-dent)	VII	W	202PPl	
	Lab. Sec. 1	II-IV	T		
		III-IV	S	Forge Shop	
	2	III-IV	W		
		II-IV	F	Forge Shop	
	3	VII-IX	T		
		VI-VII	Th	Forge Shop	
	4	I-III	M		
		I-II	W	Forge Shop	
	(Chem.)	VIII-IX	Th		
		VII-IX	F	Forge Shop	
	(Pre-dent)	VII-IX	M		
		VIII-IX	W	Forge Shop	
13w	Elementary Shop Practice (Forge)* (See 13f)				
	Lect. Sec. 1	VI	W	201PPl	Mr. Hughes
	2	IV	S	201PPl	
	3	VI	T	201PPl	
	4	I	W	201PPl	
	(Chem.)	I	S	201PPl	
	(Pre-dent)	VII	M	201PPl	
	Lab. Sec. 1	I-II	F		
		I-III	S	Forge Shop	
	2	III-IV	T		
		I-III	Th	Forge Shop	
	3	VII-IX	T		
		VI-VII	Th	Forge Shop	
	4	I-III	M		
		II-III	W	Forge Shop	
	(Chem.)	VIII-IX	Th		
		VII-IX	F	Forge Shop	
	(Pre-dent)	VIII-IX	M		
		VII-IX	W	Forge Shop	

* Students must register for all their shop hours in the same section.

No.	Title	Hour	Day	Room	Instructor
13s	Elementary Shop Practice (Forge)*				
	(See 13f)				
	Lect. Sec. 1	VI	M	201PPl	Mr. Hughes
	2	VI	T	201PPl	
	3	VI	Th	201PPl	
	4	I	M	201PPl	
	(Chem.)	I	S	201PPl	
	(Pre-dent)	VII	M	201PPl	
	Lab. Sec. 1	I-II	F		
		II-IV	S	Forge Shop	
	2	I-II	T		
		I-III	Th	Forge Shop	
	3	VII-IX	Th		
		III-IV	F	Forge Shop	
	4	II-III	M		
		I-III	W	Forge Shop	
	(Chem.)	III-IV	T		
		VII-IX	W	Forge Shop	
	(Pre-dent)	VIII-IX	M		
		VII-IX	F	Forge Shop	
14f	Machine Shop Practice.....				
	(4 cred.; prereq., 11, 12, 13)				
	Lect. Sec. 1	II	W	102ME	Mr. Shipley,
	2	IV	T	102ME	Mr. Rogers
	Lab. Sec. 1	II-IV	MF		
		I-IV	T	Machine Shop	
	2	VI-IX	T		
		VI-VII	Th		
		I-IV	S	Machine Shop	
15w	Machine Shop Practice.....				
	(4 cred.; prereq., 14)				
	Lect. Sec. 1	II	M	102ME	Mr. Shipley,
	2	IV	T	102ME	Mr. Rogers
	Lab. Sec. 1	I-IV	T		
		II-IV	WF	Machine Shop	
	2	VI-IX	T		
		I-II	Th		
		I-IV	S	Machine Shop	
16s	Machine Shop Practice.....				
	(2 cred.; prereq., 11, 12, 13)				
	Lect. Sec. 1	III	F	204ME	Mr. Shipley,
	2	IX	F	102ME	Mr. Rogers
	Lab. Sec. 1	VII-IX	M		
		III-IV	S	Machine Shop	
	2	I-III	W		
		I-II	F	Machine Shop	
	3	III-IV	M		
		I-II	S	Machine Shop	
	4	I-II	T		
		VI-VIII	F	Machine Shop	
17f-w	Machine Shop Practice (Chem.)....				
	(2 cred.; no prereq.)				
	Lect.	I	S	102ME	Mr. Shipley,
	Lab.	VIII-IX	Th		Mr. Rogers
		VII-IX	F	Machine Shop	
18f,w,s	General Woodworking	Ar	Ar	Ar	Mr. Richards
	(3 cred.; no prereq.)				

* Students must register for all their shop hours in the same section.

No.	Title	Hour	Day	Room	Instructor
21s	Mechanical Technology	II	TS	102ME	Mr. Richards
	(1 cred.; prereq., M.&M. 13)				
31f	Elementary Machine Design.....				
	(3 cred.; prereq., Draw. 29)				
	Lect.	I	TTh	201PPl	
	Lab.	VI-IX	W		
		I-II	S	100PPl	Mr. Campbell
31s	Elementary Machine Design.....				
	(See 31f)				
	Lect.	I	T		
		III	S	202PPl	Mr. Campbell
	Lab. Sec. 1	III-IV	T		
		II-III	MW	100PPl	Mr. Campbell
	2	II-III	Th		
		VI-IX	F	100PPl	
32f	Mechanism				
	(4 cred.; prereq., 31)				
	Sec. 1	III	MTThS	201PPl	Mr. Martenis
	2	II	MTThS	201PPl	Mr. Flodin
33w	Mechanism and Kinematics.....				
	(3 cred.; prereq., Draw. 27)				
	Sec. 1	II	TThS	202PPl	Mr. Martenis
	2	I	MWF	202PPl	Mr. Flodin
	3	III	MWF	202PPl	
34w	Kinematics				
	(2 cred.; prereq., 32)				
	Lect. Sec. 1	IV	W	201PPl	Mr. Martenis
	2	III	W	201PPl	Mr. Flodin
	Lab. Sec. 1	VI-IX	T	100PPl	
	2	VI-IX	F	100PPl	
35w	Machine Design				
	(3 cred.; prereq., 32, M.&M. 128 or reg. in 128)				
	Lect. Sec. 1	IV	MF	201PPl	Mr. Martenis
	2	III	MF	201PPl	Mr. Flodin
	Lab. Sec. 1	III-IV	T		
		VI-IX	W	100PPl	
	2	I-II	T		
		VI-IX	Th	100PPl	
36s	Machine Design (M.E.).....				
	(3 cred.; prereq., 35)				
	Lect. Sec. 1	III	MF	202ME	Mr. Martenis
	2	II	ThS	202PPl	Mr. Flodin
	Lab. Sec. 1	VI-IX	T		
		VIII-IX	Th	100PPl	
	2	I-II	T		
		VI-IX	F	100PPl	
37s	Machine Design (E.E.).....				
	(3 cred.; prereq., 33)				
	Lect. Sec. 1	III	W	201PPl	Mr. Martenis
	2	II	Th	201PPl	Mr. Flodin
	Lab. Sec. 1	VI-VII	W		
		VI-IX	Th	100PPl	
	2	VI-IX	M		
		I-II	S	100PPl	
38f	Machine Design (Chem.).....				
	(3 cred.; prereq., M.&M. 84)				
	Lect.	IV	W	202PPl	Mr. Flodin
	Lab.	VI-IX	WF	100PPl	

No.	Title	Hour	Day	Room	Instructor
39f,w,s	Ships and Shipping.....	Ar	Ar	Ar	Mr. Flodin
	(1 cred.; no prereq.; open to soph., jr., sr.)				
40f,w,s	Automotives				
	(2 cred.; prereq., 11, 12, 13)				
	Sec. 1	VI	MWF	110Ex	
	2	IV	MWF	110Ex	Mr. Hazen
42f	Steam Engines				
	(3 cred.; prereq., Phys. 23, 24)				
	Sec. 1	IV	MF	202PPl	
		III	W	202PPl	Mr. Shoop
	2	III	MF	202PPl	
		III	W	201PPl	
43w	Steam Boilers, Combustion, Fuels...				
	(2 cred.; prereq., Phys. 23 and 24)				
	Sec. 1	III	WF	102ME	Mr. Shoop
	2	II	WF	102ME	
61s	Measurement of Power.....				
	(2 cred.; prereq., M.&M. 127)				
	Lect. Sec. 1	III	ThS	102ME	
	2	II	M		
		III	Th	102ME	
81f	Elementary Mechanical Laboratory.				
	(2 cred.; prereq., M.&M. 26)				
	Sec. 1	VI-IX	T		
		VI-VII	F	Ex	
	2	VI-VII	T		
		VI-IX	F	Ex	
	3	VI-IX	M		
		VI-VII	W	Ex	
	4	VI-VII	M		
		VI-IX	W	Ex	
82w	Steam Laboratory				
	(2 cred.; prereq., 81)				
	Sec. 1	VI-IX	F		
		III-IV	S	Ex	
	2	I-IV	S		
		VI-VII	F	Ex	
	3	VI-IX	M		
		II-III	Th	Ex	
	4	VI-IX	T		
		VI-VII	M	Ex	
83s	Elementary Power and Gas.....				
	(2 cred.; prereq., 81)				
	Lab. Sec. 1	VI-IX	W		Mr. Shoop
		VI-VII	F	Ex	
	2	VI-VII	W		
		VI-IX	F	Ex	
	3	VI-IX	M		
		VI-VII	T	Ex	
	4	VI-VII	M		
		VI-IX	T	Ex	
84f	Elementary General Laboratory (Mines)				
	(4 hrs.; prereq., Mech.)				
	Sec. 1	VI-IX	Th	Ex	Mr. Shoop
	2	VI-IX	Th	Ex	

No.	Title	Hour	Day	Room	Instructor
90f-91w-92s	Seminar ..... (1 cred. per qtr.; prereq., jr. standing)				
	Sec. 1	IV	S	204ME 201PPl(s)	Mr. Shipley
	2	IV	S	202PPl	Mr. Martenis
110f,w,s	Tool Design ..... (3 cred.; prereq., 15, 31)	Ar	Ar	Ar	Mr. Shipley
111f,w,s	Tool Construction ..... (3 cred.; prereq., 15)	Ar	Ar	MEShop	Mr. Shipley, Mr. Rogers
120w	Industrial Plants ..... (3 cred.; prereq., sr. with 15 or 16)	I	MWF	102ME	Mr. Shipley
121s	Production Methods ..... (3 cred.; prereq., sr. with 15 or 16)	I	MWF	204ME	Mr. Shipley
131f-132w	Advanced Engineering Design..... (3 cred. per qtr.; prereq., 35)	VI-IX	MTh	204PPl	Mr. Flodin, Mr. Campbell
133s	Advanced Engineering Design..... (3 cred.; prereq., 132)	VI-IX	WTh	204PPl	Mr. Flodin, Mr. Campbell
135f	Steam Engine Design..... (3 cred.; prereq., 42)	VI-IX	MTh	204PPl	Mr. Campbell
136f,w	Gas Engine Design..... (3 cred.; prereq., reg. in 150)	VI-IX	MTh	204PPl	Mr. Robertson, Mr. Hazen
137w	Advanced Gas Engine Design..... (3 cred.; prereq., 136)	VI-IX	MTh	204PPl	Mr. Robertson, Mr. Hazen
137s	Advanced Gas Engine Design..... (See 137w)	VI-IX	WTh	204PPl	
138s	Advanced Gas Engine Design..... (3 cred.; prereq., 137)	VI-IX	WTh	204PPl	Mr. Robertson, Mr. Hazen
141w	Automobile and Motor Truck Engines ..... (3 cred.; prereq., 150)	I	MWF	215Ex	Mr. Hazen
142s	Automobile and Motor Trucks..... (3 cred.; prereq., 141)	Ar	Ar	Ar	Mr. Hazen
144f-145w	Heat Engines (E.E.)..... (3 cred. per qtr.; prereq., M.&M. 26)				
	Rec. Sec. 1	II	WF	110Ex	Mr. Rowley
	2	II	WF	215Ex	Mr. Robertson
	3	III	WF	110Ex	
	4	III	WF	215Ex	
	Lab. Sec. 1	VI-VIII	F	Ex	
	2	VI-VIII	Th	Ex	
	3	I-III	Th	Ex	
	4	VI-VIII	M	Ex	
146s	Gas Engines and Producers..... (3 cred.; prereq., 145)				
	Rec. Sec. 1	II	WF	110Ex	Mr. Robertson
	2	II	WF	215Ex	
	3	III	WF	110Ex	
	4	III	WF	215Ex	
	Lab. Sec. 1	VI-IX	F	Ex	
	2	VI-IX	Th	Ex	
	3	I-III	Th	Ex	
	4	VI-IX	M	Ex	
147w	Heat Engines (Chem. Engr.)..... (4 cred.; prereq., M.&M. 84)				
	Rec.	IV	MWF	215Ex	Mr. Shoop
	Lab.	VI-IX	F	Ex	

No.	Title	Hour	Day	Room	Instructor
148s	Heat Engines (Chem. Engr.).....				
	(3 cred.; prereq., 147)				
	Rec.	IV	MWF	215Ex	Mr. Shoop
		VI-IX	F	Ex	
149f	Heat Engines (C.E.).....				
	(4 cred.; prereq., M.&M. 26)				
	Rec.	IV	MWF	215Ex	
	Lab. Sec. 1	VI-IX	W	Ex	
	2	I-IV	S	Ex	
149w,s	Heat Engines (C.E.).....				
	(See 149f)				
	Rec.	I	TThS	110Ex	
	Lab.	VI-IX	W	Ex	
150f	Gas Engines and Producers.....	II	MThS	110Ex	Mr. Robertson
	(3 cred.; prereq., 41, 43)				
151s	Elementary Thermodynamics				
	(3 cred.; prereq., 43)				
	Sec. 1	I	TThS	102ME	Mr. Shoop
	2	III	MWF	102ME	
152w	Steam Turbines	II	MThS	110Ex	Mr. Shoop
	(3 cred.; prereq., 151)				
153f	Heating and Ventilation.....	IV	MWF	201PPl	Mr. Rowley
	(3 or 4 cred.; prereq., M.&M. 127, 128, 129)	VI-IX	W	100PPl	
154s	Heating and Ventilation	I	TTh	201PPl	Mr. Rowley
	(2 cred.; prereq., M.&M. 92)				
156s	Compressed Air and Refrigerator Machinery	I	MWF	209Ex	Mr. Rowley
	(3 cred.; prereq., 151)				
162f	Power Plant Machinery.....	I	MWF	102ME	Mr. Shoop
	(3 cred.; prereq., 43)				
163w	Applied Thermodynamics	I	MWF	110Ex	Mr. Shoop
	(3 cred.; prereq., 151)				
164s	Design of Power Units.....				
	(3 cred.; prereq., 163)				
	Lect.	III	Th	201PPl	Mr. Flodin
	Lab.	VI-IX	WTh	204PPl	
165s	Fuels and Combustion.....	Ar	Ar	Ar	Mr. Shoop
	(3 cred.; prereq., 43)				
166s	Water Turbines	IV	MWF	209Ex	Ar
	(3 cred.; prereq., M.&M. 129)				
170f,w,s	Theoretical Naval Architecture.....	VI-IX	MTh	204PPl	Mr. Flodin
	(2 cred.; jr., sr.; preferably preceded by 39)				
	(Spring)	VI-IX	WTh	204PPl	
171f,w,s	Theoretical Naval Architecture.....	VI-IX	MTh	204PPl	Mr. Flodin
	(2 cred.; prereq., jr., sr.)				
	(Spring)	VI-IX	WTh		
172f,w,s,	Ship Drawing	Ar	Ar	204PPl	Mr. Flodin
	(2 cred.; prereq., 138, 139)				
181w	Advanced General Laboratory.....				
	(4 hrs.; prereq., 84)				
	Sec. 1	VI-IX	Th	Ex	Mr. Robertson
	2	VI-IX	Th	Ex	

No.	Title	Hour	Day	Room	Instructor
182f,w	Advanced Steam Laboratory..... (2 cred.; prereq., reg. in 151)				
	Sec. 1	I-IV	T		
		VI-VII	T	Ex	Mr. Shoop
	2	III-IV	T		
		VI-IX	T	Ex	
183f,w	Power and Gas Engine Laboratory.. (2 cred.; prereq., reg. in 150)				
	Sec. 1	I-IV	T		
		VI-VII	T	Ex	Mr. Robertson
	2	III-IV	T		
		VI-IX	T	Ex	
184s	Advanced Engineering Laboratory.. (2 cred.; prereq., 182, 183)				
	Sec. 1	I-IV	T		Mr. Rowley,
		VI-VII	T	Ex	Mr. Robertson, Mr. Shoop
	2	III-IV	T		
		VI-IX	T	Ex	
190f-191w-192s	Seminar ..... (1 cred. per qtr.; sr.)				
	Sec. 1	IV	S	209Ex	Mr. Rowley
	2	IV	S	110Ex	Mr. Robertson
223f	Industrial Management ..... (3 cred.; prereq., 121)	IV	MWF	102ME	Mr. Shipley
224w	Industrial Management Laboratory.. (3 cred.; prereq., 223)	IV	MWF	204ME	Mr. Shipley
225s	Industrial Management ..... (3 cred.; prereq., 224)	IV	MWF	204ME	Mr. Shipley
226f	Safety Engineering ..... (3 cred.; prereq., 121)	Ar	Ar	Ar	Mr. Shipley
227w-228s	Industrial Engineering Problems... (3 cred.; prereq., 223, 224, 225 or reg. in 224, 225)	Ar	Ar	Ar	Mr. Shipley
231f-232w-233s	Automobile and Motor Truck Design (3 cred. per qtr.; grad.)	Ar	Ar	Ar	Mr. Robertson, Mr. Hazen
237s	Gas Tractor Design..... (3 cred.; prereq., 136)	Ar	Ar	Ar	Mr. Robertson, Mr. Hazen
251f	Advanced Thermodynamics ..... (3 cred.; prereq., 163)	Ar	Ar	Ar	Mr. Shoop
255f,w,s	Advanced Heating and Ventilating.. (3 cred.; prereq., 153)	Ar	Ar	Ar	Mr. Rowley
257w	Mechanical Equipment of Buildings (3 cred.; prereq., 153, Phys. 43)	Ar	Ar	Ar	Mr. Martenis,
265f-266w	Power Plant Design..... (3 cred. per qtr.; prereq., 164)	VI-IX	MTh	204PPl	Mr. Rowley
267s	Power Plant Management..... (3 cred.; prereq., 164)	Ar	Ar	Ar	Mr. Shoop
271f	Railway Technology ..... (1 cred.; prereq., M.&M. 127, 128, 129)	Ar	Ar	Ar	Mr. Martenis
272f-273w-274s	Locomotive Design and Construction (3 cred. per qtr.; prereq., 271)	Ar	Ar	Ar	Mr. Martenis
278s	Locomotive Road Tests..... (3 cred.; prereq., 271, 272)	Ar	Ar	Ar	
281f-282w-283s	Automobile Testing and Research.. (3 cred. per qtr.; grad.)	Ar	Ar	Ar	Mr. Robertson

No.	Title	Hour	Day	Room	Instructor
287f-288w-289s	Mechanical Engineering Research... (3 cred. per qtr.; prereq., 184 or reg. 184)	Ar	Ar	Ar	Mr. Robertson, Mr. Rowley, Mr. Shipley, Mr. Shoop
290f-291w-292s	Seminar ..... (1 cred. per qtr.; prereq., grad.)	Ar	Ar	Ar	Mr. Shipley
293f,w,s	Aeronautical Engineering ..... (3 cred.; prereq., 150)	Ar	Ar	Ar	
294f,w,s	Aeroplane Design ..... (3 cred.; prereq., 136)	Ar	Ar	Ar	
295s	Motor Truck Transportation..... (3 cred.; prereq., 142)	Ar	Ar	Ar	Mr. Robertson

METALLURGY

No.	Title	Hour	Day	Room	Instructor
109f	Metallurgy (M.E.) ..... (3 cred.; prereq., Chem. 16)	IV	MWF	111M	Mr. Christenson
109w	Metallurgy (E.E.) ..... (See 109f)	IV	MWF	111M	Mr. Christenson
150f	Metallography (E.E.) ..... (3 cred.; prereq., jr., sr., E.E.)				
	Lect.	I	MW	315M	Mr. Dowdell
	Lab.	VI-IX	M	307M	Mr. Weber
151w	Advanced Metallography (E.E.).... (3 cred.; prereq., 150)				
	Lect.	I	MW	315M	Mr. Dowdell
	Lab.	VI-IX	M	307M	Mr. Weber
156f	Metallography (M.E.) ..... (3 cred.; prereq., sr. M.E.)				
	Lect.	III	ThS	315M	Mr. Harder
	Lab. Sec. 1	VI-IX	W	307M	Mr. Weber
	2	VI-IX	F	307M	Mr. Weber
157w	Advanced Metallography (M.E.)... (3 cred.; prereq., 156)				
	Lect.	III	ThS	315M	Mr. Harder
	Lab. Sec. 1	VI-IX	W	307M	Mr. Weber
	2	VI-IX	F	307M	Mr. Weber
163f-164w-165s	Advanced Metallography ..... (Cred. ar.; prereq., 151, 156, or equiv.)	Ar	Ar	Ar	Mr. Harder

MILITARY SCIENCE AND TACTICS

No.	Title	Hour	Day	Room	Instructor
1f-2w	First Year Basic Course, R.O.T.C. (Artillery and Signal Corps).... (No cred.; no prereq.)				
	Sec. 1	I	MWF	A	Ar
	2	IX	MWF	A	Ar
3s	First Year Basic Course, R.O.T.C. (Artillery and Signal Corps).... (No cred.; prereq., 1-2)	VII-IX	T	A	Ar
4f-5w	Second Year Basic Course, R.O.T.C. (Artillery and Signal Corps).... (No cred.; prereq., 1-2-3)				
	Sec. 1	I	MWF	A	Ar
	2	IX	MWF	A	Ar
6s	Second Year Basic Course, R.O.T.C. (Artillery and Signal Corps).... (No cred.; prereq., 4-5)	VII-IX	T	A	Ar

No.	Title	Hour	Day	Room	Instructor
51f-52w	First Year Advanced Course, R.O.T.C (Artillery)				
	(3 cred. per qtr.; prereq., 4-5-6)				
	Rec. Sec. 1	IV	MWF	A	Capt. Adams
	2	II	MWF	A	
	Lab. Sec. 1	VIII-IX	W	A	
	2	VIII-IX	M	A	
51f-52w	First Year Advanced Course, R.O.T.C. (Signal Corps).....	III	Th	321EE	Capt. Persons
	(1 cred.; prereq., 4-5-6, reg. in E.E. 61-63)	VI	M	321EE	
53s	First Year Advanced Course, R.O.T.C. (Artillery)				
	(3 cred.; prereq., 52)				
	Rec. Sec. 1	IV	MWF	A	Capt. Adams
	2	II	MWF	A	
	Lab. Sec. 1	VIII-IX	T	A	
	2	III	T	A	
		IX	T	A	
53s	First Year Advanced Course, R.O.T.C. (Signal Corps).....	IX	T		
	(1 cred.; prereq., 52 and reg. in E.E. 65)	III	Th	136EE	Capt. Persons
54f-55w	Second Year Advanced Course, R.O.T.C. (Artillery)				
	(3 cred. per qtr.; prereq., 53)				
	Rec. Sec. 1	I	MWF	A	Capt. Adams
	2	III	MWF	A	
	Lab. Sec. 1	VIII-IX	F	A	
	2	VIII-IX	W	A	
54f-55w	Second Year Advanced Course, R.O.T.C. (Signal Corps).....				
	(1 cred. per qtr.; prereq., 51-52-53 and reg. in E.E. 161-163)				
	Rec.	I	MW	321EE	Capt. Persons
56s	Second Year Advanced Course, R.O.T.C. (Artillery)				
	(3 cred. per qtr.; prereq., 55)				
	Rec. Sec. 1	I	MWF	A	Capt. Adams
	2	III	MWF	A	
	Lab.	VII-IX	T	A	
56s	Second Year Advanced Course, R.O.T.C. (Signal Corps).....	VIII	T	A	Capt. Persons
	(1 cred.; prereq., 54-55, reg. in E.E. 165)	I	W	321EE	

PHYSICAL EDUCATION FOR MEN

No.	Title	Hour	Day	Room	Instructor
1f-2w	Freshman Physical Education.....				
	(Cred.*; no prereq.)				
	Sec. 1	II	TTh	A	
	2	III	TTh	A	
	3	VI	TTh	A	
	4	VII	TTh	A	
	5	VIII	TTh	A	

*Courses 1-2-3 and 4 carry a total of three credits. The entire course must be completed before credit is received for any quarter. Preventive Medicine 12s may be offered as a substitute for 4.

Courses 1f-2w-3s carry no credit when taken in place of military science and tactics by foreign students and others in the College of Engineering and Architecture.

No.	Title		Hour	Day	Room	Instructor
3s	Freshman Physical Education..... (See 1f-2w above)					
		Sec. 1	II	TTh	A	
		2	III	TTh	A	
		3	VI	MTh	A	
		4	VII	MTh	A	
		5	VIII	MTh	A	
4f	Freshman Hygiene ..... (Cred.*; no prereq.)					
		Sec. 1	II	T	301F	Dr. Cooke and others
		2	II	F	301F	
		3	IV	T	301F	
4w	Freshman Hygiene ..... (See 4f above)					
		Sec. 1	IV	T	301F	
		2	II	F	301F	
		3	IV	S	301F	
4s	Freshman Hygiene ..... (See 4f)					
		Sec. 1	II	F	301F	Dr. Cooke and others
		2	IV	T	301F	
		3	III	M	301F	
7f,8w,9s	Advanced Leaders ..... (1 cred. per qtr.; prereq., 1-2-3 or permission)					
		Sec. 1	IV	T	A	
			II	TTh		
		2	IV	T	A	
			III	TTh		
		3	IV	T	A	
			VI	TTh		
		4	IV	T	A	
			VII	TTh		
		5	IV	T	A	
			VIII	TTh		
		6	II	MWF	A	
		7	III	MWF	A	
		8	IV	MWF	A	
10f-11w-12s	Minor Sports ..... (2 cred. per qtr.; prereq., 1-2-3 or permission)					
		Lect.	IV	S	A	
		Lab.	IV	MWF		
16f-17w-18s	Drill Substitution ..... (No cred.; no prereq.)					
		Sec. 1	II	MWF	A	Mr. Iverson
		2	III	MWF	A	
		3	IV	MWF	A	
30s	Athletic Training and First Aid.... (2 cred.; no prereq.)		I	MWF	A	Dr. Cooke

* Courses 1-2-3 and 4 carry a total of three credits. The entire course must be completed before credit is received for any quarter. Preventive Medicine 12s may be offered as a substitute for 4.

Courses 1f-2w-3s carry no credit when taken in place of military science and tactics by foreign students and others in the College of Engineering and Architecture.

PHYSICAL EDUCATION FOR WOMEN

No.	Title	Hour	Day	Room	Instructor
1f-2w-3s*	Elem. Physical Training.....				
	(No cred.; required of all students; no prereq.)				
	Sec. 1	III	MWF	3, 151, 153WGm	Ar
	2	IV	MWF	3, 151, 153WGm	Ar
	3	VI	MWF	3, 151, 153WGm	Ar
	4	VIII	MWF	3, 151, 153WGm	Ar
	5	III	TThS	3, 151, 153WGm	Ar
4f	Preliminary Hygiene				
	(No cred.; required of all students; no prereq.)				
	Sec. 1	I	M	201WGm	Dr. Norris
	2	II	T	201WGm	
	3	III	W	201WGm	
	4	IV	M	201WGm	
	5	VI	T	201WGm	
4w	Preliminary Hygiene	III	W	201WGm	Miss Anderson
4s	Preliminary Hygiene	II	T	201WGm	Miss Anderson
7f-8w*	Sophomore Physical Training.....	IV	TS	153WGm	Miss Conger
	(No cred.; soph.; prereq., 1-2-3)				
9s	Archery	III	MF	Ar	Ar
	(No cred.; soph.; prereq., 1-2-3)				
10f-11w-12s‡	Sophomore Orthopedic Gymnastics..	IV	TS	3WGm	Dr. Tolg
	(No cred.; soph.; prereq., 1-2-3)				
10f-11w‡	Sophomore Orthopedic Gymnastics..				
	(See 10-11-12)				
	Sec. 1	VI	TTh	3WGm	Miss Denny
	2	III	MW	3WGm	Miss Denny
13f-14w-15s	Sophomore Interpretive Dancing...	VI	TTh	151WGm	Miss Baker
	(No cred.; soph.; prereq., 1-2-3)				
13f-14w*	Sophomore Interpretive Dancing...	III	MW	151WGm	Miss Bock-struck
	(See 13f-14w-15s)				
13s	Sophomore Interpretive Dancing...	III	MW	151WGm	Miss Bock-struck
	(See 13f-14w-15s)				
16f-17w	Sophomore Games and Folk Dancing	I	TTh	151WGm	Ar
	(No cred.; soph.; prereq., 1-2-3)				
18s	Tennis				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	VII	WF	151WGm	
	2	I	TTh	151WGm	
	3	IV	TS	151WGm	
	4	VIII	TTh	151WGm	
19f	Sophomore Hockey				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	VII	WF	151WGm	
	2	V	TTh	151WGm	
	3	VIII	TTh	151WGm	
20w	Sophomore Basket-Ball				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	VII	WF	151WGm	
	2	V	TTh	151WGm	
	3	VIII	TTh	151WGm	

* The third quarter is open to students who have not taken the preceding quarters. The winter quarter is not open to students who have not had the fall quarter.

‡ Students may enter course in any quarter.

No.	Title	Hour	Day	Room	Instructor
21s	Sophomore Baseball ..... (No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	VII	WF	151WGm	
	2	V	TTh	151WGm	
	3	VIII	TTh	151WGm	
22f,s-23w§*	Sophomore Elementary Swimming.. (No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	IV(11:30)	MW	51WGm	Miss Conger
	2	IV(12:00)	MW	51WGm	Miss Conger
	3	VII	MW	51WGm	Miss Clayton
	4	II	TTh	51WGm	Miss Clayton
	5	IV	TS	51WGm	Miss Clayton
	6	VII	TTh	51WGm	Miss Conger
	7	VIII(3:30)	TTh	51WGm	Miss Clayton
	8	VIII(4:00)	TTh	51WGm	Miss Clayton
	9	III	MW	51WGm	Miss Clayton
25f,s-26w§*	Sophomore Intermediate Swimming. (No cred.; soph.; prereq., 1-2-3, elementary swimming test)				
	Sec. 1	VIII½(4:00)	MW	51WGm	Miss Conger
	2	III	ThS	51WGm	Miss Conger
28f,s-29w§*	Sophomore Advanced Swimming.... (No cred.; soph., jr., sr.; prereq., 1-2-3, intermediate swimming test)	VIII(3:30)	MW	51WGm	Miss Conger
31f,s	Sophomore Life Saving and Water Sports ..... (No cred.; soph., jr., sr.; prereq., 1-2-3 and adv. swimming test)	IX	MW	Ar	Ar
43-44-45†	Play and Playground..... (3 cred.; jr., sr.; prereq., 6 qtrs.)	Not offered in 1926-27			
66f-67w-68s†	Interpretive Dancing ..... (3 cred.; jr., sr.; prereq., 6 qtrs.)	VII	TThF	153WGm	Miss Baker
69f-70w-71s†	Advanced Interpretive Dancing ... (3 cred.; jr., sr.; prereq., 13-14-15 or 66-67-68)	IV	MTS	151WGm	Miss Baker
	Courses for Which No Registration Is Required				
31f,w,s	Life Saving	IX	MW	51WGm	Miss Conger
32f,w,s	General Swimming ..... (No cred.; all; no prereq.)	IX	TThF	51WGm	
33-34-35*	Hockey, Basket-Ball, and Baseball.. (No cred.; fr., jr., sr.; prereq., permission of director)	IX	MTWTh	151WGm	

PHYSICS

No.	Title	Hour	Day	Room	Instructor
3f	Elements of Mechanics and Sound.. (3 cred.; prereq., M.&M. 12 or equiv.)				
	Lect. Sec. 1	I	MWF	30Ph	Mr. Erikson
	2	II	MWF	30Ph	
	3	VI	MWF	30Ph	
	Quiz. Sec. 1	II	Th	305E	
	2	IX	Th	100C	

* The third quarter is open to students who have not taken the preceding quarters. The winter quarter is not open to students who have not had the fall quarter.

§ No student may register for more than two quarters of swimming without permission. Course 22 is never closed for senior registration.

† The entire course must be completed before credit is received for any quarter.

No.	Title	Hour	Day	Room	Instructor
3w	Elements of Mechanics and Sound.. (See 3f)				
	Lect.	VIII	MWF	30Ph	Mr. Erikson
	Quiz.	IX	F or ar	100C	
3s	Elements of Mechanics and Sound.. (See 3f)				
	Lect.	III	TThS	30Ph	Mr. Erikson
	Quiz.	II	F	305E	
4f	Elements of Mechanics and Sound Laboratory ..... (1 cred.; prereq., 3 or reg. in 3)				
	Sec. 1	I-II	S	16Ph	Mr. Erikson
	2	VI-VII	W	16Ph	and assistants
	3	VI-VII	M	16Ph	
	4	III-IV	F	16Ph	
	5	III-IV	T	16Ph	
	6	III-IV	M	16Ph	
	7	I-II	T	16Ph	
	8	III-IV	W	16Ph	
	9	VIII-IX	F	16Ph	
	10	III-IV	S	16Ph	
4w,s	Elements of Mechanics and Sound Laboratory ..... (See 4f)				
	Lect. Sec. 1	VI-VII	T	16Ph	Mr. Erikson
	2	VIII-IX	T	16Ph	and assistants
	3	I-II	Th	16Ph	
	4	VIII-IX	Th	16Ph	
23f	Heat ..... (3 cred.; prereq., 3)				
	Lect.	III	TThS	30Ph	Mr. Miller
	Quiz.	IX	Th	100C	
23w	Heat ..... (See 23f)				
	Lect. Sec. 1	I	MWF	30Ph	Mr. Miller
	2	II	MWF	30Ph	
	3	VI	MWF	30Ph	
	Quiz. Sec. 1	II	Th	305E	
	2	IX	Th	100C	
24f	Heat Laboratory ..... (1 cred.; prereq., 23 or reg. in 23)				
	Sec. 1	VI-VII	M	23Ph	Mr. Miller
	2	VIII-IX	M	23Ph	and assistants
	3	VI-VII	T	23Ph	
	4	VIII-IX	T	23Ph	
24w	Heat Laboratory ..... (See 24f)				
	Sec. 1	I-II	S	23Ph	Mr. Miller
	2	VI-VII	W	23Ph	and assistants
	3	VI-VII	M	23Ph	
	4	III-IV	F	23Ph	
	5	I-II	T	23Ph	
	6	III-IV	W	23Ph	
	7	III-IV	T	23Ph	
	8	III-IV	S	23Ph	
	9	VIII-IX	F	23Ph	
	10	VIII-IX	M	23Ph	

No.	Title	Hour	Day	Room	Instructor
35w,s	Optics				
	(2 cred.; prereq., 3)				
	Lect.	VI	TTh	30Ph	
	Quiz (winter)	IX	T	30Ph	
	(spring)	VIII	Th	30Ph	
	(For 4-cred. course with lab. see 33f,s and 34f,s, Science, Literature, and the Arts bulletin)				
43w	Electricity				
	(3 cred.; prereq., 3)				
	Lect.	III	TThS	30Ph	Mr. Zeleny
	Quiz	IX	Th	100C	
43s	Electricity				
	(See 43w)				
	Lect. Sec. 1	I	MWF	30Ph	Mr. Zeleny
	2	II	MWF	30Ph	
	3	VI	MWF	30Ph	
	Quiz Sec. 1	II	Th	305E	
	2	IX	Th	100C	
44w	Electricity Laboratory				
	(1 cred.; prereq., 4, 43 or reg. in 43)				
	Sec. 1	VI-VII	T	31Ph	Mr. Zeleny and assistants
	2	VIII-IX	T	31Ph	
	3	VI-VII	W	31Ph	
44s	Electricity Laboratory				
	(See 44w)				
	Sec. 1	I-II	S	31Ph	Mr. Zeleny and assistants
	2	III-IV	S	31Ph	
	3	VIII-IX	F	31Ph	
	4	III-IV	M	31Ph	
	5	I-II	M	31Ph	
	6	III-IV	W	31Ph	
	7	VI-VII	M	31Ph	
	8	II-III	F	31Ph	
	9	III-IV	T	31Ph	
	10	VIII-IX	M	31Ph	
123s	Pyrometry and Heat.....	VI-IX	MW	23Ph	Mr. Miller
	(3 cred.; prereq., 23, 24)				
144f	Electrical Measurements				
	(3 cred.; prereq., 43, 44)				
	Lect.	V	T	30Ph	Mr. Zeleny
	Quiz.	II	Th	335EE	
	Lab. Sec. 1	VI-VII	TTh	31Ph	Mr. Zeleny and assistants
	2	VI-VII	MF	31Ph	
	3	VIII-IX	M		
		I-II	S	31Ph	

PREVENTIVE MEDICINE AND PUBLIC HEALTH

No.	Title	Hour	Day	Room	Instructor
3	Personal Hygiene and Elementary Sanitation	IV	TS	101b,MH	Dr. Lees
	(2 cred.; no prereq.)				
12s	Hygiene				
	(No cred.; no prereq.)				
	Sec. 1	VI	T	335EE	Dr. Cady
	2	IX	F	335EE	

No.	Title	Hour	Day	Room	Instructor
50f,w,su	Public and Personal Health..... (3 cred.; prereq., An. Biol. 1, 2, Psy. 1-2; also open to jrs. and srs.)	V	MWF	101b,MH	Dr. O'Brien
53f,s,su	Elements of Preventive Medicine... (3 cred.; prereq., Psy. 1-2; Biol. 51 or equiv. or jr., sr., by permission)	II	MWF	101b,MH	Dr. Diehl
73w	Occupational Hygiene and Disease.. (2 cred.; prereq., 53)	IV	MW	101b,MH	Dr. Myers

PSYCHOLOGY

No.	Title	Hour	Day	Room	Instructor
1f-6w	General Psychology for Business Students ..... (3 cred. per qtr.; no prereq.)				
	Lect.	III	MW	OLAud	Mr. Elliott and assistants
	Rec. (1 hr.)	III	Th or F or S	Psy	
		IV	F or S	Psy	

SOILS

No.	Title	Hour	Day	Room	Instructor
4f	Soils ..... (3 cred.; soph., jr., sr.; prereq., Chem. 10 cred.)				
	Lect.	III	TTh	251Ch(F)	Mr. Rost
	Lab.	II-III	S	253Ch(F)	
8w	Physical Properties of Soils..... (3 cred.; prereq., Soils 4)	Ar	Ar	Ar	Mr. McMiller