The Bulletin *of the* University *of* Minnesota

General Information for the Year 1928-1929

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

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 information is desired. Address

The REGISTRAR,
University of Minnesota
Minneapolis, Minn.

Research Publications. Containing results of research work. Papers are published as separate monographs numbered in several series, or as individual monographs without series designation.

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

Engineering Experiment Station Bulletins and Circulars. Reports concerning the research work of the station and occasional papers of special interest.

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

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The LIBRARIAN,
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Minneapolis, Minn.

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INTRODUCTORY STATEMENT

PURPOSE

The general information bulletin contains such material as will be helpful to the high school graduate or prospective student and his parents. In it is found the necessary information about the entrance requirements, living conditions, fees, university organizations, etc.

It is sent out on request, for such help as it may give young men and women who are thinking of coming to the University. It is not designed to urge a college education on any or all who may receive it. It will serve its purpose if it helps in the thoughtful consideration that should be given by parents and high school graduates when they choose a college education from among the many opportunities for further training. It presents a certain type of training which should be considered in relation to other opportunities such as vocational and trade schools of the better kind, normal schools, and teachers colleges, junior and private colleges, and extension courses and correspondence schools. The controlling factor in any decision should be the best interests of the individual and his capacity to make successful use of the opportunities offered by the University or by any of the agencies suggested above. The choice is often not an easy one. Perhaps the following suggestions may be helpful.

As the high school boy or girl approaches the period of responsible manhood or womanhood the kind of training in final preparation for life may often be clearly indicated by the character of the individual's high school work.

The first choice which the student has to make is that between a long period of studies and some immediate employment such as a mechanical trade, buying and selling, clerical work, and many others, perhaps preceded by a shorter period of special study or training.

The wise student will make his decision after an inventory of his own real interests and abilities and will in any case avoid a choice that does not open up to him opportunities to use to the fullest his abilities as they are or as they develop.

Generally speaking, those who like their high school studies and are successful in them are more likely to succeed in college studies. Of those who stand in the lowest one fourth of their high school classes very few are successful in college work. Most of these would do well to consider other types of training for a vocation in which they may be successful. Of those who stand in the highest one fourth of their high school classes about 80 per cent make satisfactory records in college. It is very unfortunate for those young people who have shown their aptitude for studies to be drawn into employment immediately after high school when most of them are capable of preparing for and assuming positions of high responsibility and honor in industrial and social life of state and nation. Given good health and the power of application, those who like their high school studies and stand high in them ought to make every effort to secure college training.

College work is very different from high school work. It deals with a higher order of studies and demands constant advancement to more difficult studies which require intellectual growth and expansion. The college conducts its work with a view to developing initiative, independent judgment, and responsibility in its students for the two reasons that the studies require these qualities and that the students are just becoming men and women and must assume the duties and obligations of men and women.

FRESHMAN WEEK

The University recognizes the need of giving its newly entering students an introduction to their work and to university life which is new and strange to many of them. For these purposes it is requiring freshmen to come to the University for one week before classes begin. This Freshman Week is devoted to efforts to help the freshman get a right start.

The week of September 24 to 29, inclusive, will be used by the freshman for the following duties:

a. Making his living arrangements.
b. Registration and paying his fees.
c. Physical examinations.
d. Psychological tests.
e. Other tests or examinations which will enable the faculty to place him in the classes for which he is best fitted.
f. Hearing lectures on such subjects as:
   1. The significance of a university
   2. The use of the library
   3. How to study
   4. The use of leisure time.
g. Making visits to acquaint himself with the University Library, scientific laboratories, and other points of interest in connection with his choice of studies and future occupation.
h. Special exercises intended to acquaint him with the peculiar conditions or requirements of the college which he enters.
i. Musical and social entertainments in the evenings arranged with the co-operation of the Student Council and the various religious bodies.

During the process of registration faculty advisers talk with every student who wishes it, helping him to make the best selection of studies.

A committee on educational guidance maintains an office for conference with freshmen regarding their general vocational and educational problems.

Administrative officers, faculty, student government councils, upper class students, and organizations for religious work all co-operate to make Freshman Week a period during which the freshmen find themselves and learn how to go about their university work and how to profit by the opportunities for recreation and other activities in addition to their studies.

NOTICE THAT ATTENDANCE THROUGHOUT FRESHMAN WEEK IS A REQUIREMENT.

It is recommended that as many as possible present themselves for registration on Friday, September 21, in order to avoid the inconvenience and delay incident to the congestion on the last day. All who have not completed the psychological and English tests must report on Friday, September 21.

NOTICE TO PROSPECTIVE STUDENTS

——oOo——

1. Credentials should be submitted as soon as possible after the close of the spring term, and in no case later than July 1.

2. Students who do not observe this regulation must expect to undergo the inconvenience of delay in being notified of their status.

3. This may lead to embarrassing results in the event that the candidate in question is not qualified for admission, as the time for removing deficiencies is thereby curtailed.

4. Whenever possible, credentials should be sent in directly by the proper official at the school last attended, and should not be presented in person by the student.

UNIVERSITY CALENDAR
1928-29

Fall Quarter

1928			
September	20	Thursday	Payment of fees closes, except for new students
September	21-24		Entrance examinations (for removal of entrance deficiencies)
			Registration of all new students entering the freshman class
September	24-28		Examinations for removal of conditions
			Physical examinations
			Registration period,[1] colleges of Science, Literature, and the Arts, and Education
September	24-29		Freshman Week
September	27-28		Registration days[1] for all colleges not included above
September	28	Friday	Payment of fees for new students closes
October	1	Monday	Fall quarter classes begin, 8:30[2] a.m.
			First semester extension classes[3] begin
October	18	Thursday	Senate meeting, 4:30 p.m.
October	20	Saturday	Homecoming Day
November	6	Tuesday	Election Day; a holiday
November	12	Monday	A holiday; (November 11, Sunday, Armistice Day)
November	29	Thursday	Thanksgiving Day; a holiday
December	6	Thursday	State Day Convocation
December	19-22		Final examination period
December	20	Thursday	Commencement Convocation
			Senate meeting, 4:30 p.m.
December	22	Saturday	Fall quarter ends, Christmas vacation begins, 5:20 p.m.
December	26	Wednesday	Payment of fees closes for all students in residence fall quarter[4]

[1] Registration subsequent to the date specified will necessitate the approval of the college concerned. See also penalty fees for late registration, page 44.

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 8:15 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.

Winter Quarter

1929			
January	2-4		Entrance examinations
January	4-5		Registration days for new students in the College of Science, Literature, and the Arts
January	5	Saturday	Registration day for new students in all other colleges, 8:30 a.m.-3:00 p.m.
January	7	Monday	Christmas vacation ends, winter quarter classes begin, 8:30[1] a.m.
February	2	Saturday	First semester extension classes close
February	4	Monday	Second semester extension classes begin
February	12	Tuesday	Lincoln's Birthday; a holiday
February	21	Thursday	Charter Day Convocation Senate meeting, 4:30 p.m.
February	22	Friday	Washington's Birthday; a holiday
March	20-23		Final examination period
March	21	Thursday	Commencement Convocation Payment of fees closes for all students in residence winter quarter[2]
March	23	Saturday	Winter quarter ends, spring vacation begins, 5:20 p.m.

Spring Quarter

March	25-27		Entrance examinations
March	29	Friday	Good Friday; a holiday
March	30	Saturday	Registration day for new students in all colleges, 8:30 a.m.-3:00 p.m.
April	1	Monday	Spring vacation ends, spring quarter classes begin, 8:30[1] a.m.
May	16	Thursday	Cap and Gown Day Convocation Senate meeting, 4:30 p.m.
May	30	Thursday	Memorial Day; a holiday
June	1	Saturday	Second semester extension classes close
June	12-15		Final examination period
June	15	Saturday	Spring quarter closes, 5:20 p.m.
June	16	Sunday	Baccalaureate service
June	17	Monday	Fifty-seventh annual commencement

[1] First hour classes begin at 8:15 at University Farm.

[2] Registration subsequent to the date specified will necessitate the approval of the college concerned. See also penalty fees for late registration, page 44.

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.

Summer Quarter

June	18-19		Registration, first term
June	20	Thursday	Classes begin, 8:00 a.m.
July	4	Thursday	Independence Day; a holiday
July	27	Saturday	Registration and payment of fees for second term closes. First term closes
July	29	Monday	Second term classes begin
August	31	Saturday	Second term closes

Entrance Examinations

Entrance examinations for admission to the various colleges of the University will be conducted for students whose credentials do not meet the requirements.

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

For further information concerning these examinations see under "Admission by Examination," page 27.

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 BREEDING FARM, ZUMBRA HEIGHTS
  - THE STATE TREE STATION, OWATONNA
  - THE FOREST EXPERIMENT STATIONS, ITASCA AND CLOQUET
- THE AGRICULTURAL EXTENSION DIVISION
- THE SHORT COURSES IN AGRICULTURE

THE LAW SCHOOL

THE MEDICAL SCHOOL, including—
- THE SCHOOL OF NURSING

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

THE SCHOOL OF MINES AND METALLURGY, including—
- MINNESOTA SCHOOL OF MINES AND METALLURGY 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 ADMINISTRATION

THE UNIVERSITY EXTENSION SERVICE, including—
- GENERAL EXTENSION DIVISION
- AGRICULTURAL EXTENSION DIVISION

THE BOARD OF REGENTS

The Hon. Fred B. Synder, 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, Minneapolis - - - - - - 1931
The Hon. George H. Partridge, Minneapolis - - - - - 1932
The Hon. John G. Williams, Duluth - - - - - - 1933
The Hon. Egil Boeckmann, St. Paul - - - - - - 1933
The Hon. Julius A. Coller, Shakopee - - - - - - 1928
The Hon. Archie D. Wilson, Guthrie - - - - - - 1928
The Hon. J. E. G. Sundberg, Kennedy - - - - - - 1929
The Hon. Samuel E. Lewison, Canby - - - - - - 1933

ADMINISTRATIVE OFFICERS

Lotus Delta Coffman, Ph.D., LL.D., President
Frederick J. Kelly, Ph.D., Dean of Administration
Rodney M. West, B.A., Registrar
William T. Middlebrook, B.A., M.C.S., Comptroller
Frank K. Walter, M.A., M.L.S., Librarian
Harold S. Diehl, M.A., M.D., Director of the Health Service
John B. Johnston, Ph.D., Dean of the College of Science, Literature, and the Arts
Ora Miner Leland, B.S., C.E., Dean of the College of Engineering and Architecture and of the School of Chemistry
Walter C. Coffey, M.S., Dean and Director of the Department of Agriculture
Edward M. Freeman, Ph.D., Dean of the College of Agriculture, Forestry, and Home Economics
Everett Fraser, B.A., LL.B., Dean of the Law School
Elias Potter Lyon, Ph.D., M.D., Dean of the Medical School
William F. Lasby, B.S., D.D.S., F.A.C.D., Acting Dean of the College of Dentistry
William R. Appleby, M.A., Dean of the School of Mines and Metallurgy
Frederick J. Wulling, Phm.D., LL.M., Dean of the College of Pharmacy
Melvin E. Haggerty, Ph.D., Dean of the College of Education
Guy Stanton Ford, Ph.D., Dean of the Graduate School
Russell A. Stevenson, Ph.D., Dean of the School of Business Administration
Richard R. Price, M.A., Ed.D., Director of University Extension
Anne D. Blitz, M.A., Dean of Women
Edward E. Nicholson, M.A., Dean of Student Affairs
Ernest B. Pierce, B.A., Field Secretary of the University and Secretary of the General Alumni Association

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 degrees of bachelor of science at the end of four years, bachelor of architecture at the end of the fifth year, and the Master's degree 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.

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

NOTE.—Students who have met the entrance requirements but whose high school record combined with the psychological tests and other information show that they will be unable to carry a regular course, will be permitted to take certain studies of general informational, cultural, or vocational character. Any student who shows sufficient ability in these studies may continue in them or may register as a candidate for a degree. A student in a regular course who does not profit by his opportunities may be transferred to this group until he demonstrates his ability and willingness to do work of an acceptable grade.

COLLEGE OF ENGINEERING AND ARCHITECTURE AND SCHOOL OF CHEMISTRY

The College of Engineering and Architecture offers professional four-year courses of study in the following fields:

Aeronautical Engineering	Architecture
Civil Engineering	Architectural Engineering
Electrical Engineering	Landscape Architecture
Mechanical Engineering	Interior Decoration

Agricultural Engineering (in co-operation with the College of Agriculture, Forestry, and Home Economics)

The School of Chemistry offers professional four-year courses of study in

Chemistry Chemical Engineering

Each of these courses leads to the Bachelor's degree in the corresponding field (as bachelor of areonautical engineering or bachelor of chemistry). Optional groups of electives are available in some of the courses for the guidance of students who desire to devote special attention to certain branches.

The Engineering Pre-business Course requires the first two years of work in the College of Engineering and Architecture. This is followed by two years in the School of Business Administration upon the completion of which the Bachelor's degree in business administration is conferred.

The first two years of the course in *Interior Decoration* are taken in the College of Science, Literature, and the Arts, and the last two years in the College of Engineering and Architecture.

Work is also offered in the Graduate School leading to the Master's degree in the appropriate branch of engineering, architecture, or chemistry, or to the Doctor's degree.

The professional degree of aeronautical, agricultural, architectural, chemical, civil, electrical, or mechanical engineer will be conferred upon those who have received the Bachelor's degree in the corresponding field of engineering when they have completed the equivalent of one additional year's college work in that field, and four years of approved engineering experience in positions of responsibility, and have presented a satisfactory professional thesis. Graduates of this University 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 of study immediately following graduation from the four-year course, thus making a five-year course leading to the Master's degree. Then after four years of approved experience and the preparation of the thesis, the professional 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 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 agriculture, agricultural education, agricultural economics, agricultural engineering, agronomy, farm management, dairy husbandry, dairy products, animal husbandry, and horticulture; also a course in extension work, and special courses in such sciences as agricultural biochemistry, agricultural economics, entomology, plant pathology, dairy husbandry, and soils. A course in agri-

cultural business is also offered in co-operation with the School of Business Administration. An engineering course leading to the degree of bachelor of agricultural engineering is offered in co-operation with the College of Engineering and Architecture. While no special course in fur farming is yet offered, courses basic to this industry and helpful to it are available.

In Forestry are included courses in general forestry, commercial lumbering, forest by-products, and forest sciences. 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, courses in foods and nutrition, textiles and clothing, and 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 art; 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 Homemakers' 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 ex-

periment 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.

A course leading to the degree of master of laws may be taken under the direction of the Graduate School. Candidates must have completed two years of college work, and the work required for the first law degree in a school which is a member of the Association of American Law Schools.

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 chiefly 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 32-34), (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 (c) one year of 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 as fulfilling the requirement of the bachelor of science degree before the degree of doctor of medicine is granted.

Graduate and research work are 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. A similar course in Nursing Education is offered by the College of Education and the School of 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 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. (See special circular.)

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

The 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 twenty-four weeks' course of study, given annually in the winter and spring quarters. On the successful completion of the work joint examinations are conducted by the State Board of Health and the University. Those who pass are granted a certificate by the University and are also accepted by the board as having passed the examination for an embalmer's license.

Short courses for physicians are offered from time to time by the medical faculty under the administration of the Extension Division.

COLLEGE OF DENTISTRY

The College of Dentistry offers a three-year course of study leading to the degree of doctor of dental surgery. This course requires as a prerequisite the completion of two full years of pre-dental work in the College of Science, Literature, and the Arts.

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

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 AND METALLURGY

The School of Mines and Metallurgy offers four regular four-year courses, namely, Mining Engineering, Mining Engineering (specializing in geology), Petroleum Engineering, and Metallurgy, leading to the degrees of engineer of mines, engineer of mines (in geology), engineer of mines (in petroleum), 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 a four-year course, leading to the degree of bachelor of science in pharmacy. Students not wishing to complete the requirements for a degree, but who wish to prepare themselves for the examinations given by the State Board of Pharmacy, will find the subjects required for such an examination arranged so they may be completed in three years. Such students may become candidates for the B.S. in pharmacy at any time after entrance by completing the equivalent of one full year of college work in the College of Science, Literature, and the Arts, or in a college of similar standing, the year's work to include a minimum of forty-five credits which must include at least nine credits of rhetoric, ten credits of a modern language, and eight credits of physics. The remaining eighteen credits may be electives. Students may elect zoology in place of college physics.

SCHOOL OF CHEMISTRY

(See p. 15 with College of Engineering and Architecture)

The School of Chemistry offers two courses. The four-year course in Chemistry, leading to the degree of bachelor of 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 chemical engineering at the end of four years and to the Master's degree 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.

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, agriculture, education, art education, commercial education, elementary education, high school normal training, home economics education, natural science, nursery school education, nursing education, occupational therapy, physical education for men, physical education for women, public school music, school psychologist, social studies, teaching of subnormal children, and industrial education.

The university teacher's certificate by state law authorized 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 intern 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 51). 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 ADMINISTRATION

The School of Business Administration offers a two-year course leading to the degree of bachelor of science in business. This course requires as a prerequisite the completion of two years of work in the College of Science, Literature, and the Arts in which certain pre-business courses are prescribed.

In addition to the general course in business, several specialized sequences are offered. Among them are courses in Accounting, Advertising, Agricultural Business, Banking, General Business, Insurance, Merchandising, Foreign Trade, Personnel Management, Industrial Administration, Real Estate, Traffic, Secretarial Work, and Statistics. In each of these a sequence of courses has been arranged which enables the student to obtain the professional training essential for entrance into the specialized field. Instruction is directed toward the broader aspects of the business professions rather than detailed drill in various technical processes. The business courses are combined with a sufficient amount of instruction in other fields to afford a well-rounded university education.

A limited number of positions are available to students in the senior year to supplement the university training. Students selected for these positions are employed by accounting firms, financial institutions, or other business concerns on a full time basis for one term. Employment under these conditions affords an excellent opportunity for laboratory experience. The positions available have been selected by the faculty with special consideration as to the educational value of the work. University credit is allowed for work which has been successfully carried under proper supervision.

Students who have completed the course of study required for the degree of bachelor of science in business at this university or the equivalent degree at any other institution of recognized standing may enroll in the Graduate School and become candidates for the degree of master of science.

UNIVERSITY SUMMER SESSION

The University Summer Session is organized for two terms, one of six weeks and one of five weeks, from June to September under the authority of the Board of Regents as a regular part of the University. Courses in the College of Science, Literature, and the Arts, Agriculture, Forestry, and Home Economics, Education, Engineering and Architecture, Chemistry, Medicine, Dentistry, Law, and Business Administration, 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 18.

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 merchandizing, 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 candidate'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 LIBRARY

The University Library comprises all the collections of books belonging to the University. It contains about 518,000 volumes.

The library is now occupying its new building. The University Library Building is one of the best in the country and gives 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 college and departmental collections formerly housed outside of the General Library.

In addition to the General Library, branches are maintained in the Department of Agriculture, the Colleges of Education, Engineering and Architecture, and the Schools of Chemistry, Law, and Mines and Metallurgy.

The service of the University Library to the University 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 latter 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, physical examination, or health consultation 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 service 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.

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 schools and colleges of the University which accept students directly from the high school is either by certificate or examination. These methods are described below.

ADMISSION BY CERTIFICATE

The applicant must present a certificate of graduation from an accredited preparatory school, or certificates showing that he has passed examinations in high school subjects as given by the Minnesota State Board, or corresponding examinations in another state provided these examinations are recognized by the state university in that state. Certificates representing examinations given by the College Entrance Board or the New York Regents are likewise accepted.

Graduates of senior high schools must present twelve units of work, at least nine of which must be from Groups A, B, C, D, E, (see page 28). These nine units must include a major of three units, and two minors of two units each, or preferably two majors and one minor, of which either one major or one minor must be from Group A. In Groups B and D applicants may present a maximum of one unit of work from grades below the senior high school as fulfilling one of these requirements. This unit, however, may not be counted in the twelve which are required. In addition to these requirements, applicants must fulfill such others as the particular college which they desire to enter may specify. See Requirements of Individual Colleges, pages 29-37.

Graduates of four-year high school courses, and candidates who offer state board or other examination certificates must present evidence to show that they have completed sufficient work in the last three years of their course to satisfy the requirements specified for graduates of senior high schools.

ADMISSION BY EXAMINATION

Applicants for admission to the University who are high school graduates, or who are at least nineteen years of age and are unable to meet the requirements for entrance by certificate will be admitted provisionally and subject to one year of satisfactory work at the University, upon passing the following tests:

(a) College aptitude test
(b) Test of proficiency in English
(c) Such special placement tests as the school or college to which the candidate desires admission, may prescribe.

Applicants failing to pass tests (b) or (c) may apply for a subsequent examination at any scheduled date on payment of a fee of five dollars. Those failing to pass test (a) may enter only upon satisfactorily meeting the entrance requirements by the certificate method.

LIST OF ENTRANCE SUBJECTS

Below is shown the minimum and maximum number of units in any one subject that will be accepted by the various colleges of the University. The term "unit" means not less than five recitations of forty minutes each week for a school year of 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

Composition and literature one to three units

Group B: Foreign languages

French, one, two, three, or four units
German, one, two, three, or four units
Greek, one, two, three, or four units
Latin, one, two, three, or four units
Scandinavian languages, one, two, three, or four units
Spanish, one, two, three, or four units

Requirements for a major in this group, three units in one language; for a minor, two units in one language.

Group C: History and social sciences

History—

American, one-half or one unit
English, one-half or one unit
European, one-half or two units

Social sciences—

American government, one-half or one unit
Commercial geography, one-half or one unit
Elementary economics, one-half unit
History of commerce, one-half or one unit
Sociology, one-half unit

Requirements for a major in this group include at least two units in history; for a minor, at least one unit in history.

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 science

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

For a major or minor in this group not more than two half-unit courses may be included.

Group F: Vocational and miscellaneous subjects

The three units which are not required to be in Groups A, B, C, D, E, may be in work which the superintendent certifies as being of acceptable nature and as having been counted toward the applicant's graduation.

REGISTRATION

The applicant for admission should request the principal or superintendant 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, and the year during which each subject was pursued. 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.

REQUIREMENTS OF INDIVIDUAL COLLEGES

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

I. Admission by Certificate

(a) Major in Group A.

(b) Minor in Group D.

Note that one unit in the minor may be counted from work below the tenth grade in accordance with the regulation on page 27.

II. Admission by Examination

In accordance with the regulation printed on page 27, the tests required for admission will be (a) college aptitude test, (b) test of proficiency in English.

Adult special students.—See statement on page 37.

COLLEGE OF ENGINEERING AND ARCHITECTURE AND SCHOOL OF CHEMISTRY

Courses in Aeronautical, Agricultural, Architectural, Chemical, Civil, Electrical, and Mechanical Engineering; Architecture, Landscape Architecture, Chemistry, and Engineering Pre-business.

I. Admission by Certificate

(a) Major in Group A

(b) Minor in Group D. Students who do not present *higher algebra* and *solid geometry* for admission will be required to take these subjects in their first quarter at the University without credit. This will usually necessitate their attending Summer Session to complete the work of the freshman year.

Students entering the School of Chemistry who do not present *chemistry* for admission will be required to take an additional course in Inorganic

Chemistry, Course 6. Students entering the course in Architecture who do not present *chemistry* for admission must include in their curriculum 10 or 12 credits in Inorganic Chemistry.

Recommendations.—All students entering these colleges are urged to include in their high school courses, in addition to the above, *Latin,* 2 units; *German or French,* 2 units; *ancient, modern, and American history;* and *American government or civics. French* is especially desirable for students in Architecture. *German* is important for students entering the School of Chemistry, where those who present two units of German for admission may replace the first year of required college German by elective work.

Course in Interior Decoration

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.

For admission to the College of Engineering and Architecture in the third year, the student must present the following credits: Freshman English (15 credits); Mathematics (5 credits); French (0 to 20 credits); History 11-12-13 (10 credits); Architecture 21-22-23 (6 credits); Architecture 31-32-33 (15 credits); Architecture 61-62-63 (6 credits), and Chemistry 1-2-3 or 4-5 (8 to 12 credits), or Physics 3 and 4 and any of the continuations, 23 and 24, 33 and 34, 43 and 44 (8 credits).

If, including these credits, the student does not present a total of 90 credits and 90 honor points, he must secure enough credits and honor points to make this total, after admission to the College of Engineering and Architecture and in addition to the 102 credits required in the last two years of the course.

II. Admission by Examination

In accordance with the regulation printed on page 27 the tests required for admission will be (a) college aptitude test, (b) test of proficiency in English, (c) test in mathematics, including arithmetic, elementary algebra, and plane geometry.

Adult special students.—See statement on page 37.

Time of admission.—The regular time to enter the college is in September. However, students will be admitted at the beginning of the winter quarter in January; then by attending the following Summer Session it is possible to complete most of the work of the freshman year. Admission at the opening of the spring quarter is not recommended unless the student can present advanced credit from some other college.

COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

I. Admission by Certificate

(a) Subject to the general regulations governing their selection (see page 27), majors and minors may be presented from the Groups A, B, C, D, and E.

(b) Students intending to enter any course in Forestry or the course in Agricultural Sciences must present at least a minor in Group D and one unit in Group E.

(c) For entrance to the course leading to the degree of bachelor of agricultural engineering, see requirements of the College of Engineering and Architecture.

Recommendations—

(1) For all students intending to enter any work in the college: Students entering with a unit of high school chemistry are permitted to take a two quarters' course of five credits each in general chemistry in the college instead of a three quarters' course of five credits each. Students presenting a unit of high school physics are not required to take an elementary course in college physics.

(2) For all students intending to enter any course in Agriculture: Every prospective student in Agriculture is 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 or such experience as the committee may consider equivalent will be required during the college course in accordance with the results of these examinations. It is also recommended that major and minors be taken in Groups A, D, and E.

(3) For all students intending to enter any course in Forestry: It is recommended that major and minors be taken in Groups A, D, and E.

II. Admission by Examination

In accordance with the regulation printed on page 27 the tests required for admission will be (a) college aptitude test, (b) test of proficiency in English.

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 29.) 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 18.)

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., zoology, 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, Inorganic Chemistry 4-5

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

or (1-2-3) 11, Analytical Chemistry 7, and Organic Chemistry 1-2 are necessary. Students are advised also to take chemistry in high school.[1]

3. Physics: twelve quarter (eight semester) credits, covering mechanics, sound, heat, light, electricity and magnetism, with the proper laboratory work. At Minnesota, Courses 3 and 4, 23 and 24, 33 and 34, 43 and 44 (a total of sixteen credits) meet the requirements. Students are advised to complete them all but, if desired, Course 35 may be substituted for 33 and 34.

See bulletin of the College of Science, Literature, and the Arts for description of these courses and statement of prerequisites.

4. Zoology, twelve quarter (eight semester) credits, including proper laboratory work. At Minnesota, Zoology 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 pages 15 and 18.)

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.

[1] 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.

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. Students may be excluded who are deemed physically unfit for the medical course.

School of Nursing

I. Admission by Certificate

Applicants for admission to the School of Nursing should be graduates of an approved high school and must present the minimum entrance requirements of one major and two minors as described on page 27.

II. Admission by Examination

In accordance with the regulation printed on page 27 the tests required for admission will be (a) college aptitude test, (b) test of proficiency in English.

Those wishing to enter the School of Nursing should file their applications with Miss Marion L. Vannier, 103 Millard Hall, and their credentials with the university examiner. Applicants must be not less than eighteen nor more than thirty-five years of age. They must submit satisfactory evidence of physical and mental fitness and of good character and pass a satisfactory general physical examination by the school physician.

COLLEGE OF DENTISTRY

Students desiring to enter the College of Dentistry must first complete two full years (not less than ninety quarter or sixty semester credits) of collegiate work in Science, Literature, and the Arts at this or some other university or college of equal rank.

The minimum requirements for admission include nine quarter (six semester) credits in English (rhetoric); twelve quarter (eight semester) credits in zoology; twenty quarter (thirteen and one-third semester) credits in chemistry (including general inorganic, qualitative, organic); four quarter (two and two-thirds semester) credits in mathematics; eight quarter (five and one-third semester) credits in physics; six quarter (four semester) credits each in mechanical engineering and drawing; six quarter (four semester) credits in psychology; five quarter (three and one-third semester) credits in bacteriology; and enough additional credits to make a total of at least ninety quarter (sixty semester) credits.

At Minnesota the pre-dental requirements are met by the following two-year course of study provided high school chemistry and higher algebra

are presented for admission, (if these are not presented, Chemistry 1-2-3 is required instead of Chemistry 4-5; and Mathematics 3 must be taken as a prerequisite to 4 or 6); Zoology 5-6-7 (12 credits); Inorganic Chemistry 4-5, 11, Organic Chemistry 6-7 (20 credits); Mathematics 4 (4 credits) or Mathematics 6 (5 credits); Physics 3-4 and one of 23-24, 33-34, 43-44 (8 credits); Freshman English A-B-C (15 credits) or Composition for Technical Students 4-5-6 (9 credits); Drawing 41-42-43 (6 credits); Mechanical Engineering 11-12-13 (6 credits); Psychology 1-2 (6 credits); Bacteriology 51 (5 credits). Electives to make a total of ninety quarter credits.

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 Hygienists

The requirement for admission to the School for Dental Hygienists is graduation from an approved high school or other preparatory school on the accredited list, and the applicant must present the minimum requirements of one major and two minors as prescribed on page 27. Applicants must not be over 35 years of age.

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 AND METALLURGY

I. Admission by Certificate

(a) Major or minor in Group A.

(b) Major or minor in Group D.

Recommendations—

(1) It is recommended that the major be offered either from Group D, Mathematics or Group A, English. If it be in mathematics, it should include higher algebra, one-half unit, and solid geometry, one-half unit.

It is further recommended that all work in mathematics be taken in the senior high school.

Applicants deficient in higher algebra and plane geometry will be required to take a special course in mathematics during their freshman year.

(2) It is recommended that the second minor requirement be offered from Group E, Natural Science, and include physics, one unit, and chemistry, one unit; or from Group B, foreign languages.

II. Admission by Examination

In accordance with the regulation printed on page 27, the tests required for admission will be (a) college aptitude test, (b) test of proficiency in English.

Adult special students.—See statement on page 37.

COLLEGE OF PHARMACY

I. Admission by Certificate

(a) Major in Group A.
(b) Minor in Group D.
(c) One unit in Latin, Group B.
(d) One unit in physics, Group E.

Students who have completed forty-five credits in the College of Science, Literature, and the Arts or in other accredited colleges of similar standing, including nine or ten credits in each of (1) rhetoric, (2) a modern language, (3) physics or zoology, will be admitted to the second-year class. These students must have completed at high school the equivalent of one year each of Latin and physics in addition to meeting the other entrance requirements of the College of Science, Literature, and the Arts.

II. Admission by Examination

In accordance with the regulation printed on page 27, the tests required for admission will be (a) college aptitude test, (b) test of proficiency in English.

SCHOOL OF CHEMISTRY

Courses in Chemistry and Chemical Engineering

See page 15, with College of Engineering and Architecture.

COLLEGE OF EDUCATION

I. Admission by Certificate

(a) Completion of a regular senior high school course.
(b) For all courses of study excepting the special curricula to which freshmen are admitted (see page 21) the completion of two full years of college work (a minimum of 90 credits must have been earned with an average of one honor point per credit hour in all subjects pursued) in the College of Science, Literature, and the Arts at this or some other college or university of equal rank is required.
(c) For all special curricula to which freshmen are admitted (see page 21) the certificate of senior high school graduation must show the completion of the following:
    (1) Major in Group A.
    (2) Minor in each of two of the Groups B, C, D, and E (except for the public school music curriculum for which a minor in Group D, mathematics, is required).

II. Admission by Examination

In accordance with the regulation printed on page 27, the tests required for admission will be (a) college aptitude test, (b) test of proficiency in English, (c) for Public School Music Course: mathematics and music tests, (d) for Art Education Course: art test.

In explanation of the honor point requirement on page 36 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 (a) and (b), page 36.

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 ADMINISTRATION

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 and Architecture of this University. (See admission to the College of Science, Literature, and the Arts, page 29; the College of Agriculture, page 30; the College of Engineering and Architecture, 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.

ADULT SPECIAL STUDENTS

No student will be admitted to any school or college of the University who has not fully met the entrance requirements by one of the above methods, except applicants of mature age (24 years or older) and experience who may desire to pursue a special and limited course of study. Such candidates for admission must secure the approval of the college concerned for the work which they wish to pursue.

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 list of the preparatory units presented upon entrance.

(f) 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.

Applicants for transfer from the third or fourth year of the degree course offered in Minnesota teachers colleges may receive credit for any part of their work in so far as such work is equivalent in subject-matter to courses in the particular college to which the student transfers.

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 College, Minneapolis
Concordia College, St. Paul
Ely Junior College
Eveleth Junior College
Hibbing Junior College
Itasca Junior College, Coleraine
Park Region Luther College, Fergus Falls (for one year's work)
Rochester Junior College
St. John's University, Collegeville
St. Mary's College, Winona
St. Mary's Hall, Faribault (for one year's work)
St. Paul Luther College
Virginia Junior 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
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
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
McIntosh
Mabel
Madelia
Madison
Mahnomen
Mankato
Mantorville
Maple Lake
Mapleton
Marshall
Medford
Melrose
Milaca
Milroy
Minneapolis
  Central
  Edison
  John Marshall
  North
  Roosevelt
  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
Thomson
Tower
Tracy
Two Harbors
Tyler

Villard
Virginia
Wabasha
Wadena
Walker
Warren
Warroad
Waseca
Waterville
Wayzata
Wells
West Concord
Wheaton
White Bear
Willmar
Windom
Winnebago
Winona
Winthrop
Worthington
Zumbrota

Graduates of the University High School and 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
Lake City
  McCahill Institute
Maple Plain
  Maplewood Academy
Minneapolis
  Academy, 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
  Academy of the St. Paul Luther College
Red Wing
  Academy of the Red Wing Seminary
Rochester
  St. John's 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 (Derham Hall)
  Cretin High School
  Oak Hill
  St. Joseph Academy
  St. Paul Academy
  St. Paul Institute Evening School
  St. Thomas College
  Summit School
  Visitation Convent
St. Peter
  Academy, Gustavus Adolphus College
Sleepy Eye
  St. Mary's School
Waseca
  Sacred Heart High School
Winona
  Academy, St. Mary's College
  Cathedral High School
  Cotter High School

The incidental fee for the [illegible] ing and Architecture - School [illegible] School of Mines and Metallurgy is $6.46 a quarter

EXPENSES

FEES

The university year, extending from October to June, is divided into three terms called quarters. On the specified dates (See Calendar, pp. 9-11) 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 44) for further instruction on late registration and late payment of fees.

TUITION FEES

School or College	Quarter Fee		Credit Hour Fee*	
	Resident	Non-resident	Resi-dent	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	40 00	50.00	3.75	4.75
Medical School	75.00	100.00	†3.25	†4.50
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 Nursing	25 00	25.00	2.00	2.00
School of Mines and Metallurgy.....	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	‡20 00	‡30.00	‡1.75	‡2.50
Clinical Medicine	60.00	70.00	†2.50	†3.75
School of Business Administration.....	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.

Graduate school fees in Clinical Medicine are -
Residents $75 - Non-Residents $100 per quarter

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 $6 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)	

Practice teaching fee— $1.00 per credit hour

Gymnasium fee (required of all men taking exercise courses in Physical Education) ..... $1.50 a quarter
Gymnasium fee (required of all 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 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 $2 and $1 additional for each day of delay after classes begin, provided that no student shall pay more than $10 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. Only when a student withdraws from the University is such student 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 services to guests.

Women

Sanford Hall.—Sanford Hall, the dormitory residence for women students, is situated at 1100 University Avenue S.E., three blocks from the main entrance to the campus. Two hundred and fifty students may be accommodated. The building is modern in every way and is very comfortable and homelike.

The charge for board and a single room is $135 per quarter. For occupants of double rooms the charge for board and room is $125 per quarter. The fee for each quarter is payable in advance. All applications for residence must be made for the entire school year. It is best to apply as early as possible. Applications will be considered in the order in which they are received.

Communications requesting residence or further information should be addressed to the house director, Sanford Hall.

Co-operative cottages.—Six co-operative cottages, each in charge of a chaperon, offer comfortable homes for about seventy-five 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. Application may be made to the manager of university cottages, Shevlin Hall.

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 the manager of university cottages, 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.

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.

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 ten men, is operated as a dormitory only but board can 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 the manager of university cottages, Shevlin Hall.

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. A few 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. Students who are eventually able to place themselves in self-supporting positions may have to try again and again, and meanwhile their living expenses will be accumulating. An adequate reserve fund under such conditions will enable them to continue their college work.

The Twin Cities offer many 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. 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, the positions that come to this bureau 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 application is followed.

Applicants should also bear in mind that during the opening week of school there are several hundred students who apply to 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 days or weeks before they can secure work. The amount of work available depends entirely upon employment conditions.

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 & Metallurgy Business Administration Chemistry Pharmacy	Law	Eng. and Arch.	Dentistry	Medicine
Incidental fee	$ 18.00	$ 18.00	$ 18.00	$ 18.00	$ 18.00	$ 18.00
*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	120.00	90.00	180.00	225.00
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	$712.00	$742.00	$782.00	$742.00	$962.00	$887.00

* 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	$505.00	$712.00	$ 926.00
Mines and Metallurgy, Business Administration, Chemistry, and Pharmacy	534.00	742.00	956.00
Law	575.00	782.00	1001.00
Engineering and Architecture	565.00	742.00	1001.00
Dentistry	759.00	962.00	1196.00
Medicine	679.00	887.00	1116.00

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 $250 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), $240 a year, 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.

American Petroleum Institute Research Fund in Chemistry

Through the National Research Council, the American Petroleum Institute, in 1926, provided the sum of $4,500 annually for five years, to be used for fundamental research in the chemistry, physics, or geology of the hydrocarbons. The research is under the charge of the director of the School of Chemistry, and provides for one research fellowship and one research assistantship.

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 $1,200 with remission of tuition in the Graduate School. Applications may be made through the dean of the Graduate School on or before March 1.

Agriculture and Home Economics	30 assistants
Anthropology	2 assistants
Astronomy	1 assistant
Botany	6 teaching assistants 6 assistants
Chemistry and Chemical Engineering	27 teaching assistants
Economics	7 assistants
Education	7 assistants
Engineering, Electrical	4 teaching fellows
Engineering Experiment Station	5 research fellows
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	226 fellows
(3) Miller Hospital Clinic	4 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
Zoology	1 teaching assistant 8 assistants

The Board of Regents has recently established four graduate fellowships, one in the office of the comptroller, one in the office of the registrar, one in the office of the dean of women, and one in the office of the dean of student affairs. Each of these fellowships will require one half of the time of the student, one half of his time being given to such other work as may be deemed advisable. The fellowships will cover a period of two academic years, or eighteen continuous months. They carry a stipend of $1,200 for the two years, $600 a year. The appointments will be made by the president on the recommendation of the comptroller, the registrar, the dean of women, and the dean of student affairs, respectively.

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

FRESHMAN SCHOLARSHIPS

University Freshman Scholarships

The University of Minnesota will offer for the year 1928-29, fifty University Freshman Scholarships. These scholarships will be awarded to those who show the greatest capacity to profit by college work. To hold one of these scholarships in the freshman year is a high honor, the only special honor which the University bestows on a freshman at the time of entrance.

The University Freshman Scholarships carry a stipend of $100 which will be paid in two installments, $50 immediately after registration in the fall quarter and $50 immediately after registration in the winter quarter.

The scholarships will be awarded by a committee of the university faculty on the basis of:

1. The record of the student during his high school course.
2. Psychological tests and other tests intended to show the aptitude of the student for college work, and
3. Other information to be furnished by the student and his high school principal.

All the tests will deal with materials suitable for high school seniors. They will not be of such character that students can prepare for them by special study.

Candidates will be admitted to the examination on the recommendation of the principal of the high school. The examinations are open only to those who graduate or expect to graduate between September, 1927, and June, 1928, from a public or private accredited high school in the state of Minnesota. No one who has already entered an institution of collegiate grade will be eligible.

Notice of the awards will be sent to the high school principals as soon as the examination papers can be graded. The successful candidates will become University Freshman Scholars when they have entered the University. Each student must of course be prepared to meet the entrance requirements of the college which he wishes to enter.

The University reserves the right to fill vacancies from among any of those who have taken the examination.

The attention of principals is called to the fact that these scholarships are not offered as means of meeting the needs of students for financial assistance. The University has other scholarships and loan funds for that purpose. For these scholarships it is desired that recommendations be based solely on character, personality, and promise of success in university work.

All communications regarding these scholarships should be addressed to the university registrar.

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

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 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 Association of Colleges of Pharmacy 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 Association of Colleges of Pharmacy, 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 Scholarship

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 and $150, preference being given to women of the junior or senior class. In 1926-27 fifteen such scholarships

were awarded and in 1927-28, eighteen were awarded. Applications may be made to the dean of women before May 1.

The Johnson Foundation Scholarships

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; $150 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. Application may be made to the dean of women before May 1.

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. Applications may be made to the dean of women before May 1.

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. Application may be made to the dean of women before May 1.

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. Application may be made to the dean of women before May 1.

University Concert Band Scholarships

Twenty-seven scholarships of $35 each and eight scholarships of $50 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 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.

Henry Webb Brewster Scholarship

This scholarship of $250 is donated by Mrs. Florence A. Brewster in honor of her husband, the late Henry Webb Brewster, formerly principal of the Central School of Agriculture, University of Minnesota. It is open to students in the College of Agriculture, Forestry, and Home Economics under the following conditions as stated by the donor: "The beneficiaries must be young men or young women who are and must continue of exemplary moral character and of temperate and industrious habits. They must be such as by trial and examination shall evince and maintain a habit and aptitude for study and improvement. Any student who shall fail to come or cease to be within the above conditions shall forfeit all claim to the benefits of these scholarships. It is my preference that such scholarships be awarded to needy students who would otherwise be unable to gain educational advantages."

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.

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 to a senior in Forestry having the highest scholastic record.

The Minneapolis Advertising Club Scholarship

The Minneapolis Advertising Club awards annually in June a scholarship of $100 to a senior student in the School of Business Administration on vote of a committee consisting of the dean of the School of Business Administration, two other faculty members appointed by the dean, and the president and secretary of the Minneapolis Advertising Club.

The Staring Realtor Scholarship

The Staring Realty Company awards an annual scholarship of $100, beginning in June, 1928, to a senior student pursuing the real estate sequence in the School of Business Administration. The award is made upon the recommendation of the faculty of the School of Business Administration.

The American Legion Auxiliary Scholarship

The American Legion Auxiliary established a scholarship of $100 a year, for three years, beginning 1927-28, the award to go to some woman student majoring in sociology with special service among the foreign born.

Everywoman's Progressive Council Scholarship

Everywoman's Progressive Council offers annually one scholarship of $50 to a negro woman student of high scholarship and fine character. Application may be made to the dean of women before May 1.

Delta Sigma Psi Scholarships

Two scholarships of $100 each are offered annually by Delta Sigma Psi, honorary Norwegian culture fraternity. The applicants must have at least 25 university credits or their equivalent in Norse and promise to continue the study of Norse so as to earn nine additional credits after applying for the scholarship. Applications must be made to the secretary not later than May 1.

Coffman Foundation Scholarship

The Coffman Foundation for the promotion of scholarship and research in education offers the sum of $100 to a graduate of the College of Education in encouragement of graduate work in education. Application should be made to the dean of the College of Education not later than May 1, 1929.

The money becomes available at the time the winning candidate is pursuing graduate work, a period of three years being allowed in which advantage of the award may be taken

Captain DeWitt Jennings Payne Memorial Scholarships

Under the will of the late Olive Payne Stover, of Chicago, the University was given securities amounting to $15,615.24. This bequest was for the purpose of establishing one or more scholarships in the Department of English.

Law Alumni Scholarship

A scholarship of $150, awarded to the student of the senior class who has made the most meritorious record in his work and on the *Minnesota Law Review* up to the time of the award.

Minnesota Law Review Scholarship

A scholarship of $150 awarded to a student in the senior class who has done meritorious work in his classes and on the *Minnesota Law Review* up to the date of the award.

Law Faculty Scholarship

A faculty scholarship of $150 awarded to a student of the senior class who has done meritorious work in his classes and on the *Minnesota Law Review* up to the date of the award.

LOAN FUNDS

Unless otherwise stated, all applications for loans should be made to the dean of student affairs. No student is eligible to borrow from any university loan fund until he has completed one quarter's work at the University of Minnesota.

General Student Loan Fund

A loan fund open to all students in the University of Minnesota that come under the requirements established by the Board of Regents. This fund has been built up by small contributions from alumni who have been benefited in their student days and have taken this means of building up a loan fund to show their appreciation.

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 $5,000 established by the will of the late Mrs. Mary H. Elliot, is loaned without interest to students in the School of Mines and Metallurgy. 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 $3,000, 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 $1,700.54 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. Applications 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. An advisory committee consisting of one member from each sorority together with a faculty adviser recommend the candidate for the loan.

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.

Mary Dwight Akers Loan Fund for Forestry Students

Established by Emily Speechley Whiteacre, of St. Paul, Minnesota, "in recognition of the interest and work of the Fourth District, Minnesota Federation of Women's Clubs, in conservation and reforestation, and especially of the effective work of Mrs. C. N. Akers, chairman of the Outdoor Life Committee of that organization, and with a hearty appreciation of the work which the students and faculty of the Forestry Department of the

University of Minnesota are doing in the cause of forestry and conservation," and "to assist worthy and needy students in the study of Forestry, and to establish a permanent memorial to the great work of the Outdoor Life Committee, Fourth District Minnesota Federation of Women's Clubs." The amount of this loan fund is $4,000.

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.

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 Administration 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.

Woman's Auxiliary of the Minneapolis District Dental Society Loan Fund

A loan fund of $500 to assist needy and worthy students who are registered in the College of Dentistry.

Engineers Bookstore Loan Fund

The Engineers Bookstore of the University of Minnesota has established a loan fund of $1,000, primarily for the use of students in the College of Engineering and Architecture, the School of Chemistry, and the School of Mines and Metallurgy.

Max Toltz Loan Fund

Through the American Society of Mechanical Engineers, members of the University of Minnesota student chapter of the society have access to a loan fund established by a gift of $15,000 from Major Max Toltz, of St. Paul. Applications should be made through the head of the Department of Mechanical Engineering.

The John Lind Loan Fund

A fund of $7,000 has been established by John Lind, the income of which is to be used for loans to deserving crippled students. This money may be loaned, at the discretion of the governing authorities, without interest.

Dad's Day Loan Fund

Due to the generosity and interest in the University of Minnesota on the part of the dads attending the last two annual Dad's Day dinners, money was collected and donated to the University to be used as a loan fund for needy students, subject to the regulations adopted by the Board of Regents governing the administration of loan funds.

Merchants National Bank of St. Paul Loan Fund

A gift of $200 was received from the Merchants National Bank of St. Paul, Minnesota, to be used as a loan fund for needy students.

Eighth Ward Woman's Christian Temperance Union Loan Fund

A gift of $100 was made by the above organization to establish a loan fund. The money is to be repaid by the borrowers within two years after graduation.

PRIZES

The John S. Pillsbury Prizes

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 Frank O. Lowden Prizes

The annual income from $3,000 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 School 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 and architectural engineering.

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.

Magney and Tusler Prizes in Architecture

Two annual prizes of $20 and $10, respectively, are provided by Magney and Tusler, architects, of Minneapolis. They will be awarded to the authors of the designs placed first and second in a sketch competition, the subject of which pertains to civic beautification.

Scarab Medal in Architecture

The Scarab Fraternity provides an annual silver medal, to be awarded to the student winning first place in a designated design competition in the regular work of the junior year in the course in architecture.

Alpha Alpha Gamma Prize in Architecture

An annual prize of $15 in books is provided by the Alpha Alpha Gamma Sorority, to be awarded to the author of the design placed first in a designated competition consisting of one of the regular long problems in the sophomore course in design in the School of Architecture.

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 offers prizes annually to upper class students in the course in civil engineering on the basis of competition or scholarship or both.

American Society of Mechanical Engineers Prizes

The American Society of Mechanical Engineers offers two annual prizes, open to members of the University of Minnesota student chapter of the society, for original papers adjudged from the standpoint of applicability, value as a contribution to mechanical engineering literature, completeness, originality of manner, and conciseness. Papers must be submitted before June 30.

Colbert Ralph Bennett Prize

An annual prize of $25 will be awarded to the regularly enrolled student in the College of Engineering and Architecture who produces and submits the best piece of imaginative writing. Manuscripts are to be the students' original creative work, and must not have been submitted elsewhere. One story, one play, or one long poem or group of shorter poems may be submitted by each contestant. Entries must be deposited in the office of the dean, College of Engineering and Architecture, on or before April 15.

The Briggs Prizes 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 3,000 words, and must be submitted to the instructor in rhetoric on or before May 1.

Phi Lambda Upsilon Prize in Chemistry

Phi Lambda Upsilon, national honorary chemical fraternity, offers an annual prize of $15 to that male sophomore student registered in the School of Chemistry, or specializing in agricultural biochemistry, who shall have the highest scholastic standing up to the beginning of the spring quarter, as certified by the registrar upon a prescribed basis.

Alpha Chi Sigma Twin City Alumni Prize in Chemistry

The Twin City Alumni Association of Alpha Chi Sigma Fraternity offers an annual prize of books to the value of $10 to that male sophomore in the School of Chemistry having the highest scholastic average at the end of the winter quarter.

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 seminannually 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 the 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 Prizes

Gift of $2,000 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.

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 thesis showing original work upon a surgical subject.

The Minneapolis Surgical Society Prize Essay Contest

The Minneapolis Surgical Society offers each year two prizes of $75 and $25, respectively, for the best essay on any subject in the field of clinical surgery, subject to the following conditions:

(1) The competition is open to (a) any medical student at the University of Minnesota working for a degree of bachelor or doctor of medicine; (b) any interne at a Minneapolis hospital.

(2) The essays, to receive consideration, must be in the hands of the secretary of the Minneapolis Surgical Society not later than March 1 of the year for which they are entered. Students graduating in December may send in their essays to be considered the following March.

(3) The Minneapolis Surgical Society through its Committee of Awards may reject any or all essays and may withhold the prize entirely in any year, if no sufficiently meritorious essays are presented.

(4) The prize winning essays are to be read before the Minneapolis Surgical Society at its April meeting and are to be published as the "Minneapolis Surgical Society Prize Essays."

(5) The judging and supervision of the prize essay contest each year will be entirely in the hands of the council of the society acting as a "Committee of Awards."

Alpha Kappa Gamma Prize in Dental Hygiene

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

Lehn and Fink Gold Medal

Messrs. Lehn and Fink, of New York City, award annually a gold medal to that student in the College of Pharmacy who graduates with the highest general average rating.

Chi Omega Prize

The Chi Omega prize of $25 is awarded annually to the woman student who has excelled in social work in the Department of Sociology. All senior women following the training course for social and civic work or one of the sequences of applied sociology are eligible for consideration. The award is made on the basis of academic standing plus personality, judged not only by instructors in the courses, but by the supervisors in social agencies who direct the practical work.

The Minnesota Quarterly Award

The Minnesota Quarterly offers two prizes of $15, one for the best prose article published in the magazine during the year, and the other for the best poem. These prizes may not be awarded to members of the editorial board.

Class of 1911 Memorial Trust Fund Prize

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.

The W.S.G.A. Award

The W.S.G.A. Scholarship tablet is inscribed annually with the name of that young woman who has attained the highest average during her first college year.

Farmstead, Stock and Home Medal

Farmstead, Stock and Home, a farm journal published in Minneapolis, offers a medal in the form of a watch fob to each student standing highest in judging dairy cattle, beef cattle, horses, swine, and sheep.

H. P. Linner Prizes

Gift of $200 from Dr. H. P. Linner for three prizes—first, $100; second, $60; and third, $40, to be awarded annually upon the recommendation of the Department of Scandinavian Languages for exceptional progress in the study of the Swedish language, for general scholarship and for character and extra-curricular activities in promoting Swedish cultural interests at the University of Minnesota.

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 purpose. 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 billiard room, smoking rooms, writing and study rooms, barber shop, game rooms, private dining rooms for students and faculty luncheons, and a ballroom.

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. Headquarters 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 colleges of the University have their own councils articulating with the All-University Council and have similar functions.

MISCELLANEOUS ORGANIZATIONS

There are at the University more than two hundred student organizations representing religious, ethical, literary, scientific, technical, 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 individual colleges of the University, announcements of special courses of instruction, reports of officers, etc.

The University Press

Hereafter all 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.

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 Social Sciences, Studies in the Physical Sciences and Mathematics, Studies in Engineering, Studies in Biological Sciences, Studies in Language and Literature.

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

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. 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 senior annual, is a book published annually by the senior class of the University.

The Minnesota Alumni Weekly, issued each Wednesday during the university year, is published in the interests of 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 Minnesota Quarterly, a literary magazine, is published three times during the university year, by a student editorial board of five members. It is devoted to the publication of the best literary work done by the students of the University.

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 and Metallurgy. It is devoted to articles on engineering subjects and to alumni news.

The Minnesota Mentor is issued three times a year by students in the College of Education. It is devoted to matters of interest to undergraduate and graduate students in education.

The Gopher Business News is a quarterly magazine published by the students of the School of Business Administration. It is devoted to articles on business and to news of general interest to the student body and alumni of the school.

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 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.

The Red River Aggie is a book published annually by the Northwest School of Agriculture.

The Moccasin is a book published annually by the West Central School of Agriculture.

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 and Metallurgy Experiment Station Bulletins contain reports 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 State 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 Guidbook to Minnesota Trunk Highway No. 1; The Geology and Magnetite Deposits of Northern St. Louis County.*

Bulletin of the University of Minnesota

The College of Science, Literature, and the Arts

Part I

Announcement of Courses for the Years 1927-1929

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

THE COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

FACULTY

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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 and Professor of Mathematics
Royal R. Shumway, B.A., Assistant Dean for Students' Work and Associate Professor of Mathematics

ANIMAL BIOLOGY

William A. Riley, Ph.D., Professor and Head
Royal N. Chapman, Ph.D., Professor
Hal Downey, Ph.D., Professor
Henry F. Nachtrieb,[1] B.S., Professor Emeritus
Thomas S. Roberts, M.D., Professor
Charles P. Sigerfoos, Ph.D., Professor
Dwight E. Minnich, Ph.D., Associate Professor
Oscar W. Oestlund,[1] Ph.D., Associate Professor
Marshall Hertig, Ph.D., Assistant Professor
Maynard S. Johnson, Ph.D., Assistant Professor
Adolph Ringoen, Ph.D., Assistant Professor
Arthur M. Banta, Ph.D., Professorial Lecturer
John A. Cederstrom, Ph.B., Instructor
Melville Hatch, Ph.D., Instructor
Donald C. Boughton, B.S., Teaching Assistant
Ralph W. Carr, B.A., Teaching Assistant
Reed O. Christenson, B.S., Teaching Assistant
Ralph Dawson, M.A., Teaching Assistant
Porter D. Dobyns, B.A., Teaching Assistant
Katherine Hummel, B.A., Teaching Assistant
Richard M. Johnson, B.S., Teaching Assistant
George Knowlton, B.S., Teaching Assistant
Ruth Koester, B.S., Teaching Assistant
Edith E. Mortenson, B.A., Teaching Assistant
Nordahl Peterson, B.A., Teaching Assistant
George M. Ruggles, B.S., Teaching Assistant
Wayland A. Shands, B.S., Teaching Assistant

[1] Retired, June 30, 1926.

Irwin Epstein, D.D.S., Assistant
Ralph T. King, M.A., Assistant
A. T. Stewart Lockwood, M.A., Assistant
Allen McIntosh, B.Sc., Assistant
Helen R. Parker, B.S., Assistant
Irma Surbeck, B.S., Assistant

ANTHROPOLOGY

Albert Ernest Jenks, Ph.D., Professor and Chairman
Wilson D. Wallis, Ph.D., Professor

ARCHITECTURE

See the bulletin of the College of Engineering and Architecture.

ASTRONOMY

Francis P. Leavenworth,[1] M.A., Professor and Head
William O. Beal, Ph.D., Assistant Professor
Louis Berman, B.A., Assistant

BACTERIOLOGY

See the bulletin of the Medical School.

BOTANY

J. Arthur Harris, Ph.D., Professor and Head
Carl O. Rosendahl, Ph.D., Professor
Josephine E. Tilden, M.S., Professor
Frederic K. Butters, Ph.D., Associate Professor
William S. Cooper, Ph.D., Associate Professor
Rodney B. Harvey, Ph.D., Associate Professor
Ned L. Huff, M.A., Assistant Professor
Ernest Dopp, M.A., Instructor
Ethel M. Mygrant, M.S., Instructor
Vernon Young, M.A., Instructor
Paul A. Harvey, M.S., Teaching Assistant
Esther G. Herrick, B.S., Teaching Assistant
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John W. Moore, B.S., Teaching Assistant
George Steinbauer, B.S., Teaching Assistant
Abraham D. Stoesz, B.A., Teaching Assistant
Edna K. Lockwood, Assistant
Nellie Thompson, B.A., Assistant

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

Oscar W. Firkins, M.A., Professor

[1] Retired, June 30, 1927.

COMPARATIVE PHILOLOGY

Frederick Klaeber, Ph.D., Professor and Head

DRAWING AND DESCRIPTIVE GEOMETRY

See the bulletin of the College of Engineering and Architecture.

ECONOMICS

See the bulletin of the School of Business Administration.

ENTOMOLOGY AND ECONOMIC ZOOLOGY

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

ENGLISH

Joseph M. Thomas, Ph.D., Professor and Chairman
Joseph W. Beach,[1] Ph.D., Professor
Cecil A. Moore, Ph.D., Professor
Frank M. Rarig, M.A., Professor
Elmer E. Stoll, Ph.D., Professor
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Muriel B. Carr, Ph.D., Assistant Professor
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Anna H. Phelan, Ph.D., Assistant Professor
Ottilie T. Seybolt, M.A., Assistant Professor
Emerson G. Sutcliffe, Ph.D., Assistant Professor
Cortland Van Winkle,[2] Ph.D., Assistant Professor
H. Don Ambler, M.A., Instructor
Jesse May Anderson, Ph.D., Instructor
Francis S. Appel, M.A., Instructor
Amy E. Armstrong, M.A., Instructor
Elizabeth Atkins, Ph.D., Instructor
Fred S. Beers, B.A., Instructor
Harold E. Briggs, M.A., Instructor
Ruth Christie, B.A., Instructor
Arthur E. Christy, B.A., Instructor
John J. Creamer, B.A., LL.B., Instructor
Lucille May Curtis, M.A., Instructor
Hannah M. Daniel, M.A., Instructor
Frances K. del Plaine, M.A., Instructor
Ira T. C. Dissinger, B.A., Instructor
Margaret Gable, M.A., Instructor
Adah Grandy, B.L., Instructor
P. Clegg Haigh, M.A., Instructor
F. Lincoln D. Holmes, M.A., Instructor

[1] Absent on leave, 1927-28.
[2] Resigned, June 30, 1927.

Frank M. Hursley, M.A., Instructor
C. Harold King, B.A., Instructor
Mildred Lambert, Ph.D., Instructor
Chilson Leonard, M.A., Instructor
Winslow H. Loveland, M.A., Instructor
George D. McJimsey, M.A., Instructor
Malcolm MacLean, B.A., Instructor
Paul J. P. Mahon, M.A., Instructor
Judson Q. Owen, M.A., Instructor
Don Perham, M.A., Instructor
Harlow C. Richardson, B.A., Instructor
Charles A. Rouse, M.A., Instructor
Harold A. Seering, B.A., Instructor
Miriam R. Small, Ph.D., Instructor
Alethea E. Smith, B.A., Instructor
William A. Telfer, B.A., Instructor
Lawrence G. Woodman, M.A., Instructor
Myrtle Bacon, B.A., Assistant
Donna Bibler, B.A., Assistant
Isabel Foot, B.A., Assistant
Alta Jones, B.A., Assistant
Elizabeth Kerr, B.A., Assistant
Wilma Smith Leland, B.A., Assistant
Winifred Lynskey, B.A., Assistant
Isabel Spencer, M.A., Assistant
Anna Thies, B.A., Assistant

GEOGRAPHY

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

GEOLOGY AND MINERALOGY

William H. Emmons, Ph.D., Professor and Head
Frank F. Grout, Ph.D., Professor
Clinton R. Stauffer, Ph.D., Professor
John W. Gruner, Ph.D., Assistant Professor
George M. Schwartz, Ph.D., Assistant Professor
George A. Thiel, Ph.D., Assistant Professor
Ira S. Allison, Ph.D., Instructor
A. J. Bauernschmidt, M.S., Instructor
George McL. Brownell, M.Sc., Instructor
Donald Davidson, M.S., Instructor
Anton Gray, B.S., Instructor
Raymond J. Leonard, Ph.D., Instructor
Philip J. Shenon, Ph.D., Instructor
Fred Foreman, B.Sc., Assistant
Eunice Peterson, M.A., Assistant
George Ward, M.Sc., Assistant
Francis G. Wells, B.S., Assistant
Walter S. Yarwood, M.S., Assistant

GERMAN

Carl Schlenker, B.A., Professor and Chairman
Oscar C. Burkhard, Ph.D., Associate Professor
Samuel Kroesch, Ph.D., Associate Professor
James Davies, Ph.D., Assistant Professor
George F. Lussky, Ph.D., Assistant Professor
Jacob Cornils, B.A., Instructor
William Dehorn, Ph.D., Instructor
Karl Ermisch, M.A., Instructor
Alvin E. Prottengeier, B.A., Instructor
Gina Wangsness, B.A., Instructor
Bertha M. Bertsch, B.A., Teaching Assistant
Joseph Meidt, B.S., Teaching Assistant
Lucy Mary Will, M.A., Teaching Assistant

GREEK

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

HISTORY

Guy Stanton Ford, Ph.D., Professor and Chairman
Solon J. Buck, Ph.D., Professor
William S. Davis, Ph.D., Professor
Norman S. B. Gras,[1] Ph.D., Professor
Samuel B. Harding,[2] Ph.D., Professor
August C. Krey, Ph.D., Professor
Lester B. Shippee, Ph.D., Professor
Albert B. White, Ph.D., Professor
Lawrence D. Steefel, Ph.D., Assistant Professor
George M. Stephenson,[3] Ph.D., Assistant Professor
Frederick C. Lane, M.A., Instructor
Faith Thompson, Ph.D., Instructor
David H. Willson, Ph.D., Instructor
Jean R. Barnes, B.A., Teaching Assistant
Archie Conliffe, B.S., Teaching Assistant
Grace B. Falck, M.A., Teaching Assistant
Marian Gurley, B.S., Teaching Assistant
Florence Hartwig, M.A., Teaching Assistant
Eugenie O. Heldridge, M.A., Teaching Assistant
Martha McCartney, B.A., Teaching Assistant
Helen P. Mudgett, M.A., Teaching Assistant
Harold F. Peterson, B.A., Teaching Assistant
Herbert E. Putnam, B.A., Teaching Assistant
Girard Schultz, B.A., Teaching Assistant
Alice Smith, M.A., Teaching Assistant
James D. Squires, B.A., Teaching Assistant
Alice F. Tyler, Ph.D., Teaching Assistant

[1] Resigned, June 30, 1927.
[2] Died, January 29, 1927.
[3] Absent on leave, 1927-28.

Olga W. M. Wold, B.S., Teaching Assistant
Edward Edelman, B.A., Assistant
Kenneth Porter, B.A., Assistant
Donald W. Snell, B.A., Assistant
Joe Rankin Starr, B.A., Assistant

HOME ECONOMICS

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

HUMAN ANATOMY

See the bulletin of the Medical School

HUMAN PHYSIOLOGY

See the bulletin of the Medical School.

JOURNALISM

E. Marion Johnson, M.A., Professor and Chairman
Thomas E. Steward, B.A., Assistant Professor
Clarence E. Cason, M.A., Instructor
Dorothy B. Schallenberger, B.A., Teaching Assistant

LATIN

Joseph B. Pike, M.A., Professor and Head
Robert V. Cram, Ph.D., Assistant Professor
Emily A. Babcock, M.A., Instructor
Etta C. Lundstrom, M.A., Instructor

LIBRARY METHODS

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

MATHEMATICS

William L. Hart, Ph.D., Professor and Chairman
William H. Bussey, Ph.D., Professor
Dunham Jackson, Ph.D., Professor
Raymond W. Brink, Ph.D., Associate Professor
Royal R. Shumway, B.A., Associate Professor
Anthony L. Underhill, Ph.D., Associate Professor
Gladys Gibbens, Ph.D., Assistant Professor
Elizabeth Carlson, Ph.D., Instructor
Ella Thorp, B.A., Instructor
Joseph E. Dunbar, B.A., Teaching Assistant
James M. Earl, M.A., Teaching Assistant
John J. Gergen, M.A., Teaching Assistant
William Risselman, M.A., Teaching Assistant

MECHANICAL ENGINEERING

See the bulletin of the College of Engineering and Architecture.

MILITARY SCIENCE AND TACTICS

Bernard Lentz, Major, Infantry, U.S.A., Professor
Julian H. Gist, M.A., Captain, Infantry, U.S.A., Assistant Professor
Ray C. Hill, Major, Infantry, U.S.A., Assistant Professor
Frederick S. Matthews, B.A., Captain, Infantry, U.S.A., Assistant Professor
Don F. Pratt, Captain, Infantry, U.S.A., Assistant Professor
William F. Rehm, Captain, Infantry, U.S.A., Assistant Professor
Arthur R. Walk, Ph.D., Captain, Infantry, U.S.A., Assistant Professor

MUSIC

Carlyle M. Scott, Professor and Chairman
Earle G. Killeen, Professor
Donald N. Ferguson, M.A., Associate Professor
William Lindsay, Associate Professor
George H. Fairclough, F.A.G.O., M. Mus., Assistant Professor
Gertrude Hull, Assistant Professor
Gertrude Reeves, Assistant Professor
Genevieve Church-Smith, Instructor in Voice
Alexander Duvoir, Instructor in Oboe
Christian Erck, Instructor in Cello
Georges Grisez, Instructor in Clarinet
Blanche Kendall, Instructor in Piano
Richard Lindenhahn, Instructor in French Horn
Karl Scheurer, Instructor in Violin
Miles Sery, Instructor in Trumpet
Clyde Stephens, Instructor in Piano
Kate M. Twichell, Instructor in Piano
Michael A. Varallo, Instructor in Harp
Clarence Warmelin, Instructor in Clarinet
Henry J. Williams, Instructor in Harp
Johan Egilsrud, B.S., Assistant
Mary Malcolm, B.S., Assistant
Bergliot Strand, B.A., Assistant

ORIENTATION

John M. Gaus, Ph.D., Professor of Political Science and Director
F. Stuart Chapin, Ph.D., Professor of Sociology
Richard M. Elliott, Ph.D., Professor of Psychology
Wilson D. Wallis, Ph.D., Professor of Anthropology
Frederic K. Butters, Ph.D., Associate Professor of Botany
Edwin L. Clarke, Ph.D., Assistant Professor of Sociology
George P. Conger, Ph.D., Assistant Professor of Philosophy
George A. Thiel, Ph.D., Assistant Professor of Geology
Richard Hartshorne, Ph.D., Instructor in Geography
Ralph T. Huntley, B.A., Instructor
Mary J. S. Kuypers, M.A., Instructor

PHILOSOPHY

Norman Wilde, Ph.D., Professor and Head
David F. Swenson, B.S., Professor
George P. Conger, Ph.D., Assistant Professor
Homer H. Dubs, Ph.D., Instructor
Charner M. Perry, Ph.D., Instructor
Daniel P. Varnum, Ph.D., Instructor
Ralph W. Erickson, B.A., Assistant
Thyra Wirtenberger, B.A., Assistant

PHYSICAL EDUCATION FOR MEN

See the bulletin of the College of Education.

PHYSICAL EDUCATION FOR WOMEN

See the bulletin of the College of Education.

PHYSICS

Henry A. Erikson, Ph.D., Professor and Chairman
John T. Tate, Ph.D., Professor
Anthony Zeleny, Ph.D., Professor
Louallen F. Miller, Ph.D., Associate Professor
John H. Van Vleck, Ph.D., Associate Professor
Joseph Valasek, Ph.D., Assistant Professor
J. William Buchta, Ph.D., Instructor
Arthur J. Ahearn, B.A., Teaching Assistant
Walker Bleakney, B.S., Teaching Assistant
Walter H. Brattain, M.A., Teaching Assistant
George C. Campbell, B.A., Teaching Assistant
Sigmund Hammer, B.A., Teaching Assistant
Allan Hemmingway, B.A., Teaching Assistant
Edward L. Hill, B.A., Teaching Assistant
Ernest J. Jones, B.S., Ch.E., Teaching Assistant
Louis R. Maxwell, B.A., Teaching Assistant
Ralph R. Palmer, B.A., Teaching Assistant
Vladimir Rojansky, M.A., Teaching Assistant
Gerald W. Willard, B.A., Teaching Assistant
Marvin M. D. Williams, B.S., Teaching Assistant
Abner J. Wilson, B.E.E., Teaching Assistant
Harry J. Winslow, M.A., Teaching Assistant
William B. Halliday, Assistant
Iwao Fukushima, M.A., Assistant

PLANT PATHOLOGY

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

POLITICAL SCIENCE

Cephas D. Allin, LL.B., M.A., Professor and Chairman
William Anderson, Ph.D., Professor
John M. Graus,[1] Ph.D., Professor

[1] Retired, June 30, 1927.

Morris B. Lambie,[1] Ph.D., Professor
Harold S. Quigley, Ph.D., Professor
Jeremiah S. Young, Ph.D., Professor
Harold F. Kumm, M.A., S.J.D., Assistant Professor
John P. Dalzell, B.A., LL.B., Lecturer
Benjamin Palmer, M.A., LL.B., Lecturer
Ford P. Hall, B.A., B.C.L., Instructor
Landreth M. Harrison, M.A., Instructor
George Bargen, B.A., Teaching Assistant
Merle M. Price, B.S., Teaching Assistant
Dwight Williams, B.A., LL.B., Teaching Assistant
Robert L. Kingsley, M.A., Assistant
Lester Orfield, B.A., Assistant
Harvey Walker, B.A., Assistant

PREVENTIVE MEDICINE AND PUBLIC HEALTH

See the bulletin of the Medical School.

PSYCHOLOGY

Richard M. Elliott, Ph.D., Professor and Chairman
John E. Anderson, Ph.D., Professor
Donald G. Paterson, M.A., Professor
Herbert Woodrow,[2] Ph.D., Associate Professor
Arthur G. Bills, Ph.D., Assistant Professor
Charles Bird, Ph.D., Assistant Professor
Edna F. Heidbreder, Ph.D., Assistant Professor
William T. Heron, Ph.D., Assistant Professor
Carlyle Jacobsen, B.A., Instructor
Theos A. Langlie, B.A., Instructor
Mary Shirley, M.A., Instructor
Willard H. Brentlinger, B.A., Teaching Assistant
Harold C. Carter, B.A., Teaching Assistant
Josephine Clousing, B.A., Teaching Assistant
Paivi Elonen, B.A., Teaching Assistant
Ralph W. Erickson, B.A., Teaching Assistant
Hanna Faterson, B.A., Teaching Assistant
Ruth M. Hubbard, B.A., Teaching Assistant
Dorothy Hunter, B.A., Teaching Assistant
Walter G. McAllister, B.A., Teaching Assistant
Marion Myer, B.A., Teaching Assistant
Peter Shellenberg, B.A., Teaching Assistant
Keith Sward, B.A., Teaching Assistant

ROMANCE LANGUAGES

Everett W. Olmsted, Ph.D., Litt.D., Professor and Head
Irville C. LeCompte, Ph.D., Professor

[1] Absent on leave, 1927-28.
[2] Resigned, June 30, 1927.

Ruth S. Phelps, Ph.D., Professor
Colbert Searles, Ph.D., Professor
Francis B. Barton, Docteur l'Université de Paris, Associate Professor
Edward H. Sirich,[1] Ph.D., Associate Professor
Carlos V. Arjona, Ph.D., Assistant Professor
Herbert E. Clefton, Ph.D., Assistant Professor
Jay K. Ditchy, Ph.D., Assistant Professor
William L. Fichter, Ph.D., Assistant Professor
Jules T. Frelin, B.A., Assistant Professor
Alexander H. Krappe, Ph.D., Assistant Professor
Paul Morand, Licencié és lettres, Assistant Professor
Ethel E. Benton, M.A., Instructor
David R. Blanpied, B.A., Instructor
Marguerite Guinotte, M.A., Brevet Supérieur, Certificat d'Aptitude Pédagogique, Instructor
Wheeler Hawley, M.A., Instructor
Elizabeth Nissen, M.A., Instructor
John H. Owens, M.A., Instructor
Walter T. Pattison, M.A., Instructor
Helen Benham, B.A., Teaching Assistant
Rose F. Berman, M.A., Teaching Assistant
Gladys H. Butler, B.A., Teaching Assistant
Gratia M. Burns, B.S., Teaching Assistant
Channing MacFadon, B.A., Teaching Assistant
Sheila A. Morrisey, B.A., Teaching Assistant
Grace Speelman, B.A., Teaching Assistant
Borghild Sundheim, B.S., Teaching Assistant

SCANDINAVIAN

Gisle C. Bothne, M.A., Professor and Head
Andrew A. Stomberg,[1] M.S., Professor
Alfred M. Carlson, B.A., Assistant
Thorvald B. Madsen, M.A., Assistant

SOCIOLOGY AND SOCIAL WORK

F. Stuart Chapin, Ph.D., Professor, Chairman, and Director of the Training Course for Social and Civic Work
Pitirim A. Sorokin, Dr. of Soc., Professor
Edwin H. Sutherland, Ph.D., Professor
Edwin L. Clarke,[2] Ph.D., Assistant Professor
Ross L. Finney, Ph.D., Assistant Professor
Gustave A. Lundquist, Ph.D., Assistant Professor
Mildred D. Mudgett, Ph.D., Assistant Professor
Carle C. Zimmerman, Ph.D., Assistant Professor
Joanna C. Colcord, M.S., Professorial Lecturer
Otto F. Bradley, B.A., Lecturer
Monica K. Doyle, B.A., Lecturer
Belle Mead, M.A., Lecturer

[1] Absent on leave, 1927-28.
[2] Resigned, June 30, 1927.

Pearl C. Salsberry, B.A., Lecturer
Edward F. Waite, B.A., LL.M., Lecturer
Mary P. Wheeler, Lecturer
Helen A. Young, B.S., Lecturer
Otis D. Duncan, M.S., Instructor
Mabel A. Elliott, M.A., Instructor
Anne L. Fenlason, B.A., Instructor
Fred C. Frey, M.A., Instructor
Harold R. Hosea, M.A., Instructor
Lewis L. McKibben, B.A., Instructor
Robert W. Murchie, M.A., Instructor
Marion Rotnem, B.A., Instructor
Elmo H. Lott, B.A., Teaching Assistant
Dorothy G. Markey, M.A., Teaching Assistant
Ira G. Adams, B.A., Assistant
Herbert D. Baab, B.A., Assistant
Vida Elliott, B.A., Assistant
N. Clara Kildahl, B.S., Assistant
Reuben Tanquist, B.A., Assistant
Sanford R. Winston, B.A., Assistant

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 or two units of unified mathematics.

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 Composition 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 composition for as many quarters as may be necessary. During this time he can be registered in this college for not more than fourteen credits.

On the basis of these tests students will be further divided into three groups: (1) those of whom no further work in English is required; (2) those who will be allowed to register for English A-B-C; (3) those who will be restricted to a three-credit course in composition.

3. *Exemption from requirement in English.*—Those students who meet certain standards of competence in the tests mentioned above will be exempted from required work in English. These students may register for any courses in English, Composition, or Speech, for which the only prerequisite is English A-B-C or Composition 4-5-6.

4. *Unclassed students.*—Persons of maturity (at least 21 years of age) who cannot meet the entrance requirements may be admitted by the Students' Work Committee as unclassed students, provided they pass satisfactorily such tests as the committee may prescribe to demonstrate their ability to carry the work they wish to undertake. Such registration may be cancelled whenever the student's work is not satisfactory.

Application for registration as an unclassed student should be made not later than September 15, December 15, or March 15, depending upon the quarter the candidate desires to enter the college.

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
Non-residents	30.00
Credit hour tuition fee (unclassed students, auditors, and others carrying less than full work.)	
Residents of Minnesota	1.75
Non-residents	2.50
Incidental fee (per quarter)	4.00
Deposit[1] (first quarter only)	5.00
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

[1] 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.

Laboratory deposit (required of students registered for courses in chemistry) 5.00
Graduation fee 10.00
Music fees (in addition to tuition) for those electing music
Class fees (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 approval 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. *Grades.*—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 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.

[1] Six hours per week.

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. 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, English (courses in composition and courses in speech), Geology, German, Greek, History, Journalism, Latin, Mathematics, Music, Physical Education for Women, Physics, Political Science, 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, Botany, Chemistry, Comparative Literature, Comparative Philology, Drawing, Economics, English (courses in literature), Geography, Philosophy, 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 Administration, (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 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[1] 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.

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.

[1] See sections 15 and 17.

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. 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.

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

40. 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.)

41. 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.

42. *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 duplication 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.

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.

43. *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.

44. *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.

Men entering with forty-five credits of advanced standing are excused from Physical Education 1-2-3 but not from Physical Education 4. Women entering with advanced standing should consult the head of the department.

7. Physical education may be postponed only by petition. After two quarters of postponement, no petitions will be approved, and this requirement will take precedence over requirements in other departments.

8. *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 no credits of advanced standing are not required to drill. Students with 45 credits, or with more than 45 credits but less than 90 credits, of advanced standing must complete three quarters of drill.

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

10. *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.

11. *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 composition as the chairman of the Department of English may specify.

12. *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.

13. 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.

14. 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."

15. 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.

16. *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.

17. *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 permission of the Students' Work Committee. Any student thus excluded will receive a failure for the course.

18. 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.

19. *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.

20. *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.

21. 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.

22. *Probation.*—A student in the Junior College will be placed on probation if at the close of any quarter or at the time of the midquarter report he is below passing grade in fifty per cent of his work. A student in the Senior College will be placed on probation if he is below passing grade in forty per cent of his work.

23. 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.

24. 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.

25. 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.

26. 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.

27. *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.

28. 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.

29. Students who return under the provision of section 27 will be registered on probation. Such students may be dropped at any time that their work is unsatisfactory to the Students' Work Committee.

30. *Eligibility.*—The rules regarding eligibility will be revised for the year 1927-28. For the revised statement consult Dean Nicholson's office.

31. *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.

32. *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.[1] These curricula are subject to revision by action of the faculties of the colleges concerned. For revised statements for the year 1928-29, it will be necessary to consult Part II of the bulletin for that year.

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 course leading to the degree of bachelor of music.
4. 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.
5. Courses preparing for admission to the School of Business Administration, College of Dentistry, College of Education, the course in Interior Decoration in the College of Engineering and Architecture, and the Law School.
6. 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:

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

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.

Any student who fails to complete the requirements for graduation within a normal period will, in order to complete the work, be required to continue in the Senior College for one or more university sessions. During this period he will be required to carry at least thirteen credit

[1] Students in Art Education, Physical Education, Public School Music, and certain other special courses, register in the College of Education in their freshman year.

hours of work and to secure an average of one honor point per credit.

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, except upon petition.

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, Botany, Chemistry, Geology and Mineralogy, Human Physiology, Physics, Psychology.

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 Nine credits in composition. This requirement may be met by taking either English A-B-C or Composition 4-5-6. Students who meet certain standards of competence will be exempted from this requirement.

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.

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. 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, 7, and 8) 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, Journalism, 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.

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.

Honors Course Plan

A student who has met all the requirements for admission to the Senior College may be enrolled for the honors course upon the approval of the department in which he wishes to pursue his major study.

Each student enrolled in the honors course will be put under the immediate direction of a member of his major department of professorial rank who shall be known as his tutor.

A student enrolled in the honors course may be a candidate for graduation honors. The tutors will co-operate with the Committee on Honors in arranging comprehensive examinations and the evaluation of theses.

A part of the student's senior college work will consist of reading or other individual studies done under the direction of his tutor. Work done in this way will be accepted as a substitute for a part or the whole of the major sequence and of the elective work of the usual curriculum.

A student electing this plan will be governed by the announcement of his major department and the direction of his tutor as to number of courses, attendance at classes, and general methods to be pursued.

The requirements for the minor study are not modified by this plan at present.

When the tutors of a department report at the end of any quarter that a student is not making satisfactory progress in the honors course, the student will be registered as a candidate in the regular course. In this case the tutors will report blanket credits equivalent to the work actually done. The student can then arrange to complete his major sequence either in the same department or in another.

For the year 1927-28 honors courses are offered for the Departments of Anthropology, English, Political Science, and Sociology.

Graduation Honors[1]

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

[1] 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.

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.

Credit in the Graduate School

A student lacking not more than nine credits toward graduation may, upon petition, receive graduate credit for a limited amount of work taken as an undergraduate. No graduate credit will be given unless the student has made previous arrangement with the Graduate School. Courses taken for graduate credit will not carry credit toward the Bachelor's degree.

With the permission of the assistant dean for the Senior College, undergraduates lacking not more than nine credits toward graduation may be registered also in the Graduate School. Permission will be granted only in exceptional cases.

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. For the senior year specialization is afforded in case work, medical social work, and rural social work. Preparation in group work for leaders of Boy Scouts, Girl Scouts, Camp-fire, and Girl Reserve groups, is also provided. 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.

For admission to the Senior College the student must earn 90 credits with an average of one honor point per credit. During the four years, he 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, Junior College

Common basic foundation.

REQUIRED

English A-B-C or Composition 4-5-6 or exemption from requirement
Sociology 1, 6, 45
Economics 6-7
Political Science 1, 11[2]
Psychology 1-2
Animal Biology 1-2[3]

ELECTIVES FOR CASE WORK STUDENTS

Foreign language
Sociology 14
Philosophy 2, 3
Political Science 2
Inorganic Chemistry 1-2-3 or 4-5[4]
Psychology 3
Bacteriology 51[4]
Human Physiology 4[4]

ELECTIVES FOR GROUP WORK STUDENTS

Animal Biology 33, 37-38-39, 44, 46-47
Anthropology 51
Architecture 21-22-23
Botany 7, 21
Drawing and Descriptive Geometry 44, 45
English 55-56, 31-32, 33, Speech 41-42-43,[5] 81-82-83[5]
Geography 51, 52
Geology 4, 8, 11, 27, 29
History 11-12-13, 1-2-3
Home Economics 3 or 4

[2] Elective for students preparing for medical social work.
[3] Botany 1-2 may be substituted for *Animal* Biology by students in group work.
[4] Required of students preparing for medical social work.
[5] Especially recommended.

Third Year, Senior College

Concentrated sociological study and training, in which students become familiarized with the three chief techniques of social work; case work, group work, research.

REQUIRED

Sociology 51, 52, 53,[2] 55, 60, 70, 90, 91
Preventive Medicine 50 or 53
Home Economics 70, 71, 72
or
Economics 161, 162

ELECTIVES FOR CASE WORK STUDENTS

Sociology 100, 101, 102, 114
Anthropology 110, 112
Preventive Medicine and Public Health 60[4]
Political Science 157

ELECTIVES FOR GROUP WORK STUDENTS

Anthropology 54, 62, 80, 113
English 123-124-125,[5] 129, 133
History 80[5] or 82-83-84
Preventive Medicine and Public Health 59, 61, 80
Home Economics 50, 56, 123
Physical Education for Women 58-59[6]

Fourth Year, Senior College

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 187.

b. *Group work:* Sociology 71, 100 or 101, 122-123, 126, 128, 134, 153-154; Preventive Medicine 60; and Economics 161 or Physical Education for Women 43-44-45, 66-67-68, 69-70-71, 91.[6]

c. *Medical social work:* Sociology 100 or 119, 133, 138-139, 153-154; Preventive Medicine 58, 61 or 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: Animal Biology 117-118-119, 120, 125-126-127, 183; Anthropology 113, 123-124, 125; Economics 161, 162; English 148-149,[5] 150,[5] 151;[5] History 141-142[5] 154,[5] 120;[5] Philosophy 124; Political Science 130, 131-132, 187; Psychology 114, 115, 124, 125-126-127, 140, 144-145; Public Speaking 91-92-93;[5] Sociology 121, 122-123, 128, 130, 133, 138-139, 140, 141.

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, 215-216-217, 218-219-220, 221-222-223; with a suggested minor in anthropology, economics, education, psychology, political science, or preventive medicine and public health.

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 Administration, is made up as follows:

1. 10 credits in Introduction to Economics (Economics 1-2)
2. 15 credits (English A-B-C) or 9 credits in composition (Composition 4-5-6) or exemption from requirement

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[2] Elective for students preparing for medical social work.
[4] Required of students preparing for medical social work.
[5] Especially recommended for group work students.
[6] To be taken without credit.

3. 10 credits in *one* of the following social sciences: geography, history, political science, sociology[1]
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 1-2)
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 listed below. It is desirable that students should have had chemistry and higher algebra in high school.

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 or 6
5. Physics 3 and 4 and one of the combinations 23 and 24, 33 and 34, 43 and 44
6. Drawing 41-42-43
7. Mechanical Engineering 11-12-13
8. English A-B-C or Composition 4-5-6 or exemption from requirement
9. Psychology 1-2
10. Bacteriology 51
11. Electives to make a total of 90

NOTE.—Students who have had no chemistry in high school are advised to take Chemistry 11 in the summer of their first year.

C. GENERAL COURSE PRELIMINARY TO THE COLLEGE OF EDUCATION[2]

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 to complete certain of these curricula satisfactorily, it is necessary for a student to begin a proper arrangement of his program during the freshman or sophomore year. Students who intend 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

[1] Students who take Sociology to satisfy this requirement should not elect Sociology 45, which is to a certain extent a duplication of Economics 14.

[2] Students in Art Education, Physical Education, Public School Music, and certain other special courses register in the College of Education in their freshman year.

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 School 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
English A-B-C or Composition 4-5-6 or exemption from requirement	15
Mathematics 4 or 6 (with prerequisite)	4 to 10
French (see Junior College Requirements, page 26)	0 to 20
History 11-12-13	10
Physics 3 and 4 and any of the continuations, 23 and 24, 33 and 34, or 43 and 44	8
or	
Inorganic 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
Architecture 61-62-63	6
History 11-12-13	10
Chemistry or physics	8 to 12

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. 25 and 26.)

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. English A-B-C or Composition 4-5-6 or exemption from requirement
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; Speech 41-42-43 or 45-46, 55-56-57; Economics 3; History 146-147 and 116-117-118; Philosophy 1, 3, 124, and 129; Political Science 2, 11, 15, 121-122, 123, and 161-162.

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 37.

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 War Department regulations.

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 with an average of one honor point per credit.
   Group A English A-B-C or Composition 4-5-6 or exemption from requirement.
   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 or exemption from requirement
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, physics, 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, or elective for those exempt from requirement.

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, or elective for those exempt from requirement

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[1]

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 School of Architecture. For the first two years the requirements are the same as those laid down in the course in Interior Decoration, page 33 of this bulletin, except that the student will register in Mathematics 11, 12, and 13 (College of Engineering and Architecture) 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. SIX-YEAR COURSE IN ARTS AND LAW, LEADING TO THE DEGREES OF BACHELOR OF ARTS AND BACHELOR OF LAWS[1]

The work of the first three 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.

[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.

X. EIGHT-YEAR COURSE IN ARTS AND MEDICINE, LEADING TO THE DEGREES OF BACHELOR OF ARTS, BACHELOR OF MEDICINE, AND DOCTOR OF MEDICINE[1]

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. 35).[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 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 or composition, 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.

XI. FIVE-YEAR COURSE IN ARTS AND NURSING OR NURSING EDUCATION, LEADING TO THE DEGREES OF BACHELOR OF SCIENCE AND GRADUATE IN NURSING[3]

During the first 5 quarters in this course the student is registered in the College of Science, Literature, and the Arts. This period is followed by 10 quarters during which the student is registered in the University School of Nursing. The last 3 quarters of the fifth year are devoted to elective work in the University, in preparation either for teaching and supervision in schools of nursing[3] or for public health nursing.

The student is required to earn 135 credits and 135 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.

[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. 35.

[3] Students in Nursing Education register in the College of Education in their fifth year and receive their degree in that college. See bulletin of the College of Education.

First Year

1. English A-B-C or Composition 4-5-6 or exemption from requirement
2. Botany 1-2
3. Inorganic Chemistry 6-7-8 or 9-10
4. Anatomy 2
5. Library Methods 1, or electives to make a total of 45

Second Year, Fall and Winter Quarters[2]

6. Animal Biology 1-2
7. Psychology 1-2
8. History 1-2, 3-4, or 7-8
9. Composition 11-12, or 18-19
   or
   Speech 41-42

Third and Fourth Years

See bulletin of the School of Nursing.

Fifth Year

During their last three quarters students register in this college[1] and take work subject to the approval of the director of the Public Health Nursing Course and the assistant dean for the Senior College.

1. Sociology, 10 credits
2. Preventive Medicine and Public Health, 15 credits of theoretical work and 14 credits of practical work.
3. Child Welfare 40 or Sociology 60.
4. Electives to make a total of 135.

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[1] Students in Nursing Education register in the College of Education in their fifth year and receive their degree from that college. See bulletin of the College of Education.

[2] In the spring quarter students register in the School of Nursing for Physiology 4, Educational Psychology 55, Bacteriology 51, History of Nursing, Theory of Dietetics, and Lettering.

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.

25. Introductory Histology. A brief course on the structure of the cell, tissues, and organs. Lectures, laboratory.

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

27. Technique. Elements of microscopical technique.

INTERMEDIATE AND ADVANCED COURSES

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.

109-110-111. Experimental Zoology. A survey of animal behavior from the physiological viewpoint. Lectures, laboratory, 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.

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 survey of the principles of animal development dealing with fundamental invertebrate and vertebrate types. Lectures, reference, and laboratory work.

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

197-198-199. Problems. Advanced work in some special line.

GRADUATE COURSES. CONSULT GRADUATE SCHOOL BULLETIN

201-204. Research in Entomology.

217-218-219. Experimental Zoology.

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.

261-264. Animal Parasitology.

205-208, 209-212, 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.
265-268. Research in Insecticides.
217-218-219, 229-232, 233-236, 237-240, 245-248, 249-252, 261-264. See Animal Biology, page 41.

ANTHROPOLOGY

51. Introduction to Anthropology. The early history of man.
53. Cultural Anthropology. Technology and industry.
54. Cultural Anthropology. Social organization of primitive peoples.
55. Human Migrations. The movements of peoples and immigration.
56. Primitive Science. Concepts of man and nature in primitive culture.
62. Ethnology. Racial and cultural groups and contacts.
80. American Indian. Ethnology of the New World.
106. Types of Prehistoric Men and Cultures. Problems of chronology and distribution.
108. Philippine Peoples. Ethnology of the Philippines.
110. Physical Anthropology. The physical types of man, prehistoric and contemporary.
112. The American Negro. The physical types. Problems and methods of interracial adjustments.
113. Peoples of Europe. Racial and cultural characteristics.
121. Advanced Physical Anthropology. A critical study of problems in physical anthropology. Based on 110.
122, 123, 124. Problems in Anthropology. Advanced work with individual guidance. Also, honors course—Anthropological Backgrounds of the Social Sciences, on recommendation of their advisers. Credits to be arranged.
161. Primitive Religion. Religious concepts and practices of primitive peoples. Theories of the evolution of religion. Primitive eschatology.
204, 205, 206. Consult Graduate School bulletin.

ARCHITECTURE

COLLEGE OF ENGINEERING AND ARCHITECTURE

JUNIOR COLLEGE COURSES

21-22†-23. Freehand Drawing.

31-32†-33. Elements of Architecture.

61-62-63. Shades and Shadows and Perspective.

84-85-86. Modeling. An elementary course in clay modeling. Ornament, heads, and animals from casts and from life.

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. Freehand Drawing. For students in Interior Decoration.

81. Stage Design.

90-91-92. Illustration. Design of illustration as applied to the printed page. Magazine illustration, posters, and books.

93-94-95. Hand Print Processes. Making and printing wood engravings, etchings, dry-points, and lithographs.

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.

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.

[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 41.

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.
114. The Higher Bacteria.
116. Immunity.
117. Pathogenic Protozoa.
118. Morphology and Taxonomy of Bacteria.
119. Bacteriological Chemistry.
120. Bacteriological Chemistry (continued).
121. Industrial Bacteriology.
122. Industrial Bacteriology (continued).
150-151. Advanced Bacteriology.
201. Research in Bacteriology. Consult Graduate School bulletin.
203. Seminar in Bacteriology. Consult Graduate School bulletin.

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. Structure, evolution, and classification of the 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.
23. General Morphology of Bryophytes and Pteridophytes. Structure, evolution, and classification of liverworts, mosses, and ferns.
51. Histological Methods. Training in the technique of preparing plant material for microscopic study.
63. General Morphology of Gymnosperms and Angiosperms. Structure, evolution, and classification of seed plants.
101. Elementary Biometry. An introduction to the mathematical analysis of biological data.
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.

125, 126. Morphology and Taxonomy of Marine Algae. Advanced studies in selected groups. Either course 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 structure, their causes and significance.

133. Forest Geography of North America. Preliminary discussion of the principles of plant distributions followed by a detailed study of the forest regions of North America.

134. Research Methods in Ecology. Theory and practice of instrumental study of the habitat and of precise investigation of community and succession.

140. General Plant Physiology. Advanced survey of the whole field of plant physiology.

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.

145,146,147. Advanced Biometry. Theory and practical exercises in the statistical analysis of biological data.

149,150,151. Freshwater Algae. A general survey based on studies in field and laboratory. Designed for teachers and research workers who wish to acquire a practical knowledge of the algae. Problems and reports. Any course may be taken separately.

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.

INORGANIC CHEMISTRY

SCHOOL OF 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.

ANALYTICAL CHEMISTRY

SCHOOL OF CHEMISTRY

1-2. Quantitative Analysis.
7. Quantitative Analysis.
123-124-125. Advanced Analytical Chemistry.
127-128-129. Analytical Chemistry of the Rare Elements.

ORGANIC CHEMISTRY

SCHOOL OF CHEMISTRY

1-2.† Elementary Organic Chemistry.
6-7.†Elementary Organic Chemistry.
51-52-53. Organic Chemistry.
111. Reagents in Organic Chemistry.
116. The Terpenes.
137. Advanced Organic Chemistry Laboratory.
139. Advanced Organic Chemistry Laboratory.

PHYSICAL CHEMISTRY

SCHOOL OF CHEMISTRY

101-102-103. Physical Chemistry.
110. Physical Chemistry.
116-117-118. Advanced Physical Chemistry.
129. Principles of Colloidal Chemistry.
130. Application of Colloidal Chemistry.
131-132-133. Colloid Chemistry Laboratory.
144. Magnetochemistry.

TECHNOLOGICAL CHEMISTRY

SCHOOL OF CHEMISTRY

100-101-102. Food Analysis.

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.

CHILD WELFARE

40. Child Training. Emphasis on the pre-school child.

50-51.† Nursery School Methods. Materials and methods utilized in the training of small children as individuals and in groups. 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 student with reference to the Nursery School and parental education movement. Consideration given also to the kindergarten and Montessori movement and to the physical and mental hygiene movement.

120. 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 those who have charge of groups of children, and for workers in parental education. Observation in the Nursery School and in clinics.

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 aspects.

133-134-135. 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.

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.

230-231-232. Seminar in the Development of the Young Child. Consult Graduate School bulletin.

233-234-235. Research in the Development of the Young Child. Consult Graduate School bulletin.

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.

202-203-204. Gothic. Consult Graduate School bulletin.

209-210-211. 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.

87. Introduction to the Graphic Arts.

88. Printing Types and Lettering.

89. The Picture and the Printed Word.

ECONOMICS

SCHOOL OF BUSINESS ADMINISTRATION

NOTE.—The following courses in other departments may 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. Pre-business. Principles of economics relating especially to productive organization, considered from standpoint of society and of individual enterprises. Application of principles and necessary description of industry and commerce. Emphasis upon localization of enterprises.

3. The Mechanism of Exchange. Elementary course in money and banking. Study of financial institutions and their relations as parts of the financial structure. Relation of financial organization to the economic organization.

4. Principles of Economics. One-quarter course for pre-business students who have had 1-2.

6-7.† Principles of Economics. General survey for Arts and Education students.

14. Elements of Statistics.

25-26.† Principles of Accounting. Pre-business.

54. Accounting Survey I. One-quarter course covering the fundamental principles of accounting without making a study of the technical processes involved. Statement construction and analysis, income determination, valuation of assets, depreciation intangibles, the corporate balance sheet, capital stock, bonds.

55. Accounting Survey II. The applications of accounting to social and public problems such as: statement analysis and auditing from the investor's viewpoint, cost problems, accounting as an instrument of social control over public utilities and governmental operations.

85. Economics of Marketing. A general course dealing with (1) the market functions, (2) the organization of marketing enterprises, (3) measures of efficiency in marketing, (4) the manager's administration of marketing.

103-104.† Value and Distribution. An advanced course in economic theory, prices and costs, the value theory. The distribution of wealth; causes and effects of inequality. The distribution of income; inequality; rent, wages, interest, and profits.

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.

141. Monetary and Banking Policy.

142. Comparative Banking.

149. Business Cycles.

154. Public Utilities.

160. The Modern Corporation. A survey of the simpler financial activities and of the social problems of the corporate form of business organization.

161. Labor Problems and Trade Unionism.

162. Labor Movements.

163. Economic Aspects of Population and Immigration.

164. Labor Legislation and Social Insurance. A course dealing with the economic aspects of labor legislation, including minimum wage laws; hours legislation; factory acts; accident, health, old age, and unemployment insurance; mothers' pensions.

170. Land Economics.

172. Economics of Transportation.

174. Transportation Problems.

176. Commercial Policies.

187. Market Prices.

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; classics of English literature.

21-22-23.[1] Introduction to English Literature.

31-32.† Development of the English Novel. Principles and personalities in the evolution of the English novel. Written reports on selected novels.

33. The Later English Novel.

[1] Students must take two consecutive quarters to receive credit.

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.

55-56.† Shakespeare.

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

61. American Pronunciation. A study of the sounds of present day English, with particular reference to American usage.

62. Milton, with some consideration of his contemporaries.

63. American Usage. A study of the forms and syntax of present day English, with particular reference to American English.

69. Browning and Tennyson. Most of the time will be spent on Browning.

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.

73-74.† American Literature.

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

81-82. Survey of Middle English.

86-87. Forms of English Verse.

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

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.

126-127. Drama, 1660 to 1880.

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 75). 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.

160. History of the English Language.

162. Restoration Literature.

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

166. Bacon and His Contemporaries. Bacon as an essayist and as a promoter of learning.

171-172-173. Honors Course.

GRADUATE COURSES. CONSULT GRADUATE SCHOOL BULLETIN

201. Old English.

202-203. Old English Poetry.

208. Piers the Plowman.

209-210-211. Seminary in Middle English Lyric.

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

217-218-219. Seminary in Restoration 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.

237-238-239. Seminary in Chaucer.

240-241-242. Seminary in *The Canterbury Tales.*

COURSES IN COMPOSITION

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

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

10. Organization of Source Material.

11-12.† Description and Narration.

18-19.† Types of Writing. Advanced exposition, 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.)

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.

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

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 SPEECH

Voice and Speech Correction. The speech staff conducts a speech clinic twice each week. Every student in Speech 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. Fundamentals of Speech. A study of speech as applied in social adaptation of the individual and in his control of his environment. Emotional problems. Technique of body and voice. Mechanisms of thought. Oral reading and original speeches.

45-46. Fundamentals of Speech. A 10-credit course identical in subject-matter with 41-42-43.

51. Advanced Speech. Speeches on public questions. Analysis and outlining. Methods of reasoning. Adaptation of material to audience.

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.

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.

67. Phonetics. The study of English speech sounds, as they occur separately and in connected speech. Strong and weak forms, stress, assimilation. Practice in ear training.

81-82-83. Interpretative Reading. Literature as an art form. Esthetic theory of interpretation and oral reading. Critical appreciation of authors. Action and voice. Practice in reading essays, prose narratives, lyric and narrative poems, and plays as vehicles of distinct modes of experience.

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 Squad. The question for intercollegiate debate studied and briefed, and frequent practice debates held.

101-102.† Advanced Speech Composition. Structure and oral style. Psychology of persuasion. Briefing. Critical study of models. Written speeches. Reports.

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.

107. Seminar in Great Orators. A critical study of the great English and American orators. One historical period each year.

121-122.† Advanced Speech Problems. Factors determining the behavior of speakers and audiences.

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.

2. Introduction to Regional Geography. A study of type areas in the different continents with a view to determining human adjustments to the physical environment in these areas.

33. Climatology. The climatic elements, the distribution of climatic types, and 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. Regional Geography of the World. A critical study of selected type areas. A more advanced treatment of the material of Course 2.

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.

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.

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

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

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

135. Geography of Minnesota. A regional economic study of the state. The basis for the 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.

141. Field Course in Geography. A consideration of the problems of field work, illustrated by field trips.

151-152-153.† Seminar in Geography. A survey of current literature with reports and discussions on assigned topics.

201. Research Problems in Geography. Consult Graduate School bulletin.

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; modification of surface features by interactions of earth movements, volcanic activity, and the work of streams, glaciers, wind, etc.

49. Physiography of the United States. The development of the surface features of the United States as affected by the rock structure and geologic history. Description and genetic analysis.

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.

102-103. Micropaleontology. The study and classification of Foraminifera, diatoms, and other small fossil organisms, and their use for purposes of correlation.

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. Three credit hours of laboratory work.

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 1928, 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.
2. Beginning B. Continuation of Course A.
3. Beginning C. Selected texts from modern writers.
4. Intermediate German. Modern narrative prose.
7. Prose and Poetry.
8. Advanced Prose and Poetry.
15. Narrative Prose for Pre-medical Students.
24-25-26.† Beginning German for Chemists.
27. Narrative Prose for Chemists.
28-29.† Chemical German. Selected readings in Chemical German.
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. Readings from modern novelists.
63. Modern Drama.

64. Classic Drama.
65. Survey of German Literature through the Reformation Period.
66. Survey of German Literature of the Eighteenth Century.
67. Survey of German Literature of the Nineteenth Century.
72. Drama since 1880. The beginnings of the dramatic revival.
73. Drama since 1880. The Naturalistic School.
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.

143-144-145.† Der Roman (Novel). A study of its technique and development.

150-151-152.† Die Novelle. A study of the technique and development.

153-154-155.† Studies in German Literature of the Nineteenth Century. Subject for 1927-28: Die Dorfgeschichte.

160-161-162.† Lyric Poetry of the Eighteenth and Nineteenth Centuries.

163-164-165.† German and English Literary Relations in the Sixteenth, Seventeenth, and Eighteenth Centuries.

225-226-227.† Literary Problems. Consult Graduate School bulletin.

GREEK

1-2†-3. Beginning Greek. Grammar, composition, word formation, oral exercises, and selected readings in simple prose and verse.

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* or *Odyssey;* 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 to 1815.
6. England since 1815.
7-8.† American History. The national period to 1877.
9. Recent American History. The national period after 1877.

[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.

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. See Political Science.
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.

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.[1] Economic History of the United States. Colonial period, early national period since 1860.

113,114,115.[1] Economic History of Europe since 1750.

116,117,118.[1] Economic History of Europe, 1300-1750.

169. Economic History of the United States since the Civil War.

English History

121. English Backgrounds and the American Colonies.

162. The Beginnings of Parliament.

183. The Stuart Period.

184. Topics in Modern English History.

See also 113, 114, 115 and 116, 117, 118 under Economic History.

European History

101-102. The French Revolution and Napoleonic Era.

104. The Near East: Modern. Rise and decline of Ottoman Empire. Development of the Balkan States. Action of the great powers in the Near East.

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.

123. European Expansion to 1815. The period of the great discoveries. Foundation of the European empires in America, Asia, and Africa. The old colonial system. The struggle for empire.

124. European Expansion since 1815. The expansion and development of British dominion in India. Russian expansion in Central Asia and Siberia. The partition of Africa. Imperialism and the reaction of the non-European peoples.

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.

130. 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.

131-132. France under Louis XIV and Louis XV. Reading knowledge of French desirable.

157-158.[1] Topics in European History, 1815-1914. Reading knowledge of French or German required.

159. Topics in European History since 1914.

164. Studies in the Crusades. Reading knowledge of at least high school Latin required.

[1] This course may be taken by quarters, credit being given for any part.

201-202-203. Historical Bibliography and Criticism. Consult Graduate School bulletin.

See also 113, 114, 115 and 116, 117, 118 under Economic History.

Honors Course

197-198-199. Honors Course. See Anthropology 122-123-124.

NOTE.—The following courses carry credit also in this department: Political Science 136-137 and 138-139.

HISTORY AND INTERPRETATION OF ART

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.

HOME ECONOMICS

COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

3. Textiles.
4. Textiles.
11. Clothing Planning and Construction A.
13. Clothing Planning and Construction B.
15. Clothing Problems.
17. Advanced Clothing.
21. Foods and Cookery.
22. Food Economics.
50. Color and Design I.
51. Color and Design II.
53. Advanced Design.
56. Applications 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.
161. Art History and Appreciation.

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.

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

5. The American Newspaper. A survey of the history, organization, and methods of contemporary journalism, followed by an analysis of the relations of newspapers to their readers.

13. Introduction to Reporting. The elements of news writing.

14-15.† Newspaper Reporting and Correspondence. An intensive news writing course. Students are required to cover one news assignment each week for a Minneapolis or St. Paul newspaper.

51-52. Copy Reading and Newspaper Make-up. Instruction and practice in copy reading and newspaper make-up.

53. Mechanics of Journalism. A survey of the mechanical processes in the production of newspapers and magazines.

55. Advertising Typography.

56. Newspaper Typography.

57. Magazine Typography.

[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.

58. Advanced Typography.

60-61†-62. The Community Newspaper. A comprehensive analysis of the problems of editors and publishers of country weeklies and small city dailies.

65. Women's Departments. Study of departmental work on newspapers and magazines and editorial positions usually occupied by women.

70-71.† Trade and Technical Journals. An analysis of the editorial requirements and services rendered by specialized periodicals.

73-74. Special Feature Articles. Lectures and practice in gathering and preparing material for special magazine and newspaper articles.

75. Law of the Press. A study of the legal rights and duties of newspapers and magazines.

76. Critical Writing.

77. Advanced Reporting.

80. Newspaper Reference Library. A practical course in the organization of the newspaper reference library or "morgue."

82. Supervision of School Publications.

95. Editorial Administration. An intensive study of the editorial organization of the newspaper and the duties of the editorial executives.

96. Financial Writing. Practical instruction in the methods by which financial reporters and editors cover the activities and interests of modern business, finance, and stock and commodity exchanges.

97. Press Associations and Correspondence. An intensive survey of the organization, methods, and equipment of American press associations and a study of the work and methods of special newspaper correspondents at home and abroad.

98. Court Procedure and Evidence. A study of the organization of the federal and state courts and the methods by which they may be covered efficiently as news sources. A consideration of evidence and its evaluation.

104. Editorial Writing.

110. History of Journalism. A study of the history of American journalism, briefly considering its old world origin.

111. Foreign News Sources. A comparison of American journalism with that of other countries and a study of the news gathering agencies of the world. The course is designed to prepare students for the handling of foreign news dispatches.

112. Current Newspaper Problems. An analysis of current tendencies in contemporary journalism.

130-131. Public Opinion and the Newspaper.

190-191-192. Topics in Journalism. Required of all journalism majors. Original research.

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. Alternates with Course 53.
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 Beeson's *Primer of Medieval Latin*.
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. Alternates with Course 123.
144.[1] Roman Poetry from Ennius to Ausonius.
145.[1] Roman Tragedy.
146.[1] *Tusculan Disputations*, Book I.
201-202-203. Tacitus. Graduate seminar.
211-212-213. Lucretius. Graduate seminar.
221-222-223. Cicero's Philosophical Works. Graduate seminar.
231-232-233. Cicero's Rhetorical Works. 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.

[1] 144, 145, 146 are offered in successive summers.

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, address the university librarian.

MATHEMATICS

3.[1] Higher Algebra, Short Course. 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.[1] College Algebra and Trigonometry. Selected topics in algebra and trigonometry with special reference to preparation for the first course in physics.

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.

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.

30. Analytic Geometry. The elements of plane analytic geometry including the geometry of the conic sections, with a brief introduction to solid analytic geometry.

47-48-49. Mathematics for Students of Statistics. Topics in college algebra, trigonometry, analytic geometry, and calculus most useful for students of statistics. Intended for students desiring rapid preparation for the Mathematical Theory of Statistics (Course 121-122-123), or other work in mathematical statistics.

[1] For pre-medical and pre-dental students, and others who desire only that mathematics which is needed in the first course in physics.

[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.

50. Calculus I. Differential calculus.
51. Calculus II. Integral calculus.
52. 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.
62. Theory of Equations I.
63. Theory of Equations II.
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.
144-145-146. Topics in Mathematical Analysis. A study of mathematical questions arising in connection with certain problems of mathematical physics; developments in series; the properties of solutions of Laplace's equation.

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. Pattern Practice.[1]
12. Foundry Practice.[1]
13. Forge Practice.[1]

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; rifle marksmanship; military hygiene and first aid; military courtesy; physical drill; equipment; ceremonies.

[2] For description, see bulletin of the College of Engineering and Architecture.

4-5-6. Second Year Basic Course R.O.T.C. Infantry. Practical instruction in school of the platoon and company; command and leadership; scouting and patrolling; automatic rifle; musketry; interior guard duty.

51-52-53. First Year Advanced Course R.O.T.C. Infantry. Military field engineering; combat principles; military sketching and map reading; machine gun; command and leadership.

54-55-56. Second Year Advanced Course R.O.T.C. Infantry. 37 mm. gun; 3" trench mortar; administration; military history and national defense act; combat principles; military law; rules of land warfare; command and leadership.

MUSIC

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 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.

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.

201-202-203. Basis of Musical Expression. Consult Graduate School bulletin.

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.

4-5. Logic. Essentially the same subject-matter as Course 2, but planned to afford more intensive training. Especially for those majoring in philosophy or in the social sciences.

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.

110. Contemporary Philosophy. Critical discussion of the various forms of present day idealism, naturalism, pragmatism, and realism.

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. Metaphysics. A study of the problem of the unity of the sciences.

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. Sophomore Gymnastics. Fundamental gymnastics based on the work of Niels Bukh. The exercises include work for flexibility, strength, and co-ordination.

9. Sophomore Archery. Suitable in strength for girls in Individual Gymnastics.

10-11-12. Sophomore Orthopedic and Individual 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. Sophomore Games and Folk Dancing. Suitable in strength for C-D girls. Conducted outdoors when weather permits.

18. Tennis.

19. Sophomore Hockey.

20. Sophomore Basket-Ball.

21. Sophomore Baseball.

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 Life Saving and Water Sports. Red Cross life saving, leading to membership in the Life Saving Division of the American Red Cross.

31. Sophomore Elementary Skating. Practice of elementary strokes on the rink, with support in the beginning for those who need it.

32. Sophomore Intermediate Skating. Practice and technique of the fundamental strokes of simple figure skating; ice games on the rink.

33-34-35. Elective Sports. Hockey and volley ball in autumn, basket-ball in winter, baseball, track, and horseshoe in spring.

36. General Swimming. For both beginners and advanced swimmers and divers. No registration necessary.

41, 42. Health Projects. Two periods of exercise in a course chosen by the student; one period of conference; individual study of a problem of health.

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]

PHYSICS

INTRODUCTORY COURSES

3. Elements of Mechanics and Sound. First part of general course, 3, 23, 33, 43. Course 4 should be taken in conjunction with this course. Three lectures, one quiz hour a week.

4. Elements of Mechanics and Sound Laboratory. The laboratory part supplementing Course 3. 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.

23. Heat. Course 24 should be taken in conjunction with this course. Three lectures, one quiz hour a week.

24. Heat Laboratory. The laboratory part supplementing Course 23. One two-hour session in the laboratory a week.

33. Optics. Course 34 should be taken in conjunction with this course. Three lectures, one quiz hour a week. Course 33 without the laboratory. Course 34 will satisfy the pre-medical requirement in optics.

34. Optics Laboratory. The laboratory part supplementing Course 33. One two-hour session in the laboratory a week.

43. Electricity. Course 44 should be taken in conjunction with this course. Three lectures, one quiz hour a week.

44. Electricity Laboratory. The laboratory part supplementing Course 43. One two-hour session in the laboratory a week.

INTERMEDIATE COURSES

52. 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.

101-103-105. Theoretical Physics. Intensive analytical survey of fundamental principles of mechanics, sound, heat, light, electricity, and mag-

[1] If taken for no credit, no reading or written work will be required.

netism, designed to supplement the general courses and to prepare students for more specialized graduate courses. Five lectures a week.

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.

124. 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.

134. Applied Optics. Special experimental work in spectometry, optical instruments, photometry, absorption, polarized light. Two three-hour laboratory periods a week.

144. Electric Measurements. Devoted mainly to the study of potentiometer methods, capacity, inductance, magnetic flux. Three two-hour laboratory periods a week.

146. Advanced Electric Measurements. Standard measurements of the various electric quantities including the use of precision instruments. A continuation of Course 144. Three two-hour 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.

INTERMEDIATE COURSES

2. American State Government.

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. A study of the constitutional status; the common law attributes; the creation, alteration, and dissolution; the organization, officers, and procedure; the corporate and governmental powers; and the expanding functions of municipal corporations.

113. Municipal Administration. Administrative organization, personnel, and finance; planning, public works, safety, sanitation; utilities.

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.

146-147.† Constitutional History of the United States.

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. Recent Social Legislation. Governmental powers and methods used for social legislation, both state and federal; peace and security; safety and health; public morals; semi-social economic relations, social advertising, minimum wage, city planning, police power restrictions on use of private property.

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.

161-162.† 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.

171. Political Psychology. A biological and psychological approach to political theories and problems. The political significance of individual differences in intellect and temperament in relation to belief, propaganda, and public opinion.

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.

4. Increasing the Span of Human Life. Control of disease conditions since 1855 and resulting increase in length of human life. Diseases now causing high mortality. Foods, rest, recreation, work, and other important factors increasing efficiency and length of life.

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. Susceptibility, resistance, and immunity to disease; methods of spread and prevention of communicable and degenerative diseases; protection of food, water, and milk; school health work; vital statistics.
57. Health of Infant and Pre-school Child. Growth and development of baby and young child. Care and feeding of normal child. Prevention and correction of physical defects. Demonstration of infant clinics.
58. Maternal and Child Hygiene.
59. Social Hygiene.
60. Tuberculosis and Its Control.
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 Nursing.
70. Home Nursing and Child Care.
73. Occupational Hygiene and Disease.
80. Child Health and Educational Hygiene.
102. Sanitation.
103. Public Health Bacteriology.
106. Public Health Administration.
107. Sanitary Surveys.
200. Research. Consult Graduate School bulletin.

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. Special recitation sections for 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.

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.

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.

124. Psychology of Learning. A study of the literature and experiments of memory and habit formation. Lectures, readings, and reports.

125-126†-127. Psychology of Individual Differences. Experimental and statistical study. Influence of sex, race, immediate ancestry, environment, maturity, in causation of individual differences. Investigation of definite problems and analysis of results. Individual minor research problems in third quarter.

130. Vocational Psychology. Psychology of individual differences in intelligence, aptitudes, interests, and training, with special reference to vocational guidance.

137. Psychology of Learning. A continuation of 124.

140. Social Psychology. A critical study of the experimental investigations of group behavior including the social significance of instinct, habit, imitation, suggestibility, and personality traits.

141. Political Psychology. A biological and psychological approach to political theories and problems. The political significance of individual differences in intellect and temperament in relation to belief, propaganda, and public opinion.

144-145.† Abnormal Psychology. Normal and abnormal behavior contrasted. Varieties of maladjustment as illustrated in criminality, deficiency, fanaticism, and insanity. Stress will be laid on the inadequacies of personality as shown in everyday life.

151-152-153. Animal Psychology. Vertebrate behavior is emphasized. A critical study of the literature and the relationship between animal and human psychology. Individual investigation of special problem in third quarter.

GRADUATE COURSES. CONSULT GRADUATE SCHOOL BULLETIN

200. Seminar in the History of Psychology. I. Men and Schools.
203. Seminar in the History of Psychology. II. Methods and Problems.
205. Advanced Differential Psychology.
206-207-208. Research in Animal Behavior.
210-211-212. Research Problems.
215-216-217.† Seminar in Psychology.
220-221-222.† Journal Club in Contemporary Trends in Psychology.
228. Perception of Space.

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. First quarter: romantic poetry and novel; second quarter: romantic drama and realistic novel; third quarter: drama and poetry after 1850. The course is conducted entirely in French.
100. Oral Diction. Practical and theoretical study of spoken French.
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. First quarter: formation of the classic ideal; the salons, the Academy, Corneille; second quarter: literature mondaine; third quarter: Racine, Molière, La Fontaine.
118-119-120. French Literature: Eighteenth Century. First quarter: beginnings of the philosophic movement, Bayle, Montesquieu, Diderot; second quarter: Voltaire; third quarter: Rousseau, the theater, the novel.

121-122-123. French Literature: Sixteenth Century. First quarter: the Rhetoriqueurs, Marot, Rabelais; second quarter: the Pleiade; third quarter: Montaigne, Amyot.

141. Realistic Novel: Nineteenth Century. A study of realism with especial reference to the novel. Flaubert, Maupassant, Zola, etc.

145. Explication de Textes. An intensive, critical study of selected French masterpieces. The course is conducted in French.

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. Contemporary French Lyric Poetry.

156. Molière.

157. Contemporary French Novel. Bourget, Loti, France, etc.

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.

ITALIAN

1-2.† Beginning Italian.

3-4. Intermediate Italian.

71. Modern Poetry (Leopardi, Carducci). Alternates with 72.

72. Modern Drama (Giacosa, Bracco, Pirandello). Alternates with 71.

73. Boccaccio. Alternates with 74.

74. Petrarch. Alternates with 73.

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.

30. Spanish Commercial Correspondence.

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.

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.

110-111-112. Spanish Literature: Nineteenth Century. First quarter: drama; second quarter: the novel; third quarter: poetry.

115-116-117. Spanish Literature: Seventeenth Century. First quarter: drama; second quarter: the novel; third quarter: lyric and epic poetry. Alternates with 156-157-158.

141. Spanish Contemporary Novelists.

150-151. Spanish Dramatic Literature. Contemporary dramatists.

156-157-158. Spanish Literature: Sixteenth Century. First quarter: drama; second quarter: Cervantes and the novel; third quarter: poetry and the mystics. Alternates with 115-116-117.

159. Cervantes.

174-175-176. Lectures in Spanish: Twentieth-Century Literature. First quarter: drama; second quarter: the novel; third quarter: poetry.

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.

230-231-232. Research Methods and Material.

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 *Frithiofs 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.

117. Earlier 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

201-202-203. Seminar in History of Scandinavian Languages.

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. A study of rural and urban relationships. The principles of sociology applied to the position of an agricultural class in an industrial society; the contributions and obligations of farmers to the larger society and vice versa.

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.

71. Elementary Field Training in Group Work.

90. Elementary Field Training in Case 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 Training in Case 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 Training in Case 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 co-operation; causes, manifestations, results, and cures of conflict between nations, races, religions, and economic and social classes.

110. Rural Organization. A study of social organization as it affects living conditions in small towns and rural districts. Especially designed for rural social workers and specialists in rural sociology or agricultural economics.

112. The Rural Social Survey. A course dealing with the methods and content of rural social research. All methods of investigation are analyzed. Especially designed for those interested in social research under Purnell or similar funds.

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. The Technique of Leadership in Group 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 Training in Group or Case Work. May be taken in specialized fields of child welfare and medical, as well as family, work.

158. The Sociology of Revolution.

160. Population Problems.

187. 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.

218-219-220. Seminar in Social Work.

221-222-223. Graduate Field Training in Group or Case Work.

ZOOLOGY

See Animal Biology.

INDEX

The Bulletin *of the* University *of* Minnesota

The College of Science Literature, and the Arts

Part II

Announcement of Program for the Year 1928-1929

Vol. XXXI No. 24 April 28 1928

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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 1928 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 21, Saturday, September 22, or Monday, September 24, to begin the process of registration. Those coming later than 5:00 p.m. Monday, September 24, will be subject to the usual penalty for late registration. See Penalty Fees, page 44 of the bulletin of general information.

During the week September 25 to 29, 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 21, in order to avoid the inconvenience and delay incident to the congestion on the last day.

Any applicants who have not taken the psychological and English tests must report on Friday, September 21, and take these tests before they will be enrolled for Freshman Week.

1928

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1929

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DECEMBER

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UNIVERSITY CALENDAR
1928-29

Fall Quarter

1928			
September	20	Thursday	Payment of fees closes, except for new students
September	21-24		Entrance examinations (for removal of entrance deficiencies)
			Registration of all new students entering the freshman class
September	24-28		Examinations for removal of conditions
			Physical examinations
			Registration period[1]
September	24-29		Freshman Week
September	28	Friday	Payment of fees for new students closes
September	28-29		Necessary changes in registration
October	1	Monday	Fall quarter classes begin, 8:30[2] a.m.
October	18	Thursday	Senate meeting, 4:30 p.m.
October	20	Saturday	Homecoming Day
November	6	Tuesday	Election Day; a holiday
November	12	Monday	A holiday; (November 11, Sunday, Armistice Day)
November	29	Thursday	Thanksgiving Day; a holiday
December	6	Thursday	State Day Convocation
December	19-22		Final examination period
December	20	Thursday	Commencement Convocation
			Senate meeting, 4:30 p.m.
December	22	Saturday	Fall quarter ends, Christmas vacation begins, 5:20 p.m.
December	26	Wednesday	Payment of fees closes for all students in residence fall quarter[3]

Winter Quarter

1929			
January	2-4		Entrance examinations
January	4-5		Registration days for new students[1]
			Necessary changes in registration
January	7	Monday	Christmas vacation ends, winter quarter classes begin, 8:30[1] a.m.

[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, Part I of this bulletin.

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 permitting registration at a later date.

[2] First hour classes begin at 8:15 at University Farm.

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

February	12	Tuesday	Lincoln's Birthday; a holiday
February	21	Thursday	Charter Day Convocation
			Senate meeting, 4:30 p.m.
February	22	Friday	Washington's Birthday; a holiday
March	20-23		Final examination period
March	21	Thursday	Commencement Convocation
			Payment of fees closes for all students in residence winter quarter[3]
March	23	Saturday	Winter quarter ends, spring vacation begins, 5:20 p.m.

Spring Quarter

March	25-27		Entrance examinations
March	29	Friday	Good Friday; a holiday
March	30	Saturday	Registration day for new students[2]
April	1	Monday	Spring vacation ends, spring quarter classes begin, 8:30[1] a.m.
May	16	Thursday	Cap and Gown Day Convocation
			Senate meeting, 4:30 p.m.
May	30	Thursday	Memorial Day; a holiday
June	12-15		Final examination period
June	15	Saturday	Spring quarter closes, 5:20 p.m.
June	16	Sunday	Baccalaureate service
June	17	Monday	Fifty-seventh annual commencement

Summer Quarter

June	18-19		Registration, first term
June	20	Thursday	Classes begin, 8:00 a.m.
July	4	Thursday	Independence Day; a holiday
July	27	Saturday	Registration and payment of fees for second term closes. First term closes
July	29	Monday	Second term classes begin
August	31	Saturday	Second term closes

[1] First hour classes begin at 8:15 at University Farm.

[2] 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, Part I of this bulletin.

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 permitting registration at a later date.

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

COURSES OF STUDY

A student may, while registered in the College of Science, Literature, and the Arts, pursue one of the following courses.[1] These curricula are subject to revision by action of the faculties of the colleges concerned.

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 course leading to the degree of bachelor of music.
4. 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.
5. Courses preparing for admission to the School of Business Administration, College of Dentistry, College of Education, the course in Interior Decoration in the College of Engineering and Architecture, and the Law School.
6. 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:

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

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.

Any student who fails to complete the requirements for graduation

[1] Students in Art Education, Physical Education, Public School Music, and certain other special courses, register in the College of Education in their freshman year.

within a normal period will, in order to complete the work, be required to continue in the Senior College for one or more university sessions. During this period he will be required to carry at least thirteen credit hours of work and to secure an average of one honor point per credit.

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, except upon petition.

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.

CLASSIFICATION OF STUDIES

Because of the large numbers of students who fail in their attempt to carry college courses leading to the Bachelor's degree or professional training, and because in a large percentage of cases the lack of aptitude for such college training can be clearly understood before entrance, the college has selected certain courses which should be taken by those who, for any reason, can remain only a short time in college. As compared with the usual college studies, these courses deal less with specialized knowledge and require less technical skill, while they contribute more directly to the general information and culture which will have value for such students. Some of these courses have a definite interest in relation to certain vocations or occupations. The courses are all of standard college grade and may be taken by any student for full college credit. Some of them are courses which are required in certain regular curricula.

A special list of studies has been selected as means of meeting the existing situation. Persons who have very low aptitude for college work gain little or nothing from the study of foreign languages, laboratory exercises in science, or the more technical or specialized courses intended for those who will complete their college training. Such students of low aptitude will, therefore, be limited to these general courses of informational, cultural, and vocational character. They will be exempt from the requirements of the regular curricula.

In doing this, the college is not setting up in any permanent way a new type of training for those who have not the aptitude for its proper field of work. The arrangement is intended to meet an emergency. It is a step toward the definition of an intelligent public policy regarding those high school graduates who have leisure and desire further school opportunities, but who have not the qualifications necessary to profit by the type of training appropriately offered in this college.

The courses at present included in this list[1] are

Botany 1
Inorganic Chemistry 1-2-3 and 4-5
Composition 4-5-6
Drawing 41-42-43, 44
Economics 1, 2, 3
English A-B-C
Geography 1, 2
Geology 8
History 1-2
How To Study 1
Library Methods 1
Mathematics 3, 4, 5, and 8
Mechanical Engineering 11-12-13
Music
Zoology 8-9

Students may be reclassified on the basis of their record in the first two quarters. Any student who shows sufficient ability in these courses may continue in further courses for vocational training or may register as a candidate for a degree if he wishes to do so. A student who has freedom of election from the first, but does not profit by his opportunities, may find himself limited to the above list of studies until he demonstrates his ability and willingness to do work of an acceptable grade. Of course, this announcement in no way changes or relaxes the rules regarding delinquency in studies.

JUNIOR COLLEGE

1. 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.

a. 15 credits in English (English A-B-C) or 9 credits in composition (Composition 4-5-6), or exemption from the requirement. All students are required to take a placement test before registering for any course in English or composition.

b. Foreign language, 0 to 20 credits, according to the following schedule:[2]

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

c. 10 credits in one of the social sciences: economics, geography, history, political science, sociology.

d. 10 credits in one of the natural sciences: astronomy, botany, chemistry, geology, human physiology, physics, psychology (including laboratory), zoology.

2. Every student should plan to begin the work specified in the preceding paragraph early enough to provide for the completing of these requirements before the end of his sophomore year. Failure to do this will delay his admission to the Senior College.

3. In addition the student must secure the necessary preparation for a senior college major sequence in one subject.

[1] Other freshman courses are marked in the program as requiring a certificate of aptitude.

[2] Not required in the Social and Civic Course.

4. The requirements in physical education and military drill (General Regulations, sections 6, 7, and 8, Part I of this bulletin) 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: Anthropology, Architecture, Astronomy, Bacteriology, Botany, Chemistry, Economics, English, Geography, Geology and Mineralogy, German, Greek, History, Human Physiology, Journalism, Latin, Mathematics, Music, Philosophy, Physics, Political Science, Psychology, Romance Languages, Sociology, Zoology. 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.

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.

HONORS COURSE PLAN

A student who has met all the requirements for admission to the Senior College may be enrolled for the Honors Course upon the approval of the department in which he wishes to pursue his major study.

Each student enrolled in the Honors Course will be put under the immediate direction of a member of his major department of professorial rank who shall be known as his tutor.

A student enrolled in the Honors Course may be a candidate for graduation honors. The tutors will co-operate with the Committee on Honors in arranging comprehensive examinations and in the evaluation of theses.

A part of the student's senior college work will consist of reading or other individual studies done under the direction of his tutor. Work done in this way will be accepted as a substitute for a part or the whole of the major sequence and of the elective work of the usual curriculum.

A student electing this plan will be governed by the announcement of his major department and the direction of his tutor as to number of courses, attendance at classes, and general methods to be pursued.

The requirements for the minor study are not modified by this plan at present.

When the tutors of a department report at the end of any quarter that a student is not making satisfactory progress in the Honors Course, the student will be registered as a candidate in the regular course. In this case the tutors will report blanket credits equivalent to the work actually done. The student can then arrange to complete his major sequence either in the same department or in another.

For the year 1928-29 Honors Courses are offered by the departments of Anthropology, English, Political Science, Sociology, and Zoology.

GRADUATION HONORS[1]

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,

[1] 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.

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.

CREDIT IN THE GRADUATE SCHOOL

A student lacking not more than nine credits toward graduation may, upon petition, receive graduate credit for a limited amount of work taken as an undergraduate. No graduate credit will be given unless the student has made previous arrangement with the Graduate School. Courses taken for graduate credit will not carry credit toward the Bachelor's degree.

With the permission of the assistant dean for the Senior College, undergraduates lacking not more than nine credits towards graduation may be registered also in the Graduate School. Permission will be granted only in exceptional cases.

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[1]

This course is organized in response to a demand for distinctive pre-technical training for professional service. For the senior year specializa-

[1] No requirement in foreign language.

tion is afforded in case work, medical social work, and rural social work. Preparation in group work for leaders of Boy Scouts, Girl Scouts, Camp-fire, and Girl Reserve groups, is also provided. Satisfactory completion of the four-year course leads to the degree of bachelor of science.

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.

It is recommended that students who register in this course come to the Department of Sociology for advising. A special bulletin is prepared for students in this course, and this bulletin should be consulted for a statement of recommended elective courses.

For admission to the Senior College the student must earn 90 credits with an average of one honor point per credit. During the four years, he 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, Junior College

Common basic foundation

REQUIRED

English A-B-C or Composition 4-5-6
or exemption from requirement
Sociology 1, 6, 45, 49
Economics 6-7
Political Science 1, 11[2]
Psychology 1-2
Zoology 1-2[3]
Inorganic Chemistry 1-2-3, or 4-5[4]
Bacteriology 41[4]
Human Physiology 4[4]

Third Year, Senior College

Concentrated sociological study and training, in which students become familiarized with the three chief techniques of social work; case work, group work, research.

REQUIRED

Sociology 52, 53,[2] 55, 60, 70, 71,
90 (simultaneously with 52), 91
Preventive Medicine 50 or 53
Home Economics 70, 71, 72
or
Child Welfare 50, 51, 60
or
Economics 161, 162

[2] Elective for students preparing for medical social work.

[3] Three quarters of botany may be substituted for Zoology 1-2 by students in group work.

[4] Required of students preparing for medical social work.

Fourth Year, Senior College

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 169.

b. *Group work:* Sociology 71, 100 or 101, 122-123, 126, 128, 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, 61 or 73; Psychology 144-145.

d. *Rural social work:* Sociology 101, 110, 112, 114, 115, 153-154; Preventive Medicine 60; Agricultural Education 154.

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, 215-216-217, 218-219, 220, 221-222-223; with a suggested minor in anthropology, economics, education, psychology, political science, or preventive medicine and public health.

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 Administration, is made up as follows:

5 credits in Business Organization: Marketing (Economics 1)
5 credits in Business Organization: Production (Economics 2)
5 credits in Mechanism of Exchange (Economics 3)
9 credits in composition (Composition 4-5-6)
10 credits in *one* of the following social sciences: geography, history, political science, sociology
10 credits in mathematics or in *one* of the following laboratory sciences: botany, chemistry, physics, zoology. (Mathematics 8 and 20 are required of students who intend to specialize in accounting or banking)
6 credits in psychology (Psychology 1-2)
5 credits in Principles of Economics (Economics 4)
3 credits in Elements of Accounting (Economics 20)[1]
6 credits in Principles of Accounting (Economics 25-26)
5 credits in Elements of Statistics (Economics 14)
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 listed below. It is desirable that students should have had chemistry and higher algebra in high school.

[1] Students who have had a high school course or experience in bookkeeping may be exempt from this course and admitted to Economics 25 by passing a placement test.

1. Zoology 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 or 6
5. Physics 3 and 4, and one of the combinations 23 and 24, 33 and 34, 43 and 44
6. Drawing 41-42-43
7. Mechanical Engineering 11-12-13
8. English A-B-C or Composition 4-5-6 or exemption from requirement
9. Psychology 1-2
10. Bacteriology 41
11. Electives to make a total of 90

NOTE.—Students who have had no chemistry in high school are advised to take Inorganic Chemistry 11 in the summer of their first year.

C. GENERAL COURSE PRELIMINARY TO THE COLLEGE OF EDUCATION[1]

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 a minimum of 90 credits with an average of one honor point per credit in all subjects pursued, 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. 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 to complete certain of these curricula satisfactorily, it is necessary for a student to begin a proper arrangement of his program during the freshman or sophomore year. Students who intend to teach should consult the statement of requirements in the College of Education bulletin. Failure to do this may necessitate a longer residence period in order to complete all requirements.

In certain academic subjects (English, history, mathematics, etc.) the requirements for a major recommendation in the College of Education differ from the major requirements in the College of Science, Literature, and the Arts. Prospective students of education should therefore consult the College of Education bulletin for such 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

[1] Students in Art Education, Physical Education, Public School Music, and certain other special curricula register in the College of Education in their freshman year.

and 90 honor points. At the beginning of his course, he should consult the School 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 interior decoration. (See bulletin of the College of Engineering and Architecture.)

Courses Required in the First Two Years	Credits
English A-B-C or Composition 4-5-6 or exemption from requirement	0 to 15
Mathematics 4 or 6 (with prerequisite)	4 to 10
French (see Junior College Requirements, page 8)	0 to 20
History 11-12-13	10
Physics 3 and 4 and any of the continuations, 23 and 24, 33 and 34, or 43 and 44	8
or	
Inorganic 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	4 or 5	Elective or physics	4 or 5

Sophomore Year

	Credits
Architecture 21-22-23	6
Architecture 31-32-33	15
Architecture 61-62-63	6
History 11-12-13	10
Chemistry or physics	8 to 12
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. 8 and 9)

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. English A-B-C or Composition 4-5-6 or exemption from requirement
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; Speech 41-42-43 or 45-46, 55-56-57; Economics 3; History 146-147 and 116-117-118; Philosophy 1, 3, 124, and 129; Political Science 2, 11, 15, 121-122, 145-146, 181-182, and 183.

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 19.

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 War Department regulations.

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 course.

JUNIOR COLLEGE

1. A total of 90 credits with an average of one honor point per credit.
   a. English A-B-C or Composition 4-5-6 or exemption from requirement.
   b. History 1-2.
   c. Zoology 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 41 ..... 5 credits
3. Preventive Medicine 50, 53 ..... 6 credits

4. One of the following (in senior college courses)
   a. History, including 101-102, 156 ..... 21 credits
   b. Political Science, including 101-102, 181-182 ..... 21 credits
   c. Mathematics including 50, 51, 52 ..... 21 credits
   d. 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 is expected to complete the courses listed below and must secure ninety credits with an average of one honor point per credit.

Composition 4-5-6 or exemption.

Zoology 5-6-7 (1-2, 10 credits will be accepted).

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, 43 and 44. Course 34 optional.

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 zoology, (such as comparative anatomy), physics, chemistry, freehand drawing, Latin, higher mathematics and statistics, 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 41.

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 zoology, 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.

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
Zoology 5-6-7 (or 1-2)

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, 34 (optional), 43 and 44
Composition 4-5-6, or elective for those exempted from requirement

NOTE.—Students who have had no chemistry in high school are advised to take Inorganic Chemistry 11 in the summer of their first year.

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
Zoology 5-6-7 (1-2, 10 credits, will be accepted)

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, or elective for those exempted from requirement

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.

VIII.[1] 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 arts at the end of four years, bachelor of architecture at the end of five years, and master of architecture at the end of six years.

Students wishing to elect this course should consult the School of Architecture. For the first two years the requirements are the same as

[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.

those laid down in the course in Interior Decoration, page 14 of this bulletin, except that the student will register in Mathematics 11, 12, and 13 (College of Engineering and Architecture) and complete these courses by the end of his sophomore year.

During the first four 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] SIX-YEAR COURSE IN ARTS AND LAW, LEADING TO THE DEGREES OF BACHELOR OF ARTS AND BACHELOR OF LAWS

The work of the first three years of this course is done in the College of Science, Literature, and the Arts. 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.

X.[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 zoology, chemistry, physics, and foreign language, prescribed for the seven-year course in Science and Medicine (p. 17).[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 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

[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. 17.

subjects of English or composition, chemistry, physics, and zoology; 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.

XI. FIVE-YEAR COURSE IN ARTS AND NURSING OR NURSING EDUCATION LEADING TO THE DEGREES OF BACHELOR OF SCIENCE AND GRADUATE IN NURSING[1]

During the first 5 quarters in this course the student is registered in the College of Science, Literature, and the Arts. This period is followed by 10 quarters during which the student is registered in the University School of Nursing. The last 3 quarters of the fifth year are devoted to elective work in the University, in preparation either for teaching and supervision in schools of nursing[1] or for public health nursing.

The student is required to earn 135 credits and 135 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 Year

1. English A-B-C or Composition 4-5-6 or exemption from requirement
2. Botany, three quarters
3. Inorganic Chemistry 10 credits (Inorganic Chemistry 6-7 or 9-10 or 1-2-3 or 4-5 and 11)
4. Anatomy 2
5. Electives to make a total of 45

Second Year, Fall and Winter Quarters[2]

6. Zoology 1-2
7. Psychology 1-2
8. History, 10 credits
9. Composition 11-12, or 18-19
   or
   Speech 41-42

Third and Fourth Years

See bulletin of the School of Nursing.

Fifth Year

During their last three quarters students register in this college[2] and take work subject to the approval of the director of the Public Health Nursing Course and the assistant dean for the Senior College.

1. Sociology, 10 credits
2. Preventive Medicine and Public Health, 15 credits of theoretical work and 14 credits of practical work
3. Child Welfare 40 or Sociology 60
4. Electives to make a total of 135

[1] Students in Nursing Education register in the College of Education in their fifth year and receive their degree from that college. See bulletin of the College of Education.

[2] In the spring quarter students register in the School of Nursing for Physiology 4, Educational Psychology 55, Bacteriology 41, History of Nursing, Theory of Dietetics, and Lettering.

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

Anthropology	11F	Journalism	214P
Architecture	315E	Latin	118F
Astronomy	123F	Library Methods	107Lib
Bacteriology	228MH	Mathematics	119F
Botany	209Bot	Mechanical Engineering	103ME
Chemistry	127C	Military Science and Tactics	105A
Child Welfare	1CWI	Music	107Mu
Comparative Literature	111F	Orientation	17F
Comparative Philology	216F	Philosophy	323F
Drawing&DescriptiveGeometry	208E	Physical Education for Men	108A
Economics	113B	Physical Education for Women	101WGm
English	219F	Physics	148Ph
Geography	101OL	Political Science	205OL
Geology and Mineralogy	108P	Preventive Medicine and Public Health	101bMH
German	211F	Psychology	112Psy
Greek	112F	Romance Languages	200F
History	102OL	Scandinavian	122F
History & Interpretation of Art	414F	Sociology	20OPh
Home Economics	214HE	Zoology	308AB
Human Anatomy	204IA		
Human Physiology	215MH		

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.

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.

Certain courses numbered under 50 are restricted to juniors and seniors. They are not technically senior college courses and cannot be used in major or minor sequences.

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; Adm, Administration; Ad(F), Administration, University Farm; B, Business; Bot, Botany; 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; OLaw, Old Law; OL, Old Library; OPh, Old Physics; P, Pillsbury; Ph, Physics; Psy, Psychology; Pu, Publications; S, Stadium; SBH, State Board of Health; WGm, Women's Gymnasium, Z, Zoology.

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.
Cert. of apt.	Certificate of aptitude. See *Classification of Studies,* p. 7.
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.

ANTHROPOLOGY

Major Advisers

Professors Jenks and 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, 106, 108, 110, 112, 113, 114, 121, 161; History 121, 166. In addition, Psychology 114-115 is required.

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	Introd. to Anthropology ..... (5 cred.; soph. with C average, jr., sr.; prereq., 10 cred. of a science and 10 cred. of a social science)	VI	MTWThF	15F	Mr. Jenks
51w	Introd. to Anthropology ..... (See 51f)	II	MTWThF	15F	Mr. Jenks
51s	Introd. to Anthropology ..... (See 51f)	I	MTWThF	15F	Mr. Wallis
53s	Cultural Anthropology: Technology ..... (3 cred.; jr., sr.; prereq., 51)	II	TThS	15F	Mr. Wallis
54f	Cultural Anthropology: Social Organization ..... (3 cred.; jr., sr.; prereq., 51*)	II	TThS	15F	Mr. Wallis
56w	Primitive Science ..... (3 cred.; jr., sr.; prereq., 51)	I	TThS	15F	Mr. Wallis
62w	Ethnology ..... (3 cred.; jr., sr.; prereq., 51*)	IV	MWF	15F	Mr. Jenks
80w	The American Indian ..... (3 cred.; jr., sr.; prereq., 51)	III	MWF	15F	Mr. Wallis
106f	Prehistoric Man ..... (3 cred.; jr., sr.; prereq., 51)	III	MWF	12F	Mr. Jenks
108	*Philippine Peoples* ..... (3 cred.; jr., sr.; prereq., 51)	*Not offered in 1928-29*			
110f	Physical Anthropology ..... (3 cred.; jr., sr.; prereq., 51)	III	TThS	12F	Mr. Wallis
112s	The American Negro ..... (3 cred.; jr., sr.; prereq., 51)	IV	MWF	15F	Mr. Jenks
113w	Peoples of Europe ..... (3 cred.; jr., sr.; prereq., 51)	VI	MWF	15F	Mr. Jenks
114s	The American People ..... (3 cred.; jr., sr.; prereq., 51)	III	MWF	15F	Mr. Jenks
121w	Advanced Phys. Anthropology .. (3 cred.; jr., sr.; prereq., 110)	III	TThS	12F	Mr. Wallis
122f,123w,124s	Problems in Anthropology ..... (Cred. ar.; jr., sr., grad.; prereq., three courses. For honors course students, permission of instructor)	Ar	Ar	12F	Mr. Jenks, Mr. Wallis
161f	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, 61-62-63, 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.

* Open without petition to sophomores who have an average of C in the prerequisite courses and in all of their previous work.

Junior College Courses

No.	Title	Hour	Day	Bldg.	Instructor
21f-22w†-23s	Freehand Drawing ..... (6 cred.; soph., jr., sr.; prereq., soph. standing)		NOTE.—Consult the bulletin of the College of Engineering and Architecture for program of hours, days, buildings, and instructors.		
31f-32w†-33s	Elements of Architecture ..... (15 cred.; soph., jr.; prereq., soph. standing)				
31w-32s†-33su	Elements of Architecture ..... (See 31f-32w-33s)				
61f*	Projections ..... (2 cred.; soph.; prereq., Math. 3 or 5)				
62w	Shades and Shadows ..... (2 cred.; prereq. 61 or Draw. 41)				
63s	Perspective ..... (2 cred.; prereq., 61 or Draw. 41)				
81f	Stage Design ..... (2 cred.; jr., sr.; no prereq.)				
84-85-86f,w,s	Modeling ..... (6 cred.; jr., sr.; no prereq.)				

Senior College Courses

No.	Title	Hour	Day	Bldg.	Instructor
14f-15w-16s	History of Architecture ..... (6 cred.; jr., sr.; prereq., 31-32-33)		NOTE.—Consult the bulletin of the College Engineering and Architecture for program of hours, days, buildings, and instructors.		
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)				
90-91-92f,w,s	Illustration ..... (3 cred.; jr., sr.; prereq., 21-22-23 or equiv.)				
93-94-95f,w,s	Hand Print Process ..... (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-184s	Decoration and Allied Arts .... (7 cred.; sr.; prereq., 17-18-19)				

† The entire course must be completed before credit is received for any quarter.
* Drawing 41 covers the same ground as Course 61 and may be substituted for it.

ASTRONOMY

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,w,s§	Descriptive Astronomy ..... (5 cred.; 3d qtr. fr. with cert. of apt., soph., jr., sr.; no prereq.)	III	MTThFS	124F	Mr. Beal
51f	General Astronomy ..... (3 cred.; jr., sr.; prereq., 15 cred. in bot., chem., geol., zool., math., or phys.)	II	MWF	124F	
51w	General Astronomy ..... (See 51f)	IV	MWF	124F	Mr. Beal
51s	General Astronomy ..... (See 51f)	I	MWF	124F	Mr. Beal
52w	Astrophysics ..... (3 cred.; jr., sr.; prereq., 51, or 11 and prereq. for 51)	II	MWF	124F	
53s	Stellar Astronomy ..... (3 cred.; jr., sr.; prereq., 52)	II	MWF	124F	
62	*Field Astronomy* ..... (3 cred.; jr., sr.; prereq., Astron. 11 or 51, and Math. 6, 7)	*Not offered in 1928-29*			
101-102-103	*Practical Astronomy* ..... (9 or 18 cred.; jr., sr., grad.; prereq., Astron. 11 or 51, and Math. 50)	*Not offered in 1928-29*			
111f-112w-113s	Celestial Mechanics ..... (9 cred.; sr., grad.; prereq., Math. 51)	Ar	Ar	123F	Mr. Beal

BACTERIOLOGY

MEDICAL SCHOOL

Major Advisers

Professors Larson and Henrici; Associate Professor R. G. Green.

Major Sequences

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, Zoology 144-145-146 and Human Physiology 100-101 or Agricultural Biochemistry 111-112.)

Sequence B. For work in industrial bacteriology. Courses 103, 114, 118, 119-120, 121-122, 150-151. (Prerequisites: besides the necessary courses in this department, Human Physiology 100-101 or Agricultural Biochemistry 111-112.)

§ Does not satisfy the junior college requirement for science.

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
41f,w	General Bacteriology ..... (5 cred.; soph., jr., sr.; prereq., chem. 10 cred. and zool. 8 cred.)				
	Sec. 1	VI, VII, VIII	MWF	MH	Ar
	2	VI, VII, VIII, IX	TTh	MH	Ar
	3	I, II, III	MWF		
41s	General Bacteriology ..... (See 41f)	VI, VII, VIII	MWF	MH	Ar
101f	Special Bacteriology for Medical Students ..... (4 cred.; jr., sr.; prereq., 41)	I, II I, II, III	ThS T	MH	Ar
103w	Special Bacteriology for Students of Agriculture ..... (5 cred.; jr., sr.; prereq., 41)	I, II, III I, II	TS Th	MH	Ar
114s	Molds, Yeasts, and Actinomycetes (3 cred.; jr., sr.; prereq., 41)	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
118w	Morphology and Taxonomy of Bacteria ..... (3 cred.; jr., sr.; prereq., 41)	VII, VIII	TTh	MH	Ar
119w-120s	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	Industrial Bacteriology ..... (3 cred.; jr., sr., grad.; prereq., 41)	I, II	TTh	MH	Ar
122s	Industrial Bacteriology continued (3 cred.; jr., sr., grad.; prereq., 41)	I, II	TTh	MH	Ar
150f-151w or 150w-151s	Advanced Bacteriology ..... (Cred. ar.; jr., sr., grad.; prereq., see instructor)	VII, VIII	TTh	MH	Ar

BOTANY

Major Advisers

Professors Harris, Rosendahl, and Tilden; Associate Professors Butters, Cooper, and Harvey; Assistant Professors Burr, Huff.

Major Sequences

A. In Morphology. (Prerequisite: 1, 2, 5, 7, 12, 21, 22, 23.) Courses 51, 63, 118, either 149, 150, or 151, and 15 credits from Courses 108, 110, 125, 126, 127, or Plant Pathology 105-107.

B. In Taxonomy. (Prerequisite: 1, 2, 7, 12, 21, 23, and Geology 2 or 8.) Courses 101, 113, 114, 115, 127, 133, and 10 credits from 63, 108, 110, 125, 126, 149, 150, 151, or Plant Pathology 105-107.

C. In Physiology. (Prerequisite: 1, 5, 21, 22, and elementary inorganic chemistry.) Courses 140, 141, 142, 143, and 10 credits from 144 or biochemistry or organic chemistry.

D. In Ecology. (Prerequisite: 1, 2, 5, 7, 21, 22, and Geology 2 or 8.) Courses 131, 132, 133, 134, and 10 credits from 101, 113, 114, 115, 127, 149, 150, 151.

Modifications of these sequences will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

For the requirements for the teacher's certificate consult the bulletin of the College of Education.

No.	Title			Hour	Day	Bldg.	Instructor
1f*	General Botany						
	(4 cred.; all; no prereq.)						
		Lect.	Sec. 1	III	TThS	BotAud	Mr. Huff
			2	VI, VII	T		
				VI	Th		
		Quiz	Sec. 1	I	M		
			2	II	T		
			3	III	W		
			4	IV	F		
			5	VI	M		
			6	VII	Th		
			7	VIII	W		
1w,s*	General Botany						
	(See 1f)						
		Lect.		III	TThS	BotAud	Mr. Huff
		Quiz	Sec. 1	I	M		
			2	II	T		
			3	III	W		
			4	IV	F		
			5	VI	M		
			6	VII	T		
			7	VIII	W		
2w	Elem. Gen. Morph. of Plants ..			III, IV	MWF	1,4,5,8Bot	Mr. Huff
	(3 cred.; all; prereq., 1)						
5w	Elem. Plant Histology			VI, VII, VIII	TTh	1,4,5,8Bot	Mr. Butters
	(3 cred.; all; prereq., 1)						
7f,w	Taxonomy of Flowering Plants			I, II	MWF	1,4,5,8Bot	Mr. Rosendahl
	(3 cred.; all; prereq., 1)						
12f,s	Morphology of Algae			I, II	TThS	1,4,5,8Bot	Miss Tilden
	(3 cred.; all; prereq., 1)						
13	*Morphology of Fungi*.....			*Not offered in 1928-29*			
	(3 cred.; all; prereq., 1)						
21f	Elementary Ecology			III, IV	MWF	1,4,5,8Bot	Mr. Cooper
	(3 cred.; all; prereq., 1)						
21s	Elem. Ecology			VI, VII, VIII	TTh	1,4,5,8Bot	Mr. Cooper
	(See 21f)						
22f,s	Elementary Plant Physiology ...						
	(3 cred.; all; prereq., 1)						
			Lect.	III	Th	1,4,5,8Bot	Mr. Burr
			Lab.	III, IV	TS		

* To complete the science requirement a student may elect any two of Courses 2, 5, 7, 12, 13, 21, 22.

No.	Title	Hour	Day	Bldg.	Instructor
22w	Elem. Plant Physiology ..... (See 22f,s)				
	Lect.	VI	TTh	1,4,5,8Bot	Mr. Burr
	Lab.	VII, VIII	TTh		
23w	Bryophytes and Pteridophytes .. (3 cred.; all; prereq., 2 or 12)	VI, VII	MWF	1,4,5,8Bot	Mr. Huff
51f	Histological Methods ..... (5 cred.; jr., sr.; prereq., 15 cred.)	I, II	MTWThF	01Bot	Miss Wilson
63s	Gymnosperms and Angiosperms (3 cred.; jr., sr.; prereq., 15 cred. incl. 7 and 2 or 23)	III, IV	MWF	215Bot	Mr. Butters
101f,w	Elementary Biometry ..... (3 cred.; jr., sr., grad.; prereq., 18 cred., biol. sci.)	I, II	MWF	202Bot	Mr. Harris
108	*Pteridophytes* ..... (5 cred.; sr., grad.; prereq., 18 cred. incl. 7 and 23)	*Not offered in 1928-29*			
110w	Gymnosperms ..... (5 cred.; sr., grad.; prereq., 18 cred. incl. 7 and 63)	Ar	Ar		Mr. Butters
113f-114w-115s§	Adv. Taxonomy of Flowering Plants ..... (9 cred.; jr., sr., grad.; prereq., 15 cred. incl. 7)	VI, VII, VIII	TTh	215Bot	Mr. Rosendahl
118w	Cytology ..... (5 cred.; jr., sr., grad.; prereq., 18 cred.)	I, II	MTWThF	215Bot	Mr. Rosendahl
125s,126f§	Morphology and Taxonomy of Marine Algae ..... (3 to 5 cred.; jr., sr., grad.; prereq., 15 cred. incl. 12, or consent of instructor)				
	Lect.	III	Th	110Bot	Miss Tilden
	Lab.	III, IV	TS		
127s	Anatomy of Vascular Plants ... (5 cred.; jr., sr., grad.; prereq., 18 cred. incl. 5)				
	Lect.	I	MWF	215Bot	Mr. Butters
	Lab.	Ar	Ar		
131f	Field Ecology ..... (5 cred.; jr., sr., grad.; prereq., 15 cred. incl. 21)	VI, VII, VIII	MWF	214Bot	Mr. Cooper
132w	Ecological Anatomy ..... (5 cred.; jr., sr., grad.; prereq., 15 cred. incl. 21)	VI, VII, VIII	MWF	214Bot	Mr. Cooper
133s	Plant Geography of North America ..... (5 cred.; jr., sr., grad.; prereq., 15 cred. incl. 21)	VI, VII, VIII	MWF	214Bot	Mr. Cooper
134	*Research Methods in Ecology* .. (5 cred.; jr., sr., grad.; prereq., 15 cred. incl. 21)	*Not offered in 1928-29*			
140	*General Plant Physiology* ..... (5 cred.; jr., sr., grad.; prereq., 22, elem. inorg. chem.)	*Not offered in 1928-29*			

§ Any quarter may be taken separately.

No.	Title	Hour	Day	Bldg.	Instructor
141f	Physical Phases of Plant Physiology ..... (5 cred.; sr., grad.; prereq., qual., quant., org., and phys. chem.)	I, II	MTWThF	101Bot	Mr. Burr
142w	Plant Metabolism ..... (5 cred.; sr., grad.; prereq., as for 141)	I, II	MTWThF	101Bot	Mr. Burr
143s	Plant Metabolism Continued ... (5 cred.; sr., grad.; prereq., as for 141)	I, II	MTWThF	101Bot	Mr. Burr
144s	Plant Microchemistry ..... (5 cred.; sr., grad.; prereq., 22, 140, org. chem.)	Ar	Ar		Mr. Harvey
145f,146w,147s§	Advanced Biometry ..... (9 cred.; sr., grad.; prereq., 101)	III, IV	MWF	202Bot	Mr. Harris
149s,150su,151f§	Freshwater Algae ..... (3 to 10 cred. per qtr.; jr., sr., grad.; prereq., 15 cred. incl. 12, or consent of instructor)	VI, VII, VIII	TTh	110Bot	Miss Tilden

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. (Prerequisite: 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.

For the requirements for the teacher's certificate, consult the bulletin of the College of Education.

NOTE.—Analytical Chemistry 1-2, and all courses numbered above 50 count as senior college courses.

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
	Lab. Sec. 1	VI, VII	TTh	110C	Mr. Reyerson
	2	VIII, IX	TTh		and assistants

† Two quarters must be completed before credit is received for either quarter.
§ Any quarter may be taken separately.

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. Sec. 1	II	TThS	225C	Mr. Stephens
		Lab.	VI, VII or VIII, IX	TTh TTh	210C	Mr. Stephens and assistants
		Lect. Sec. 2	VI	MWF	100C	Mr. Stephens
		Lab.	VI, VII or VIII, IX	TTh TTh	210C	Mr. Stephens and assistants
6f-7w†-8s	Gen. Inorg. Chemistry ..... (15 cred.; those entering without chem., fr. with cert. of apt., soph., jr., sr.; 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.; fr. with cert. of apt., soph., jr., sr.; 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	Miss Cohen, 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. Sec. 1	II	TThS	225C	Mr. Stephens
		Lab.	VI, VII or VIII, IX	TTh TTh	210C	Mr. Stephens and assistants
		Lect. Sec. 2	VI	MWF	100C	Mr. Stephens
		Lab.	VI, VII or VIII, IX	TTh TTh	210C	Mr. Stephens and assistants
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.	VI	WF	490C	
		Lab.	VII, VIII, IX	MWF	290C	

† Two quarters must be completed before credit is received for either quarter.

No.	Title		Hour	Day	Bldg.	Instructor
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	WF	490C	Mr. Kirk
		Lab.	VII, VIII, IX	WF	290C	
			VI, VII, VIII	M		
101s	History of Chemistry ..... (2 cred.; sr., grad.; prereq., Org. Chem. 52)		Ar	Ar	Ar	Miss Cohen
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
106f-107w-108s	Chemistry of the Rare Elements (3 cred.; jr., sr., grad.; prereq., quant. anal. or permission of instructor)		Ar	Ar	Ar	Mr. Kirk

Analytical Chemistry

1w-2s*	Quant. Analysis ..... (10 cred.; soph., jr., sr ; prereq., Inorg. Chem. 12-13)					
		Lect.	VI	M	325C	Mr. Geiger
		Quiz	VI	W	410C	
		Rec.	VI	F	315C	
		Lab.	VII-IX	MWF	310C	
7f	Quantitative Analysis (pre-med.) (4 cred.; pre-med. only, prereq., Inorg., Chem. 11 or 13)					
	Lect. (Secs. 1, 2)		VI	M	325C	Mr. Geiger
	Rec. (limit 35) Sec. 1		VI	W	315C	
	Lab.		VII-IX	MW	310C	
			VI, VII	F	310C	
	Rec. (limit 35) Sec. 2		VI	F	315C	
	Lab.		VII-IX	MF	310C	
			VI, VII	W	310C	
	Lect.	Sec. 3	VII	T	315C	Mr. Sarver
	Rec.	Sec. 3	VI	Th	315C	
	Lab.		VIII-IX	T	310C	
			VII-IX	Th	310C	
			I-III or II-IV	S S	310C	
7w,s	Quantitative Analysis ..... (See 7f)		For hours, see 7f, Sec. 3			

* Course 2s may precede 1w, if desired.

† Two quarters must be completed before credit is received for either quarter.

No.	Title	Hour	Day	Bldg.	Instructor
123f-124w-125s	Advanced Analytical Chemistry (3 cred. per qtr.; prereq., 1, 2, or 7)				
	Lect.	VI	T	315C	Mr. Sarver
	Lab.	VII-IX	T	310C	
		VI-IX	Th	310C	
131f	Application of Indicators ..... (3 cred.; prereq. Anal. Chem. 1 and 2 and Phys. Chem. 101, 102, 103)				
	Lect.	II	TThS	315C	Mr. Kolthoff
	Lab.	III, IV	TThS	ArC	Mr. Kolthoff
132w,s	Electrometric Titrations ..... (3 cred.; prereq. Anal. Chem. 1 and 2 and Phys. Chem. 101, 102, 103)				
	Lect.	II	TThS	315C	Mr. Kolthoff
	Lab.	III, IV	TThS	ArC	
	ORGANIC CHEMISTRY				
1f-2w†	Elem. Organic Chemistry ..... (8 cred.; pre-dent., pre-med., prereq., Inorg. Chem. 11)				
	Lect. (all secs.)	I	MWF	100C	Mr. Lauer
	Lab. conference (all secs.)	II	Th	225C	Mr. Lauer
	Quiz (all secs.)	I	Th	Ar	Ar
	Lab. Sec. 1	I-IV	T	390C	
	2	I-IV	S	390C	
	3	VI-IX	M	390C	
	4	VI-IX	T	390C	
	5	VI-IX	W	390C	
	6	VI-IX	Th	390C	
	7	VI-IX	F	390C	
1w-2s†	Elem. Organic Chemistry ..... (See 1f-2w)				
	Lect.	IV	MWF	100C	Mr. Smith
	Lab. conference	IV	T	100C	Mr. Smith
	Quiz	V	T	Ar	
	Lab. Sec. 1	VI-IX	M	390C	
	2	VI-IX	W	390C	
	3	VI-IX	Th	390C	
	4	VI-IX	F	390C	
	5	I-IV	S	390C	
1s†	Elem. Organic Chemistry ..... (See 1f-2w)	For hours, see 1f-2w			Mr. Lauer
2f†	Elem. Organic Chemistry ..... (See 1f-2w)	For hours, see 1w-2s			Mr. Smith
51f-52w†-53s	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
101f-102w-103s	Advanced Organic Chemistry .. (3 cred. per qtr.; prereq., 53)	III	TThS	315C	Mr. Hunter

For advanced courses in Organic Chemistry, see bulletin of the School of Chemistry.

† Two quarters must be completed before credit is received for either quarter.

PHYSICAL CHEMISTRY

No.	Title	Hour	Day	Bldg.	Instructor
101f-102w-103s	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	Physical Chemistry (medic.) .. (4 cred.; pre-med. and biol. students; prereq., Org. Chem. 2)				
	Lect.	VI	TTh	225C	**Mr. Taylor**
			F	325C	
	Lab. Sec. 1	I-III	MW	15C	
	2	VII-IX	TTh	117C	
116f-117w-118s	Adv. Physical Chem. ..... (9 or 12 cred.; jr., sr., grad.; prereq., 103 and calculus)	Ar	Ar	Ar	**Mr. Taylor**
129s	Prin. of Colloidal Chemistry ... (2 cred.; sr., grad.; prereq., 102)	Ar	Ar	Ar	**Mr. Reyerson**
130	*Appl. of Colloidal Chemistry* .. (2 cred.; sr., grad.; prereq., 102)	*Not offered in 1928-29*			
131f-132w-133s	Colloid Chemistry Lab. ..... (Cred. ar.; sr., grad.; prereq., 129 or 130)	Ar	Ar	Ar	**Mr. Reyerson**
144s	Magnetochemistry ..... (3 cred.; jr., sr., grad.; prereq., 103)	Ar	Ar	Ar	**Mr. Taylor**
161f-162w-163s	Radioactivity ..... (2 cred. per qtr.; prereq., Phys. Chem. 103)	Ar	Ar	Ar	**Mr. Lind**
164f,w,s	Radioactivity Laboratory ..... (Must be preceded or accompanied by 161)	Ar	Ar	Ar	**Mr. Lind**

TECHNOLOGICAL CHEMISTRY

100f-101w-102s	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
40w*	Child Training ..... (3 cred.; jr., sr.; prereq., Psy. 1-2)	IV and one hour ar	MW	206P	**Mrs. Foster**
50w-51s†	Nursery School Methods ..... (6 cred.; jr., sr.; prereq., 60 or 40 and 6 cred. in psy. or ed.)	VI	MWF	114F	**Mrs. Foster**

* Offered fall and spring as Home Economics Education 40. Consult bulletin of the College of Agriculture, Forestry, and Home Economics.

† The entire course must be completed before credit is received for any quarter.

No.	Title	Hour	Day	Bldg.	Instructor
52f-53w-54s†	Nursery School Technique ..... (6 cred.; jr., sr.; prereq., 50-51 and permission of instructor)	Ar	Ar	105CWI	Mrs. Foster
60f	The Nursery School and Parental Education Movement ..... (2 cred.; jr., sr.; prereq., 6 cred. in psy. and 5 cred. in soc. sci.)	IV	TS	110P	Miss McGinnis
120s	Health Care of the Young Child (2 cred.; sr., grad.; prereq., 50-51 and 60 and permission of the instructor)	Ar	Ar	4CWI	Dr. Boyd
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
133f-134w-135s	Methods in Study of Development of Young Children .... (6 or 9 cred.; sr., grad.; prereq.; 10 cred. in psy. or ed. psy. incl. 4-5 or 7)	VI VI-VII	M WF	301Lib	Miss Goodenough
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.)	IV	MWF	110P	Miss McGinnis
173w-174s†	Technique and Practice of Parental Education ..... (6 cred.; sr., grad.; prereq., 170, and permission of instructor)	Ar	Ar	100CWI	Miss McGinnis
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)	III	TTh	201CWI	Miss Goodenough

COMPARATIVE LITERATURE

No.	Title	Hour	Day	Bldg.	Instructor
101f-102w-103s†	Drama ..... (9 cred.; jr., sr., grad.; prereq., jr. coll. requirement in Eng. and foreign lang.)	III	TThS	113F	Mr. Firkins
105f-106w-107s†	Criticism ..... (9 cred.; jr., sr., grad.; prereq., jr. coll. requirement in Eng. and foreign lang.)	VI	MWF	113F	Mr. Firkins
110w	Romantic Movement ..... (3 cred.; jr., sr., grad.; prereq., permission of instructor)	II	TThS	113F	Mr. Firkins

† The entire course must be completed before credit is received for any quarter.

COMPARATIVE PHILOLOGY

No.	Title	Hour	Day	Bldg.	Instructor
101-102†	*Science of Language* ..... (4 cred.; jr., sr., grad.; prereq., see note)	*Not offered in 1928-29 (except for graduates)*			
103	*Universal Language* ..... (2 cred.; jr., sr., grad.; prereq., see note)	*Not offered in 1928-29*			
105s	Life of Words ..... (2 cred.; jr., sr., grad.; prereq., see note)	VI	TTh	205F	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.)			455C	Mr. Kirchner, Mr. Doseff
	Sec. 1	I, II	MWF	(fall, winter)	
		I, II	TThS	(spring)	
	2	III, IV	MWF		
	3	VIII, IX	MWF		
44f,w,s	Lettering ..... (1 cred.; all; no prereq.)				
	Sec. 1	IV	T	36EE	Mr. Schuck,
	2	II	Th		Mr. Levens
45f,w,s	Alphabets ..... (2 cred.; soph., jr., sr.; no prereq.)	II	TTh	206E	Mr. Kirchner
87f	Introduction to the Graphic Arts (2 cred.; jr., sr.; prereq., 15 cred. of econ.)	IV	MW	Ar	Mr. Kirchner
88w	Printing Types and Lettering .. (2 cred.; jr., sr.; prereq., 87)	IV	MW	Ar	Mr. Kirchner
89s	The Picture and the Printed Word ..... (2 cred.; jr., sr.; prereq., 88)	IV	MW	238EE	Mr. Kirchner

ECONOMICS

SCHOOL OF BUSINESS ADMINISTRATION

Major Advisers

Professor Garver; Assistant Professor Myers.

† The entire course must be completed before credit is received for any quarter.

Major Sequence

Prerequisites: 3, 6-7; or 1, 3, 4; or 2, 3, 4. In addition the student is urged to earn at least 10 credits in History, Political Science, or Sociology.

The student majoring in Economics will take Courses 103-104, 141, 161; at least 12 credits from Group A (below); and additional credits elected from Groups A and B to make a total of 33 credits.

Group A: 54, 55, 149, 154, 160, 163, 172, 191-192.

Group B: 85, 105, 106, 113-114, 124, 125, 162, 164, 166, 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 may 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, Topics in Economic History; Political Science 51-52-53, Business Law; 195, Colonization; 107, Recent Social Legislation; 109, Government and Business; 111, Law of Public Utilities.

No.	Title		Hour	Day	Bldg.	Instructor
1f	Business Organization: Marketing (5 cred.; fr. only; no prereq.)				OLAud	Mr. Vaile and others
		Lect.	IV	TS		
		Sec. 1	I	MWF	109B	
		2	I	TThS	109B	
		3	I	TThS	6B	
		4	II	MWF	109B	
		5	II	TThS	109B	
		6	III	MWF	109B	
		7	III	TThS	109B	
		8	IV	MWF	109B	
		9	IV	MWF	209B	
		10	V	MWF	109B	
		11	V	MWF	6B	
		12	VI	MWF	109B	
		13	VI	MWF	6B	
		14	VII	MWF	109B	
		15	VII	MWF	6B	
		16	VIII	MWF	109B	
1w	Business Organization: Marketing (See 1f)					
		Lect.	IV	TS	202B	Mr. Vaile and others
		Sec. 1	II	TThS	6B	
		2	IV	MWF	109B	
		3	VI	MWF	109B	
1s	Business Organization: Marketing (See 1f)					
		Lect.	IV	TS	202B	Mr. Vaile and others
		Sec. 1	II	TThS	6B	
		2	IV	MWF	6B	

No.	Title	Hour	Day	Bldg.	Instructor
2f†*	Introduction to Economics ..... (2d qtr. of 1-2 as given 1927-28)				Mr. Black and others
	Lect.	III	Th	202B	
	Sec. 1	II	MWFS	6F	
	2	III	MWFS	6B	
2w	Business Organization: Production ..... (5 cred.; fr. only; no prereq.)				Mr. Black and others
	Lect.	III	T	OLAud	
	Sec. 1	I	TThFS	102F	
	2	I	TThFS	6F	
	3	I	TThFS	105F	
	4	II	MWFS	3F	
	5	II	MWFS	5F	
	6	III	MWFS	213F	
	7	III	MWFS	25F	
	8	IV	MWFS	6B	
	9	IV	MWFS	3F	
	10	V	MTWF	109B	
	11	V	MTWF	209B	
	12	VI	MWThF	209B	
	13	VI	MWThF	6B	
	14	VII	MWThF	209B	
	15	VII	MWThF	6B	
	16	VIII	MWThF	6B	
2s	Business Organization: Production ..... (See 2w)				Mr. Black and others
	Lect.	III	W	202B	
	Sec. 1	II	MWFS	6F	
	2	III	TThFS	6F	
	3	IV	MWFS	9F	
	4	VII	MWThF	303B	
3f	The Mechanism of Exchange .. (5 cred.; 3d qtr. fr., soph., jr., sr.; no prereq.)				Mr. Stehman, Mr. Bosland, and others
	Lect.	III	TTh	301F	
	Sec. 1	I	TThS	302B	
	2	II	TThS	209B	
	3	IV	MWF	104F	
	4	VI	MWF	301B	
3w	The Mechanism of Exchange ... (See 3f)				Mr. Stehman, Mr. Bosland, and others
	Lect.	III	TTh	301F	
	Sec. 1	II	MWF	109B	
	2	III	MWF	109B	
	3	IV	MWF	5F	
	4	VI	MWF	303B	

* Open to pre-business students only.

† The entire course must be completed before credit is received for any quarter.

No.	Title	Hour	Day	Bldg.	Instructor
3s	The Mechanism of Exchange . . (See 3f)				Mr. Stehman, Mr. Bosland, and others
	Lect.	III	TTh	OLAud	
	Sec. 1	I	TThS	6B	
	2	I	MWF	209B	
	3	II	MWF	101F	
	4	II	TThS	202B	
	5	III	MWF	3F	
	6	IV	MWF	5F	
	7	IV	MWF	6F	
	8	V	MWF	102B	
	9	V	MWF	202B	
	10	VI	MWF	109B	
	11	VI	MWF	204B	
	12	VII	MWF	302B	
	13	VII	MWF	3F	
	14	VIII	MWF	102B	
4f	Principles of Economics ..... (5 cred.; soph., prereq. 1 or 2 and 3)				Mr. Hansen and others
	Lect.	II	Th	OPhAud	
	Sec. 1	I	TThFS	202B	
	2	II	MWFS	204B	
	3	III	TThFS	204B	
	4	IV	MWFS	3F	
	5	V	MTWF	302B	
	6	VI	MWThF	302B	
	7	VII	MWThF	209B	
	8	VIII	MWThF	209B	
4w	Principles of Economics ..... (See 4f)				Mr. Hansen and others
	Lect.	IV	T	102B	
	Sec. 1	II	MWFS	303B	
	2	IV	MWFS	209B	
4s	Principles of Economics ..... (See 4f)				Mr. Hansen and others
	Lect.	II	Th	301F	
	Sec. 1	II	MWFS	204B	
	2	IV	MWFS	109B	
	3	V	MTWF	6B	
	4	VI	MWThF	6B	
	5	VII	MWThF	6B	
6f-7w†	Principles of Economics—General Course ..... (10 cred.; soph., jr., sr.; no prereq. Not open to students who have received credit in Econ. 4.)				Mr. Hansen and others
	Lect.	III	W	OPhAud	
	Sec. 1	I	TThFS	6F(f) 204B(w)	
	2	II	MWFS	3F(f) 204B(w)	
	3	V	MTWF	303B	
	4	VI	MWThF	204B	
	5	VII	MWThF	204B	

† The entire course must be completed before credit is received for any quarter.

No.	Title		Hour	Day	Bldg.	Instructor
6w-7s†	Principles of Economics—General Course ..... (See 6f-7w)					Mr. Hansen and others
		Lect.	II	T	OPhAud	
		Sec. 1	I	TThFS	303B(w)	102B(s)
		2	II	MWFS	209B(w)	125F(s)
		3	IV	MWFS	104F(w)	303B(s)
		4	V	MTWF	301B	
6s†	Principles of Economics—General Course ..... (First qtr. of 6-7. See 6f-7w)					Mr. Hansen and others
		Lect.	III	W	202B	
		Sec. 1	II	MWFS	114F	
		2	IV	MWFS	209B	
		3	VI	MWThF	209B	
7f†	Principles of Economics—General Course ..... (2d qtr. of 6-7. See 6f-7w)					Mr. Hansen and others
		Lect.	IV	T	202B	
		Sec. 1	II	MWFS	5F	
		2	IV	MWFS	5F	
		3	V	MTWF	209B	
14f	Elements of Statistics ..... (5 cred.; soph., jr., sr.; prereq., 4 or 6-7)					Mr. Mudgett and others
		Sec. 1	I	TWThFS	204B	
		2	II	MWThFS	302B	
		3	IV	MTWFS	302B	
14w	Elements of Statistics ..... (See 14f)					Mr. Mudgett and others
		Sec. 1	III	MTThFS	204B	
		2	IV	MTWFS	302B	
		3	VI	MTWThF	302B	
14s	Elements of Statistics ..... (See 14f)					Mr. Mudgett and others
		Sec. 1	I	TWThFS	301B	
		2	II	MWThFS	109B	
		3	III	MTThFS	6B	
		4	IV	MTWFS	302B	
		5	VI	MTWThF	302B	
		6	VII	MTWThF	301B	
20f*	Elements of Accounting ..... (3 cred.; 3d qtr. fr., soph.; no prereq.)					Mr. Heilman and others
		Sec. 1	I	MWF	303B	
		2	II	MWF	303B	
		3	II	TThS	303B	
		4	III	MWF	301B	
		5	IV	MWF	301B	
		6	VI	MWF	303B	
20w*	Elements of Accounting ..... (See 20f)					Mr. Heilman and others
		Sec. 1	III	TThS	303B	
		2	III	MWF	302B	

* Students who have had high school training or other experience in bookkeeping and who pass the placement test may be exempt from this course and admitted to Economics 25.

† The entire course must be completed before credit is received for any quarter.

No.	Title	Hour	Day	Bldg.	Instructor
20s*	Elements of Accounting ..... (See 20f)				Mr. Heilman and others
	Sec. 1	I	MWF	303B	
	2	II	MWF	303B	
	3	II	TThS	303B	
	4	VI	MWF	303B	
25f-26w†¶	Principles of Accounting ..... (6 cred.; soph., jr., sr.; prereq. 20 or placement test)				Mr. Heilman and others
	Sec. 1	I	MWF	301B	
	2	I	TThS	301B	
	3	II	MWF	301B	
25w-26s†¶	Principles of Accounting ..... (See 25f-26w)				Mr. Heilman and others
	Sec. 1	I	TThS	302B	
	2	II	MWF	303B	
	3	II	TThS	302B	
	4	III	MWF	301B	
	5	IV	MWF	301B	
	6	VI	MWF	301B	
25s†¶	Principles of Accounting ..... (First qtr. of 25-26. See 25f-26w)				Mr. Heilman and others
	Sec. 1	II	MWF	301B	
	2	II	TThS	301B	
30f-31w§	Secretarial Training: Shorthand (8 cred.; soph., jr., sr.; no prereq.)	II	MWFS	1B	Mrs. Gray and others
30w-31s§	Secretarial Training: Shorthand (See 30f-31w)	III	TThFS	1B	Mrs. Gray and others
32f-33w-34s§	Secretarial Training: Typewriting (3 cred.; soph., jr., sr.; no prereq.)	I	MTWFS	1B	Mrs. Gray and others
32w-33s§	Secretarial Training: Typewriting (First 2 qtrs. of 32-33-34. See 32f-33w-34s)	VI	MTWThF	1B	Mrs. Gray and others
40f§	Secretarial Training: Dictation I (5 cred.; soph., jr., sr.; prereq., 30-31)	III	MTThFS	1B	Mrs. Gray and others
40s§	Secretarial Training: Dictation I (See 40f)	II	MWThFS	1B	Mrs. Gray and others
41w‡	Secretarial Training: Dictation II (4 cred.; soph., jr., sr.; prereq., 40)	VII	MTWThF	1B	Mrs. Gray and others
54f‖	Accounting Survey I ..... (3 cred.; jr., sr.; prereq., 4 or 6-7)	II	MWF	104B	Mr. Heilman and others
55w‖	Accounting Survey II ..... (3 cred.; jr., sr.; prereq., 54)	II	MWF	104B	Mr. Heilman and others

* Students who have had high school training or other experience in bookkeeping and who pass the placement test may be exempt from this course and admitted to Economics 25.

† The entire course must be completed before credit is received for any quarter.

‡ Open to pre-secretarial students only. Cannot be counted for a degree in this college.

‖ Not open to School of Business Administration students.

¶ Open to pre-business students only.

§ Carries credit only for students in pre-secretarial course and pre-commercial education. Cannot be counted for a degree in this college.

No.	Title	Hour	Day	Bldg.	Instructor
85w‡	Economics of Marketing ..... (3 cred.; jr., sr.; prereq., 4 or 6-7)	II	MWF	209B	Mr. Vaile
103f-104w†	Value and Distribution ..... (6 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. including 4 or 6-7)	II	MWF	202B	Mr. Garver
105s	History of Economic Ideas (The Classical Economists) ..... (3 cred.; jr., sr., grad.; prereq., 101-102 or 103-104)	VII	MWF	102B	Mr. Garver
106	*History of Economic Ideas (The Critics of the Classical Economists)* ..... (3 cred.; jr., sr., grad.; prereq., 101-102 or 103-104)	*Not offered in 1928-29*			
108w	Marketing Organization: Agricultural Products ..... (3 cred.; jr., sr., grad.; prereq., 85. Not open to agr. bus. stud.)	VIII	MWF	102B	Mr. Price
113w-114s	Theory of Statistics ..... (6 cred.; jr., sr., grad.; prereq., 14)	I	MWF	6B	Mr. Mudgett
124f	Comparative Banking, British Systems ..... (3 cred.; jr., sr., grad.; prereq., 141)	III	MWF	104B	Mr. Myers
125w	Comparative Banking, European Systems ..... (3 cred.; jr., sr., grad.; prereq., 141)	III	MWF	104B	Mr. Myers
141f	Monetary and Banking Policy .. (3 cred.; jr., sr., grad.; prereq., 3, and 4 or 6-7)				Mr. Marget and others
	Sec. 1	I	MWF	209B	
	2	III	TThS	209B	
	3	IV	MWF	204B	
	4	VI	MWF	209B	
141w	Monetary and Banking Policy .. (See 141f)				Mr. Marget and others
	Sec. 1	I	MWF	102B	
	2	II	TThS	102B	
	3	IV	MWF	204B	
141s	Monetary and Banking Policy .. (See 141f)				Mr. Marget and others
	Sec. 1	II	MWF	209B	
	2	VII	MWF	209B	
149f	Business Cycles ..... (3 cred.; sr., grad.; prereq., 3 and 4 or 6-7)	VIII	MWF	202B	Mr. Marget
149w	Business Cycles ..... (See 149f)				Mr. Marget, Mr. Myers
	Sec. 1	III	MWF	6B	
	2	VIII	MWF	202B	
149s	Business Cycles ..... (See 149f)	III	MWF	102B	Mr. Marget

† The entire course must be completed before credit is received for any quarter.
‡ Not open to School of Business Administration students.

No.	Title	Hour	Day	Bldg.	Instructor
154w*	Public Utilities ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. Econ. 4 or 6-7)	III	TThS	202B	Mr. Garver
154s*	Public Utilities ..... (See 154w)	III	TThS	102B	Mr. Garver
160w‡	The Modern Corporation ..... (3 cred.; jr., sr., grad.; prereq., 3, and 4 or 6-7)	IV	MWF	102B	Mr. Stehman
161f	Labor Problems and Trade Unionism ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. including Econ. 4 or 6-7)	IV	MWF	202B	Mr. Hansen
161w	Labor Problems and Trade Unionism ..... (See 161f)	III	TThS	109B	Mr. Hansen
162w	Labor Movements ..... (3 cred.; jr., sr., grad.; prereq., 161)	IV	MWF	202B	Mr. Hansen
163	*Economic Aspects of Population and Immigration* ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. including Econ. 4 or 6-7)	*Not offered in 1928-29*			
164s	Labor Legislation and Social Insurance ..... (3 cred.; jr., sr., grad.; prereq., 161)	III	TThS	109B	Mr. Stead
166w	Contemporary Economic Problems (3 cred.; jr., sr., grad.; prereq., 20 credits in soc. sci. including Econ. 4 or 6-7)	VIII	MWF	204B	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., grad.; prereq., 20 cred. in soc. sci. including Econ. 4 or 6-7)	VIII	MWF	102B	Mr. Butterbaugh
176s	Commercial Policies ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. including Econ. 4 or 6-7)	I	MWF	202B	Mr. Blakey
187s	Market Prices ..... (3 cred.; grad., sr. by permission; prereq., 101-102 or 103-104)	VII	MWF	204B	Mr. Vaile
191f-192w†	Public Finance ..... (6 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. including Econ. 4 or 6-7)	III	MWF	209B	Mr. Blakey
193s	State and Local Taxation ..... (3 cred.; jr., sr., grad.; prereq., 191-192)	III	MWF	209B	Mr. Blakey

* Credit may not be received for both 154 and 172.
† The entire course must be completed before credit is received for any quarter.
‡ Not open to School of Business Administration students.

ENGLISH

Major Advisers

Professors Beach, Moore, and Ruud; Assistant Professors Carr, Dunn, and Hillhouse.

Major Sequences‡

Prerequisites: Courses 21-22 or 22-23.

Courses 55-56 and 75 and 21 additional credits, 9 of which are to be chosen from one of the groups below and 6 from each of two other groups. The Honors Course, 171-172-173, may be substituted for a part of or the whole of the above requirement of 21 credits in these groups.

Group A. Courses 61, 63, 81-82, 100, 101, 103, 141-142-143, 160.

Group B. Courses 81-82, 100, 101, 103, 133, 140, 146-147, 148-149, 152-153, 164.

Group C. Courses 51, 53, 62, 70, 77-78, 111-112, 133, 136, 152-153, 157-158.

Group D. Courses 73-74, 105-106, 107-108, 126-127, 162.

Group E. Courses 58-59, 69, 73-74, 86-87, 109-110, 123-124-125, 126-127, 129, 150, 151, 155.

Modifications of these sequences will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

For the requirements for the teacher's certificate, consult the bulletin of the College of Education.

No.	Title	Hour	Day	Bldg.	Instructor
Af-Bw-Cs	Freshman English	See Composition.			
21f-22w-23s*	Introduction to Literature .... (15 cred.; all; prereq.§)				
	Sec. 1	III	MTThFS	OPhAud(f,w) 301F (s)	Mr. Thomas
	2	VII	MTWThF	301F	Miss Jackson
31f-32w†	The English Novel ..... (6 cred.; all; prereq.§)	VI	MWF	301F	Mr. Sutcliffe
33s	The Later English Novel ..... (3 cred.; jr., sr.; prereq., 21-22 or 55-56)	VI	MWF	OPhAud	Mr. Sutcliffe
51	*Spenser* ..... (3 cred.; jr., sr.; prereq., 21-22 or 55-56)	*Not offered in 1928-29*			
53f	Seventeenth-Century Lyrists .... (4 cred.; jr., sr.; prereq., 21-22, or 55-56)	III	MTWF	205F	Mr. Moore
55f-56w†	Shakespeare ..... (6 cred.; jr., sr.; prereq.‡)				
	Sec. 1	I	TThS	204F	Mr. Bush, Miss Carr
	2	VI	MWF	205F	Mr. Dunn
	3	VI	MWF	305F	Miss Jackson, Mr. MacLean

* Students may enter any quarter. Students must take two consecutive quarters to receive credit. Two quarters are required as prerequisite for a major sequence or for a teacher's certificate. Three quarters recommended. Limited to students with an average of 2/3 honor point per credit in their previous work, and to students exempt from English A-B-C.

† The entire course must be completed before credit is received for any quarter.

‡ Students who entered the Senior College prior to September, 1927, may if they so desire, complete their major sequences according to the statement in the program for 1926-27.

§ English A-B-C, or Composition 4-5-6, or exemption from requirement.

No.	Title	Hour	Day	Bldg.	Instructor
55w-56s†	Shakespeare ..... (See 55f-56w)				
	Sec. 1	VI	MWF	303F	Mr. Hessler
	2	IV	MWF	205F	Mr. Nichols
55s†	Shakespeare ..... (First qtr. of 55-56. See 55f-56w)	III	MWF	209½F	Mr. Dunn
58f-59w†	Nineteenth-Century Prose ..... (6 cred.; jr., sr.; prereq., C or 23, or 31-32)	II	TThS	204F	Mr. Sutcliffe
61	*American Pronunciation* ..... (3 cred.; jr., sr., prereq.‡)	*Not offered in 1928-29*			
62f	Milton ..... (4 cred.; jr., sr.; prereq., 21-22 or 55-56)	VII	MTWF	204F	Mr. Dunn
62s	Milton ..... (See 62f)	VII	MTWF	205F	Mr. Hessler
63s	American Usage ..... (3 cred.; jr., sr.; prereq.‡)	I	MWF	204F	Mr. Ruud
69w	Browning and Tennyson ..... (4 cred.; jr., sr.; prereq.‡)	VI	MTWF	204F	Mr. Stoll
70f	Elizabethan Drama ..... (4 cred.; jr., sr.; prereq., 55-56)	VI	MTThF	204F	Mr. Stoll
73f-74w†	American Literature ..... (6 cred.; jr., sr.; prereq.‡)	IV	MWF	301F	Mr. Nichols, Mr. McDowell
75f	Chaucer ..... (4 cred.; jr., sr.; prereq.‡)				
	Sec. 1	II	MTWF	205F	Mr. Ruud
	2	V	MTWF	204F	Miss Carr
75s	Chaucer ..... (See 75f)				
	Sec. 1	II	MTWF	205F	Mr. Dunn
	2	V	MTWF	204F	Miss Carr
77f-78w†	Classic Myths and the Classic Tradition in English Poetry .. (6 cred.; jr., sr.; prereq.‡)	III	MWF	204F	Mr. Bush
81w-82s†	Survey of Middle English ..... (6 cred.; jr., sr.; prereq.‡)	III	MWF	205F	Mr. Ruud
86-87†	*Forms of English Verse* ..... (6 cred.; jr., sr., prereq.‡)	*Not offered in 1928-1929*			
100f	Old English ..... (4 cred.; jr., sr., grad.; prereq., 8 cred. above 50)	III	TThFS	306F	Mr. Ruud
101f	Middle English ..... (2 cred.; jr., sr., grad.; prereq., 75 and 100)	VI	TTh	217F	Mr. Klaeber
103s	Beowulf ..... (3 cred.; jr., sr., grad.; prereq., 100)	VII, VIII VII	T Th	217F	Mr. Klaeber
105-106†	*Eighteenth-Century Poetry* ..... (6 cred.; jr., sr., grad.; prereq., 8 credits above 50)	*Not offered in 1928-1929*			
107w-108s†	Eighteenth-Century Prose ..... (6 cred.; jr., sr., grad.; prereq., 8 credits above 50)	VII	MWF	204F	Mr. Moore

† The entire course must be completed before credit is received for any quarter.
‡ English A-B-C, or Composition 4-5-6 and 6 additional credits, or 10 credits in 21-22-23.

No.	Title	Hour	Day	Bldg.	Instructor
109w-110s†	Romantic Poets ..... (6 cred.; jr., sr., grad.; prereq., 8 credits above 50)	III	TThS	205F	Mr. Nichols
111-112†	*Seventeenth-Century Prose* ..... (6 cred.; jr., sr., grad.; prereq., 8 credits above 50)	*Not offered in 1928-1929*			
123-124-125†	*Technique of the Novel* ..... (9 cred.; sr., grad.; prereq., 8 credits above 50 and permission of instructor)	*Not offered in 1928-1929*			
126-127†	*Drama, 1660-1880* ..... (6 cred.; jr., sr., grad.; prereq., 8 credits above 50)	*Not offered in 1928-1929*			
129s	Modern Drama ..... (4 cred.; jr., sr., grad.; prereq., 55-56)	II	MTWF	204F	Mr. Stoll
133w	Ballads ..... (3 cred.; jr., sr., grad.; prereq., 8 credits above 50)	I	MWF	204F	Mr. Ruud
136s	Advanced Shakespeare ..... (4 cred.; jr., sr., grad.; prereq., 55-56)	I	MTWF	205F	Mr. Stoll
140s	Advanced Chaucer ..... (4 cred.; jr., sr., grad.; prereq., 8 credits above 50, including 75)	II	MTWF	217F	Miss Carr
141f-142w-143s†	Historical Grammar ..... (6 cred.; jr., sr., grad.; prereq., 8 cred. above 50, including 75 or 81-82)	Ar	Ar	Ar	Mr. Klaeber
146f-147w†	Metrical Romances ..... (6 cred.; jr., sr., grad.; prereq., 8 credits above 50, including 75 or 81-82)	II	MWF	204F	Miss Carr
148-149†	*Arthurian Romances* ..... (6 cred.; jr., sr., grad.; prereq.. 8 credits above 50, including 75 or 81-82)	*Not offered in 1928-29*			
150f	Victorian Poetry ..... (4 cred.; jr., sr., grad.; prereq., 8 credits above 50)	VII	MTThF	205F	Mr. Stoll
151s	Recent Poetry ..... (4 cred.; jr., sr., grad.; prereq., 8 credits above 50)	III	TWThF	204F	Miss Jackson
152-153†	*Pre-Elizabethan Drama* ..... (6 cred.; jr., sr., grad.; prereq., 55-56)	*Not offered in 1928-29*			
155s	American Novel ..... (4 cred.; jr., sr., grad.; prereq., 73-74)	VI	MTThF	204F	Mr. McDowell
157w-158s†	Elizabethan Non-Dramatic Literature ..... (6 cred.; jr., sr., grad.; prereq., 8 cred. above 50, incl. 51 or 70 or 55-56)	IV	MWF	204F	Mr. Bush

† The entire course must be completed before credit is received for any quarter.

No.	Title	Hour	Day	Bldg.	Instructor
160w	History of English Language .. (2 cred.; jr., sr., grad.; prereq., 100)	VI	TTh	205F	Mr. Klaeber
162	*Restoration Literature* ..... (4 cred.; jr., sr., grad.; prereq., 8 credits above 50)	*Not offered in 1928-29*			
164s	Dante in English ..... (See Italian 164s)				
171f-172w-173s	Honors Course ..... (Credits arranged; 9 to 27 cred.; prereq., permission of the department)	Ar	Ar	Ar	Mr. Dunn, Miss Carr, and others

COMPOSITION

Major Advisers

Professor Thomas; Assistant Professors Nichols, Phelan, and Sutcliffe.

Major Sequence

Prerequisites: Courses 11-12 or 18-19 and either 10 or 20; English 21-22 or 22-23.

Courses 67-68 and 69-70-71, or 111-112-113, and 119-120-121, and 15 credits in English, 9 of which are to be chosen from Group E (p. 43) and 6 from some other group.

Modifications of this sequence 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 and 6 credits of composition. Composition 4-5-6 is a 9-credit course in composition. Either course satisfies the requirement in English for graduation or for admission to the Senior College. Students may be required to register for Composition 4-5-6 if their standing in the placement tests of Freshman Week shows that they need the additional training in composition. Students who have already completed one or more quarters of Freshman English should consult the director of the course before registering.

No.	Title	Hour	Day	Bldg.	Instructor
Af-Bw-Cs	Freshman English ..... (15 cred.; all; prereq., placement test)	I	TWThFS	Ar	Ar
		II	MWThFS		
		III	MTThFS		
		IV	MTWFS		
		V	MTWF		
		III	W		
		VI	MTWThF		
		VII	MTWThF	(fall, winter)	
		VII	MWThF		
		V	T	(spring)	
Aw-Bs	Freshman English ..... (2 qtrs. of A-B-C. See Af-Bw-Cs)	II	MWThFS	Ar	Ar
		IV	MTWFS		
		VI	MTWThF		
Cf	Freshman English ..... (3rd qtr. of A-B-C. See Af-Bw-Cs)	II	MWThFS	Ar	Ar
		IV	MTWFS		
		VI	MTWThF		

No.	Title	Hour	Day	Bldg.	Instructor
4f-5w-6s	Freshman Composition ..... (9 cred.; all; prereq., placement test)				
	Sec. 1 (Pre-med. only)	I	MWF		
	2 (Pre-med. only)	I	TThS		
	3	I	TThS		
	4 (Pre-med. only)	II	MWF		
	5	II	TThS		
	6	III	TThS		
	7	IV	MWF		
	8	V	MWF		
	9	VI	MWF		
	10	VII	MWF		
4w-5s	Freshman Composition ..... (2 qtrs. of 4-5-6, See 4f-5w-6s)				
	Sec. 1	II	TThS		
	2	V	MWF		
	3	V	MWF		
4s	Freshman Composition ..... (First qtr. of 4-5-6. See 4f-5w-6s. For those only who have passed subfresh.)	Ar	Ar	Ar	
6f	Freshman Composition ..... (3rd qtr. of 4-5-6. See 4f-5w-6s)	II	MWF	311F	Ar
10	*Organization of Source Material* (3 cred.; soph., jr., sr.; prereq., A-B-C or 4-5-6 or exemption from requirement)	*Not offered in 1928-29*			
11f-12w†‡	Description; Narration ..... (6 cred.; soph., jr., sr.; prereq., A-B-C, or 4-5-6 or exemption from requirement)				
	Sec. 1	II	MWF	304F	Mrs. del Plaine
	2	III	MWF	302F	Mr. Nichols
	3	IV	MWF	305F	Mr. MacLean
	4	V	MWF	304F	Miss Armstrong
	5	II	TThS	304F	Miss Gable
	6	III	TThS	304F	Mr. Hessler
11w-12s†‡	Description; Narration ..... (See 11f-12w)				
	Sec. 1	II	MWF	306F	Mr. Sutcliffe
	2	VI	MWF	306F	Miss Gable
11s	Description; Narration ..... (First qtr. of 11-12. See 11f-12w)	III	MWF	306F	Mrs. del Plaine
18f-19w†‡	Types of Writing ..... (6 cred.; soph., jr., sr.; prereq., A-B-C or 4-5-6 or exemption from requirement)				
	Sec. 1	III	MWF	305F	Mrs. del Plaine
	2	V	MWF	303F	Miss Gable
	3	VII	MWF	306F	Miss Armstrong

† 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
18w-19s†‡	Types of Writing ..... (See 18f-19w)				
	Sec. 1	II	MWF	305F	Miss Armstrong
	2	VII	MWF	304F	Ar
20f	Informal Exposition ..... (3 cred.; soph., jr., sr.; prereq., 11-12 or 18-19)				
	Sec. 1	II	MWF	305F	Miss Gable
	2	V	MWF	306F	Mr. Hessler
20s	Informal Exposition ..... (See 20f)				
	Sec. 1	II	MWF	304F	Mrs. del Plaine
	2	III	MWF	302F	Mr. Nichols
	3	IV	MWF	305F	Mr. Sutcliffe
	4	V	MWF	304F	Ar
	5	VI	MWF	217F	Mr. Hessler
	6	III	TThS	306F	Miss Gable
31w	Technical Writing	Consult College of Engineering bulletin			
67f-68w†¶	Imitative Writing ..... (6 cred.; jr., sr., not open to sophomores; prereq., average of B in two quarters of either 11-12, 10 or 20, or 18-19, 10 or 20)	IV	MWF	304F	Mrs. Phelan
69f-70w-71s†¶	Short-Story Writing ..... (6 cred.; jr., sr., not open to sophomores; prereq., average of B in two quarters of either 11-12, 10 or 20, or 18-19, 10 or 20)	VIII, IX	W	304F	Mrs. Phelan
111f-112w-113s¶	Essay Writing ..... (9 cred.; jr., sr., grad.; prereq., 11-12, or 18-19, and 10 or 20)	III	MWF	304F	Mr. Sutcliffe
119f-120w-121s¶	Seminary in Writing ..... (9 cred.; sr., grad.; prereq., 9 cred., sr. coll. courses, and permission of instructor)	VI, VII	Th	304F	Mrs. Phelan

GEOGRAPHY

Major Adviser

Professor Davis.

Major Sequence

Prerequisites: Course 1 or 33 or 51, Geology 1-2 or 1-3 or 29, and Economics 6-7.

Twenty-nine credits from Geography 52, 61, 71, 91, 101, 102, 110, 120, 135, 141, 151-152-153; Economics 85, 108, 172; Geology 73; History 82, 83, 84; Botany 131. At least 20 credits must be in Geography.

Modifications of this sequence will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

For the requirements for the teacher's certificate, consult the bulletin of the College of Education.

† 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.

¶ Students may not elect for credit two senior college courses to be taken simultaneously.

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	MWThFS	103OL	**Mr. Davis**
1s	Introd. to Human Geography .. (See 1f)	II	MWThFS	103OL	**Mr. Davis**
2	*Introd. to Regional Geography* .. (5 cred.; 3rd qtr. fr., soph.; not open to jr., sr.; prereq., 1 or 33)	*Not offered in 1928-29*			
*33**	*Climatology* ..... (3 cred.; soph., jr., sr.; no prereq.)	*Not offered in 1928-29*			
51f‡	Human Geography ..... (5 cred.; jr., sr.; prereq., 10 cred. in econ. or soc., or 15 cred. in hist.)	I	MWThFS	103OL	**Mr. Davis**
52§	*Regional Geography of the World* (5 cred.; jr., sr.; prereq., 51, or 33, or 1 and 10 cred. in econ. or soc.)	*Not offered in 1928-29*			
61f	Geography of Commercial Production ..... (5 cred.; 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**
71w	Geography of North America .. (3 cred.; jr., sr.; prereq., 1 or 51, or 61, or 20 cred. in soc. sci. incl. at least one course in geog.)	I	MWF	103OL	**Mr. Davis**
91	*Cartography* ..... (3 cred.; jr., sr.; prereq., 10 cred. in sem. coll. work in geog., geol., hist., or other subject in which the use of maps is necessary.)	*Not offered in 1928-29*			
101	*Geography of Europe* ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. 10 cred. in geog.)	*Not offered in 1928-29*			
102s	Trade Routes and Trade Centers (3 cred.; jr., sr., grad.; prereq., 61)	III	MWF	103OL	**Mr. Hartshorne**
110	*Geography of South America* .. (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. to incl. 1, 51 or 61)	*Not offered in 1928-29*			

* Not open to those who have had Course 1 or 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
120s	Geography of Asia ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. to incl. 1, 51 or 61)	I	MWF	103OL	Mr. Davis
135	*Geography of Minnesota* ..... (3 cred.; jr., sr., grad.; prereq., 12 cred., or 20 cred. in soc. sci. incl. at least 8 cred. in geog. Limited to 15. Permission of instructor necessary)	*Not offered in 1928-29*			
141	*Field Course in Geography* ..... (3 cred.; sr., grad.; prereq., 18 cred.; permission of instructor necessary)	*Not offered in 1928-29*			
151f-152w-153s	Seminar in Geography ..... (3 cred.; sr., grad.; prereq., 20 cred. or permission)	VII	Th	103OL	Mr. Davis, Mr. Hartshorne
201f,w,s	Research Problems in Geography	Ar	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.

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w*†	General Geology (Dynamic and Historical) ..... (10 cred.; fr. with cert. of apt., soph., jr., sr.; no prereq.)				
	Lect. Sec. 1	I	TThFS	210P	Mr. Thiel
	Lab.	I, II	MW	212P	
		or			
		VI, VII	MW		
	Lect. Sec. 2	VII	MTWTh	110P	Mr. Allison
	Lab.	VIII, IX	TTh	212P	
1f-3w*†	General Geology (Dynamic and Economic) ..... (10 cred.; fr. with cert. of apt., soph., jr., sr.; no prereq.)				
	Lect.	III	TThFS	110P	Mr. Emmons
	Lab.	III-IV	MW	212P(fall),	100P(winter)
		or			
		VI-VII	TTh		
1w-2s*†	General Geology (Dynamic and Historical) ..... (See 1f-2w)				
	Lect.	IV	MTWF	110P	Mr. Allison
	Lab.	VI-VII	TTh	212P	
1w-3s*†	General Geology (Dynamic and Economic) ..... (See 1f-3w)				
	Lect.	II	MWFS	208P (w),	110P (s) Mr. Emmons, Mr. Allison
	Lab.	I, II	TTh	212P	
1s*†	General Geology (Dynamic and Historical or Economic) ..... (First qtr. of 1-2 or 1-3. See 1f-2w)				
	Lect.	III	MWThF	110P	Mr. Emmons
	Lab.	III, IV	TS	212P	
2f*†	General Geology (Dynamic and Historical) ..... (2nd qtr. of 1-2. See 1f-2w)				
	Lect.	III	MWThF	206P	Mr. Allison
	Lab.	III, IV	TS	212P	
4s	Geology of Minnesota ..... (5 cred.; all; prereq., 2 or 3)	IV	MTWFS	210P	Mr. Thiel
8f‡§	Introductory Geology..... (5 cred.; all; no prereq.)	II	MWThFS	210P	Mr. Thiel
8w‡§	Introductory Geology ..... (See 8f)	IV	MTWFS	210P	Mr. Thiel
8s§‡	Introductory Geology ..... (See 8f)	II	MWThFS	210P	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.

‡ Does not satisfy the junior college requirement for science. May be followed by Course 2 or 4 with instructor's permission.

§ Not open to students who have had 1 or 29.

15s¶	Minerals and Rocks ..... (1 cred.; jr., sr.; prereq., 1 or 29)		Ar	Ar	100P	Mr. Gruner
23w-24s†	Elements of Mineralogy ..... (First qtrs. of 23-24-25. 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	206P	Mr. Gruner
		Rec.	IX	T		
		Lab. Sec. 1	VII, VIII	M	100P	
			VI, VII	T		
		2	III, IV	M		
			VII, VIII	F		
25f†	Elements of Mineralogy ..... (3rd qtr. of 23-24-25. See 23w-24s)					
		Lect.	I	MWF	208P	Mr. Gruner
		Rec.	VIII	F		
		Lab. Sec. 1	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	208P	Ar
49s	Physiography of the United States ..... (5 cred.; jr., sr.; prereq., 2 or 3)					
		Lect.	II	TThS	206P	Mr. Allison
		Lab.	Ar	Ar	Ar	
61f	Blowpipe Analysis ..... (3 cred.; jr., sr.; prereq., 25)		Consult Mines program			Mr. Gruner
67f	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., 24)		Ar	Ar	Ar	Mr. Allison

† The entire course must be completed before credit is received for any quarter.

‡ Not open to students who have had Geol. 1 or 8; may be followed by Course 2, 4, or 11.

¶ Does not count for a senior college course. Not open to sophomores. See Course Numbering, page 21.

§ Does not satisfy the junior college requirement for science.

No.	Title	Hour	Day	Bldg.	Instructor
102w-103s	Micropaleontology ..... (6 cred.; jr., sr., grad.; prereq., 11 or 91)	II, III	TThS	103P	Mr. Stauffer
105f	Rock Study ..... (3 cred.; jr., sr., grad.; prereq., 24)				
	Lect.	VI	TTh	110P	Mr. Grout
	Lab. Sec. 1	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	Ar	Mr. Emmons
121f	Crystallography ..... (3 cred.; jr., sr.; prereq., Math. 7 and Inorg. Chem. 6-7-8 or 9-10)	Ar	Ar	100P	Mr. Gruner
124w-125s	Struct. and Metamorphic Geol. .. (6 cred.; jr., sr., grad.; prereq., 2, 3, or 11, and 105)	VI (II spring, to May 1)	MWF MTWThFS,	110P 208P	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	Ar	Mr. Allison
149s	Methods of Field Geology ..... (No cred.; jr., sr., grad.; to be taken with 150; prereq., 2, 23-24-25, 106, 124-125)	Ar	Ar	Ar	Mr. Schwartz

No.	Title	Hour	Day	Bldg.	Instructor
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	210P	Mr. Stauffer
161w	Crystal Structure ..... (3 cred.; jr., sr., grad.; prereq., 121, elem. phys., and anal. geom.)	Ar	Ar		Mr. Gruner
166w-167s	Mineralography ..... (6 cred.; sr., grad.; prereq., 111, 131)	Ar	Ar	207P	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.

For the requirements for the teacher's certificate, consult the bulletin of the College of Education.

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.; fr. with cert. of apt., soph., jr., sr.; no prereq.)				
	Sec. 1	I	TWThFS	207F	Ar
	2	I	TWThFS	209F	Ar
	3	I	TWThFS	209½F	Ar
	4	II	MWThFS	125F	Ar
	5	III	MTThFS	212F	Ar
	6	IV	MTWFS	207F	Ar
	7	VI	MTWThF	207F	Ar

* Credit is usually not given for more than one beginning language. See paragraph 2, page 7.

No.	Title	Hour	Day	Bldg.	Instructor
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	213F	Ar
	2	VI	MTWThF	209½F	Ar
2f*	Beginning B				
	(5 cred.; fr. with cert. of apt., soph., jr., sr.; prereq., 1 or one yr. prep. German)				
	Sec. 1	II	MWThFS	207F	Ar
	2	VII	MTWThF	209½F	Ar
2w*	Beginning B				
	(See 2f)				
	Sec. 1	I	TWThFS	207F	Ar
	2	I	TWThFS	209F	Ar
	3	I	TWThFS	209½F	Ar
	4	II	MWThFS	125F	Ar
	5	III	MTThFS	212F	Ar
	6	IV	MTWFS	207F	Ar
	7	VI	MTWThF	207F	Ar
2s*	Beginning B				
	(See 2f)				
	Sec. 1	II	MWThFS	209F	Ar
	2	VII V	MTThF W	207F	Ar
3f	Beginning C				
	(5 cred.; fr. with cert. of apt., soph., jr., sr.; 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	II	MWThFS	212F	Ar
	5	III	MTThFS	212F	Ar
	6	IV	MTWFS	207F	Ar
	7	VI	MTWThF	207F	Ar
4f	Intermediate German				
	(5 cred.; fr. with cert. of apt., soph., jr., sr.; prereq., 3)				
	Sec. 1	II	MWThFS	209F	Ar
	2	II	MWThFS	212F	Ar
	3	III	MTThFS	213F	Ar
	4	IV	MTWFS	212F	Ar
	5	VII	MTWThF	207F	Ar
4w	Intermediate German				
	(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 7.

No.	Title	Hour	Day	Bldg.	Instructor
4s	Intermediate German ..... (See 4f)				
	Sec. 1	II	MWThFS	207F	Ar
	2	VII V	MTThF W	209½F	Ar
7f	Prose and Poetry ..... (5 cred.; fr. with cert. of apt., soph., jr., sr.; prereq., 2 yrs. prep. German)	III	MTThFS	207F	Ar
8w	Adv. Prose and Poetry ..... (5 cred.; fr. with cert. of apt., soph., jr., sr.; 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.)				
	Sec. 1	IV	MTWF	209½F	Ar
	2	IV	MTWF	209F	Ar
27f	Narr. Prose for Chemists ..... (3 cred.; chemists, miners; prereq., 26 or 2 yrs. prep. German)				
	Sec. 1	I	MWF	108F	Ar
	2	I	MWF	217F	Ar
28w-29s†	Chemical German ..... (6 cred.; chemists, miners; prereq., 27 or 4)				
	Sec. 1	II	MWF	209½F	Ar
	2	II	MWF	113F	
31f-32w†	Medical German ..... (6 cred.; pre-med.; prereq., 4 or 15)	I	MWF	205F	Ar
31w-32s†	Medical German ..... (See 31f-32w)				
	Sec. 1	I	MWF	212F	Ar
	2	I	MWF	101F	Ar
	3	I	TThS	101F	Ar
	4	I	TThS	212F	Ar
32f†	Medical German ..... (2nd qtr. of 31-32. See 31w-32s)	I	TThS	108F	Ar
31s†	Medical German ..... (1st qtr. of 31-32. See 31w-32s)	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)	I	TThS	205F	Mr. Kroesch
62w¶	Nineteenth-Century Prose ..... (5 cred.; jr., sr.; prereq., 4 or 8, or 4 yrs. prep. German)	II	MWThFS	212F	Mr. Kroesch
62s¶	Nineteenth-Century Prose ..... (See 62w)	III	MTThFS	209F	Mr. Lussky
63f¶	Modern Drama ..... (3 cred.; jr., sr.; prereq., 4 or 8)	IV	MWF	217F	Mr. Lussky

† The entire course must be completed before credit is received for any quarter.
¶ Students may not receive credit for both 62 and 63.

No.	Title	Hour	Day	Bldg.	Instructor
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
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	217F	Mr. Schlenker
85w-86s	German-French Literary Relations (6 cred.; jr., sr.; prereq., reading knowledge of French and German)	VI	TTh	212F	Mr. Dehorn
100-101-102†	*Middle High German* ..... (9 cred.; sr., grad.; prereq., 65 and 11 cred. above 60)	*Not offered in 1928-29*			
108s	Phonetics ..... (3 cred.; sr., grad.; prereq., 9 senior college cred. in mod. lang.)	I	TThS	108F	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)	VIII, IX, X	W	301Lib	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 1928-29*			
143-144-145†	*Der Roman (Novel)* ..... (9 cred.; sr., grad.; prereq., 67 and 11 cred. above 60)	*Not offered in 1928-29*			
150f-151w-152s†	Novelle ..... (9 cred.; sr., grad.; prereq., 67 and 11 cred. above 60)	VIII, IX, X	T	301Lib	Mr. Burkhard
153-154-155†	*Studies in German Literature of the Nineteenth Century—Die Dorfgeschichte* ..... (9 cred.; sr., grad.; prereq., 67 and 11 cred. above 60)	*Not offered in 1928-29*			
160f-161w-162s	Lyric Poetry ..... (9 cred.; sr., grad.; prereq., 66 or 67 and 11 cred. above 60)	VIII, IX, X	M	301Lib	Mr. Davies
163-164-165†	*German and English Literary Relations, 16th, 17th, 18th centuries* ..... (9 cred.; sr., grad.; prereq., 65 or 67 and 11 cred. above 60)	*Not offered in 1928-29*			
225f-226w-227s†	Lit. Problems ..... (9 cred.; grad., sr. with completed major sequence)	VIII, IX, X	Th	301Lib	Mr. Schlenker

† The entire course must be completed before credit is received for any quarter.

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.

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.; fr. with cert. of apt., soph., jr., sr.; 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
61f-62w†-63s	Advanced Greek Composition .. (3 cred.; jr., sr.; prereq., 2 years of Greek)	Ar	Ar	Ar	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 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.

Courses for Which No Knowledge of Greek Is Required

No.	Title	Hour	Day	Bldg.	Instructor
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

HISTORY

Major Advisers

Professors Buck, Heaton, Krey, Shippee, and White; Assistant Professor Steefel.

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 4-5, also History 7-8 and Political Science 1, with an average grade of C.

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 and senior years, students majoring in history will take at least one senior college course in each of three of the following fields: ancient, medieval, modern European, English, American, economic.

In addition, 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.

For the requirements for the teacher's certificate, consult the bulletin of the College of Education.

NOTE.—The following courses in Political Science carry credit also in this department: 153-154, Far Eastern Government and Politics; 191-192, Far Eastern Diplomacy.

‡ Students may not get credit for both Courses 43 and 44 except by special permission.

¶ Does not count in a major or minor sequence. Not open to sophomores, see Course Numbering, page 21.

No.	Title		Hour	Day	Bldg.	Instructor
1f-2w†	Modern World ..... (10 cred.; all; no prereq.)					
		Lect.	II	TThS	OLAud	Mr. Ford,
		Sec. 1	I	MTh	2F	Mr. Harvey
		2	I	TF	2F	
		3	I	WS	2F	
		4	I	MW	112OL	
		5	II	MW	2F	
		6	II	MW	209OL (fall) 211OL (winter)	
		7	III	MTh	2F	
		8	III	TF	2F	
		9	III	WS	2F	
		10	IV	MW	2F	
		11	IV	TF	2F	
		12	IV	TS	209OL	
		13	V	MW	2F	
		14	V	TF	2F	
		15	VI	MW	2F	
		16	VI	TTh	2F	
		17	VII	MW	2F	
		18	VII	TTh	2F	
		19	VIII	MW	2F	
		20	VIII	TTh	2F	
1w-2s†	Modern World ..... (See 1f-2w)					Mr. Harvey
		Lect.	II	MWF	206OLaw	
		Sec. 1	I	TTh	10OPh	
		2	III	MW	10OPh	
		3	III	TTh	10OPh	
		4	VII	MW	10OPh	
4f-5w†	England to 1815 ..... (10 cred.; fr. with cert. of apt., soph., jr., sr.; no prereq.)					
		Lect.	VII	MW	OLAud	Mr. White
		Sec. 1	I	TThS	112OL	
		2	II	TThS	209CL(fall)	9F(winter)
		3	II	TThS	2F	
		4	III	TThS	209OL	
		5	VI	TThF	112OL	
		6	VII	TThF	6F	
		7	VII	TThF	113F	
		8	VII	TThF	15F	
4s†	England to 1815 ..... (First qtr. of 4-5. See 4f-5w)		III	MTThFS	209OL	Mr. White
6s	England since 1815 ..... (5 cred.; all; prereq., 10 cred.) (Limit 50 students)		II	MWThFS	221OL	Miss Thompson
7f-8w†	American History ..... (10 cred.; soph., jr., sr.; no prereq.)					
		Sec. 1	I	TWThFS	211OL	Mr. Osgood,
		2	I	TWThFS	201OLaw	Mr. Stephen-
		3	VII	MTWThF	221OL	son, Mrs. Tyler

† The entire course must be completed before credit is received for any quarter.

No.	Title	Hour	Day	Bldg.	Instructor
9s	Recent American History ..... (5 cred.; soph., jr., sr.; prereq., 10 cred. in hist. or pol. sci.)				
	Sec. 1	I	TWThFS	211OL	Mr. Osgood,
	2	I	TWThFS	201CLaw	Mr. Stephen-
	3	VII	MTWThF	221OL	son, Mrs. Tyler
11f-12w-13s†‡	Medieval History ..... (10 cred.; mu. and int. dec. only, no prereq.)				
	Lect.	IV	MW	221OL	Miss Thompson
		IV (fall, winter)	F	221OL	
		IV (spring)	F and ar	221OL	
14f-15w-16s†‡	Foundations of Modern Europe to 1648 ..... (9 cred.; soph., jr., sr.; prereq., 10 cred. in hist.)	IV	MWF	10OPh	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., pol. sci., or sociol.)	*Not offered in 1928-29*			
81	*Introduction to Economic History* (3 cred.; jr., sr.; prereq., 15 cred. in hist. or 10 cred. in econ., pol. sci., or sociol.)	*Not offered in 1928-29*			
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.)	II	TThS	109F	Mr. Heaton
83w	Economic History of the United States: Early National Period (See 82f)	II	TThS	109F	Mr. Heaton
84s	Economic History of the United States since 1860 ..... (See 82f)	II	TThS	109F	Mr. Heaton
101f-102w†	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.)	I	TThS	111OL	Mr. Tucker
103f	Pol. Hist.: Greece ..... (5 cred.; jr., sr., grad.; prereq., 20 cred. or major in Greek or Latin)	IV	MTWFS	112OL	Miss Kendall
104f	Near East: Modern ..... (3 cred.; jr., sr., grad.; prereq., Hist. 1-2 and 10 cred. in soc. sci.)	II	MWF	211OL	Mr. Steefel
105w	History of Rome ..... (5 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist.)	IV	MTWFS	112OL	Miss Kendall

† The entire course must be completed before credit is received for any quarter.

‡ No student may receive credit for more than one of the following courses: 11-12-13, 14-15-16, 16 of previous years.

No.	Title	Hour	Day	Bldg.	Instructor
106f-107w-108s§	Europe, 1815-1914 ..... (9 cred.; jr., sr., grad.; prereq., 15 cred. in hist. or 20 cred. in soc. sci.)	VII	MWF	111OL	Mr. Steefel
111w	European Background of American Immigration ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist.)	VI	MWF	101F	Mr. Stephenson
112s	American Immigration ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist.)	VI	MWF	211OL	Mr. Stephenson
113f-114w-115s	Econ. Hist. of Europe since 1750 (9 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci.)	III	TThS	221OL	Mr. Heaton
116-117-118	*Econ. Hist. of Europe, 1300-1750* (9 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci.)	*Not offered in 1928-29*			
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
121	*English Backgrounds and American Colonization* ..... (5 cred.; jr., sr., grad.; prereq., 20 cred. in hist. or pol. sci.)	*Not offered in 1928-29*			
122w	American Colonies in the 17th Century ..... (5 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist.)	II	MWThFS	209OL	Mr. White
123f	European Expansion to 1815 ... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist.)	IV	MWF	111OL	Mr. Willson
124w	European Expansion since 1815 (3 cred.; jr., sr., grad.; prereq., Hist. 123)	IV	MWF	111OL	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.)	II	MTThFS	111OL	Mr. Krey
128	*Rise of Nationalism in Europe* (5 cred.; jr., sr., grad.; prereq., 15 cred.)	*Not offered in 1928-1929*			
130s	Introduction to the History of Russia ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. Hist. 1-2 or 14-15-16)	II	MWF	211OL	Mr. Steefel

§ With the permission of the instructor, a student may enter the second or third quarter.
† The entire course must be completed before credit is received for any quarter.

No.	Title	Hour	Day	Bldg.	Instructor
131-132†	*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.)	*Not offered in 1928-29*			
133f	Near East: Old Orient ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist.)	VI	MTW	111OL	Miss Kendall
134w	Ancient Civilization: Greek and Roman I ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. 103 or 105 or equiv., or major in Greek or Latin and consent of instr.)	VI	MTW	111OL	Miss Kendall
135s	Ancient Civilization: Greek and Roman II ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. 103 or 105 or equiv., or major in 105 or equiv., or major in Greek or Latin and consent of instr.)	VI	MTW	111OL	Miss Kendall
136f-137w†	Far Eastern Government and Politics	See Political Science 153-154			
138-139†	*Far Eastern Diplomacy* ..... (See Political Science 191-192)	*Not offered in 1928-1929*			
141	*West in Amer. Hist. to 1815* .. (3 cred.; jr., sr., grad.; prereq., History 7-8* and 10 cred. in soc. sci. or 5 cred. in hist.)	*Not offered in 1928-1929*			
142	*West in Amer. Hist. 1815-1865* (3 cred.; jr., sr., grad.; prereq., see 141)	*Not offered in 1928-1929*			
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†	*American Constitutional Development* ..... (See Political Science 105-106)	*Not offered in 1928-29*			
149s	American Colonies in the 18th Century ..... (5 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci., or 15 cred. in hist.)	II	MWThFS	102F	Mr. Osgood
152	*Select Topics, West to 1815* .. (5 cred.; sr., grad.; prereq., 20 cred. incl. 7-8 or equiv.)	*Not offered in 1928-1929*			
153	*Topics, West since 1865* ..... (5 cred.; sr., grad.; prereq., 20 cred. incl. 7-8)	*Not offered in 1928-1929*			

* May be taken at the same time.

† The entire course must be completed before credit is received for any quarter.

No.	Title	Hour	Day	Bldg.	Instructor
154	*Topics, Minnesota* ..... (5 cred.; sr., grad.; prereq., 20 cred. incl. 7-8)	*Not offered in 1928-1929*			
155	*United States, 1850-1865* ..... (5 cred.; sr., grad.; prereq., 20 cred. incl. 7-8)	*Not offered in 1928-1929*			
156f	U. S. Reconstruction ..... (5 cred.; sr., grad.; prereq., 20 cred. incl. 7-8)	VIII, IX	WF	111OL	Mr. Shippee
*157-158-159**	*Topics in Modern European History* ..... (15 cred.; sr., grad.; prereq., 20 cred., French or German and consent of instr.)	*Not offered in 1928-1929*			
162f	Beginnings of Parliament ..... (Maximum of 5 cred.; sr., grad.; prereq., 20 cred., knowledge high school Latin)	VIII, IX	TTh	112OL	Mr. White
164w	Studies in Crusades ..... (Maximum of 5 cred.; sr., grad.; prereq., 20 cred., knowledge high school Latin, consent of instr.)	Ar	Ar	Ar	Mr. Krey
166f	Topics, Hist. of Immigration ... (5 cred.; sr., grad.; prereq., 20 cred., consent of instr.)	VIII, IX	MW	315Lib	Mr. Stephenson
168s	Topics, American Foreign Relations ..... (5 cred.; sr., grad.; prereq., 20 cred. in hist. incl. 9, or 20 cred. in pol. sci., French or German, consent of instr.)	VIII, IX	TTh	339Lib	Mr. Shippee
169	*Topics in Economic History* ... (3 cred.; sr., grad.; prereq., 20 cred. in hist. or econ.)	*Not offered in 1928-1929*			
183s	Stuart Period ..... (5 cred.; sr., grad.; prereq., 20 cred. incl. 4-5)	VIII, IX	MW	328Lib	Mr. Willson
184s	Topics in Modern English History (5 cred.; sr., grad.; prereq., 20 cred.)	Ar	Ar		Mr. Willson
197-198w-199s	Honors Course	See Anthropology 122-123-124			

HISTORY AND INTERPRETATION OF ART

No.	Title	Hour	Day	Bldg.	Instructor
1f	Art Appreciation ..... (1 cred.; soph., jr., sr.; no prereq.)	II	T	OPhAud	Miss Raymond
1w	Art Appreciation ..... (See 1f)	II	Th	OPhAud	Miss Raymond
1s	Art Appreciation ..... (See 1f)	III	W	OPhAud	Miss Raymond

* Students may enter any quarter.

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 Little
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 Little
11f,s	Clothing Planning and Construction A ..... (3 cred.; all; no prereq.)					
		Sec. 1	I, II	MWF	304HE	Miss Little, Miss Gorham, Miss Sell
	(Limited to 24)	2	I, II	TThS	304HE	Miss Little, Miss Gorham
		3	VI, VII, VIII	TTh	304HE	Miss Gorham, Miss Sell
11w	Clothing Planning and Construction A ..... (See 11f)					
		Sec. 1	I, II	MWF	304HE	Miss Little
	(Limited to 24)	2	VI, VII, VIII	TTh	304HE	Miss Gorham
13f,s	Clothing Planning and Construction B ..... (3 cred.; all; prereq., 3, 11, 51)					
		Sec. 1	III, IV	MWF	304HE	Miss Little
	(Limited to 24)	2	I, II	MWF	305HE	Miss Gorham
15f,w,s	Clothing Problems ..... (3 cred.; 3d qtr. fr., soph., jr., prereq., 3, 51)					
		Lect.	II VI	S Th	313HE	Miss Weller, Miss Gorham
		Lab.	VI, VII, VIII	T		
50f,w	Color and Design I ..... (3 cred.; no prereq.)					
		Sec. 1	I, II (f)	MWF	402HE	Miss V. Goldstein
			III, IV (w)	MWF	402HE	Miss V. Goldstein
	(Limited to 20)	2	I, II	TThS	402HE	Miss H. Goldstein
		3	III, IV (f)	MWF	402HE	Miss Kendall
50s	Color and Design I ..... (See 50f)					
		Sec. 1	I-II	TThS	402HE	Miss H. Goldstein
		2	I-II	MWF	112HE	Miss Kopp

No.	Title	Hour	Day	Bldg.	Instructor
51f	Color and Design II ..... (3 cred.; prereq., 50) (Limited to 20 each) Sec. 1	I, II	MWF	401HE	Miss V. Goldstein
	2	I, II	TThS	401HE	Miss V. Goldstein
51w	Color and Design II ..... (See 51f) (Limited to 20 each) Sec. 1	III, IV	MWF	401HE	Miss V. Goldstein
	2	I, II	TThS	401HE	Miss V. Goldstein
51s	Color and Design II ..... (See 51f) (Limited to 20 each) Sec. 1	VI, VII, VIII	TTh	402HE	Miss V. Goldstein
	2	I, II	MWF	402HE	
53f,s	Advanced Design ..... (3 cred.; soph., jr.. sr.; prereq., 51 or 56) (Limited to 20)	VI, VII	MWF	402HE	Miss Kendall
53w	Advanced Design ..... (See 53f) (Limited to 20) Sec. 1	VI, VII	MWF	402HE	Miss H. Goldstein
	2	I, II	MWF	402HE	Miss Kendall
56f	Applications of Color and Design (3 cred.; no prereq.)	VI, VII, VIII	TTh	402HE	Miss H. Goldstein
70f	Nutrition Survey ..... (2 cred.; no prereq.)	IV	WF	203HE	Miss Biester
70w	Nutrition Survey ..... (See 70f)	III	TTh	203HE	Miss Counts
70s	Nutrition Survey ..... (See 70f)	VII	TTh	OPhAud	Miss Counts
80f	Foods and Cookery ..... (5 cred.; prereq., Agr. Biochem. 3 and 4*) (Limited to 20)	I, II	MTWThF	209HE	Miss Kolshorn
80w,s	Foods and Cookery ..... (See 80f) (Limited to 20 each) Sec. 1	VI, VII	MTWThF	209HE	Mrs. Aamodt, Mrs. Niles
	2	III, IV	MTWFS	209HE	Mrs. Aamodt, Mrs. Niles
83f,w	Food Management ..... (3 cred.; soph., jr., sr.; prereq., 80 or 81) (Limited to 20)	III, IV	MWF	203,207HE	Miss Kolshorn
83s	Food Management ..... (See 83f,w) (Limited to 20 each) Sec. 1	III, IV	MWF	203,207HE	Miss Kolshorn
	2	VI, VII	MWF	203,207HE	Mrs. Niles
150f,w,s	Art History and Appreciation .. (3 cred.; jr., sr.; prereq., permission of instructor)	VIII	MWF	313HE	Miss H. Goldstein

* Course 80 may be taken parallel with Agricultural Biochemistry 4.

Senior College Courses

No.	Title	Hour	Day	Bldg.	Instructor
17w	Advanced Clothing ..... (3 cred.; jr., sr.; prereq., 13, 53) (Limited to 24)	III, IV	MWF	305HE	Miss Gorham, Miss Carlotta Brown
17s	Advanced Clothing ..... (See 17w) (Limited to 24 each) Sec. 1	III, IV	MWF	305HE	Miss Gorham, Miss Carlotta Brown
	2	I, II	TThS		
115f,w	Clothing Economics ..... (2 cred.; jr., sr.; prereq., 13, Econ. 6-7)	III	TTh	203HE	Miss Weller
131f	Home Management: House Planning and Equipment ..... (5 cred.; jr., sr.; prereq., 53) (Limited to 20)	III, IV	MTWFS	401HE	Miss Morse
131w,s	Home Management: House Planning and Equipment ..... (See 131f) (Limited to 20)	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, McClendon, and Stenstrom.

Major Sequences

Sequence A. Physiology. Courses 100-101; 103; 104; 6 credits in courses numbered 113 to 140, or Zoology 109-110.

Sequence B. Physiologic Chemistry. Courses 100-101; 103; 104; 6 credits in courses numbered 138 to 164, or suitable courses in agricultural biochemistry approved by the major adviser.

Sequence C. Biophysics. Courses will be arranged by Dr. Stenstrom with interested students subject to the approval of the dean for the Senior College.

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
4f,w,s	Human Physiology ..... (4 cred.; all; prereq., 1 qtr. zool., 1 qtr. chem.) Lect., dem., or rec.	III, IV	MWF	301MH	Dr. Lyon, Dr. Greisheimer, Dr. King, and others

No.	Title	Hour	Day	Bldg.	Instructor
57f	Physiol. Chemistry ..... (4 cred.; jr., sr.; prereq., Zool., 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,59s	Human Physiology ..... (8 cred.; jr., sr.; prereq., Zool. 1-2 or 5-6-7; Inorg. Chem. 1-2-3 or 4-5)	I	TThS	301MH	Dr. Lyon, Dr. King, Dr. Loucks, and others
	Div. A Lab.	II, III, IV	T		
	B Lab.	VI, VII, VIII	W		
100w-101s*	Physiol. Chemistry ..... (12 cred.; jr., sr.; prereq., zool., 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		
	C‡ Lab.	VI, VII, VIII	TTh		
103f*	Physiology of Muscles, etc. .... (9 cred.; jr., sr.; prereq., zool. and org. chem.)	IV	MTWF	301MH	Mr. Scott, Dr. Lyon, Dr. Greisheimer, Dr. King, and others
		VI-VIII	MWF		
104w*	Physiol. of Nervous System, etc. (7 cred., lect. only, 4 cred.; jr., sr.; prereq., zool. and org. chem.)	III, IV	MWF	301MH	Dr. Lyon,
	Div. A	9-11	F		Mr. Scott, and others
		I, II	S		
	B	9-11	MW		

For other courses see Medical School bulletin and programs.
All the above courses are repeated in the summer quarter.

JOURNALISM

Major Adviser

Professor Johnson.

Major Sequences

Prerequisites: Courses 13, 14-15, 17, and Composition 11-12 or 18-19.

Courses 51-52, 53, 73, 75, 104, 110, 111, 112, two quarters of 190-191-192. Certain modifications or additions for students preparing for special fields of journalism may be arranged in conference with the adviser.

No.	Title	Hour	Day	Bldg.	Instructor
5f,s	The American Newspaper ..... (3 cred.; soph., jr., sr.; no prereq.)	II	MWF	9F	
13f	Introduction to Reporting ..... (3 cred.; soph., jr., sr.; prereq., Eng. A-B-C, Comp. 4-5-6, or exemption)	I	MWF	110P	Mr. Cason

* Students may register for lectures without laboratory.
‡ Div. A, B, primarily for medics; C primarily for others.

No.	Title	Hour	Day	Bldg.	Instructor
14w-15s†	Newspaper Reporting and Correspondence ..... (6 cred.; soph., jr., sr.; prereq., 5 or 13 or practical experience, and Comp. 11-12 or 18-19§)	I	MWF	110P	Mr. Cason
17f‡	Newspaper Reference Library .. (2 cred.; soph., jr., sr.; prereq., 13. May be taken at same time)	I	TTh	206P	
51f-52w†	Copy Reading and Newspaper Make-up ..... (6 cred.; jr., sr.; prereq., 15)	II	TTh	110P	Mr. McCoy
53s	Mechanics of Journalism ..... (1 cred.; jr., sr.; prereq., 51)	IV	T	208P	Mr. McCoy
55	*Advertising Typography* ..... (2 cred.; sr.; prereq., 51 and Bus. Admin. 88)	*Not offered in 1928-29*			
56	*Newspaper Typography* ..... (2 cred.; jr., sr.; prereq., 51)	*Not offered in 1928-29*			
57	*Magazine Typography* ..... (2 cred.; jr., sr.; prereq., 51)	*Not offered in 1928-29*			
58	*Advanced Typography* ..... (2 cred.; jr., sr.; prereq., 55, 56, or 57)	*Not offered in 1928-29*			
60f-61w†-62s	The Community Newspaper .... (9 cred.; jr., sr.; prereq., 15)	II	MWF	25F	Mr. McCoy
65f	Women's Departments ..... (3 cred.; jr., sr.; prereq., 15 or 69)	IV	MWF	206P	
69s	The Writing of Special Articles (3 cred.; jr., sr.; prereq., 41)	I	MWF	Ar	Mr. Steward
70w-71s†	Trade and Technical Journals .. (6 cred.; jr., sr.; prereq., 15 or 69)	IV	MWF	208P	Mr. McCoy
73w-74s	Newspaper and Magazine Articles (6 cred.; jr., sr.; prereq., 15 or 41)	VI	MWF	206P	Mr. Steward
75s	Law of the Press ..... (3 cred.; jr., sr.; prereq., 51)	II	TThS	9F	Mr. McCoy
76w	Critical Writing ..... (3 cred.; jr., sr.; prereq., 69 or 73)	III	TThS	206P	Mr. Cason
77s	Advanced Reporting ..... (3 cred.; sr.; prereq., 73)	II	MWF	15F	Mr. Cason
82s	Supervision of School Publications (3 cred.; jr., sr., grad.; prereq., 41 or 51)	VII	MWF	206P	Mr. Johnson
95	*Editorial Administration* ..... (3 cred.; sr.; prereq., 52)	*Not offered in 1928-29*			
96f	Financial Writing ..... (3 cred.; sr.; prereq., 69 or 73, and 20 credits in econ., or bus. adm.)	VI	MWF	206P	Mr. McCoy

† The entire course must be completed before credit is received for any quarter.
‡ No student may receive credit for both Journalism 17 and Library Methods 1.
§ May be taken at the same time.

No.	Title	Hour	Day	Bldg.	Instructor
97	*Press Associations and Correspondence* ..... (3 cred.; sr.; prereq., 111 and reading knowledge of one foreign language)	*Not offered in 1928-29*			
98	*Court Procedure and Evidence* .. (3 cred.; jr., sr.; prereq., 75 and 10 credits in pol. sci.)	*Not offered in 1928-29*			
104f	Editorial Writing ..... (3 cred.; sr., grad.; prereq., 73, and 25 credits in soc. sci.)	III	TThS	25F	Mr. Cason
110f	History of Journalism ..... (3 cred.; jr., sr., grad.; prereq., 41 or 51, Hist. 4-5 or 7-8)	III	MWF	9F	Mr. Johnson
111w	Foreign News Sources ..... (3 cred.; jr., sr., grad.; prereq., 41 or 51 and hist. or pol. sci., course in internat. relations)	III	MWF	9F	Mr. Johnson
112s	Current Newspaper Problems .. (3 cred.; sr., grad.; prereq., 110)	III	MWF	9F	Mr. Johnson
130f-131w†	Public Opinion and the Newspaper ..... (6 cred.; sr., grad.; prereq., 110, Psy. 140, or Soc. 100 and 20 additional credits in soc. sci.)	II	MWF	206P	Mr. Johnson
190f-191w-192s	Topics Course ..... (9 cred.; sr., grad.; prereq., 20 cred. and consent of instructor)				
	Sec. 1 Seniors	VIII-IX	T	206P	Mr. Johnson
	2 Graduates	VIII-IX	Th	206P	Mr. Johnson

LATIN

Major Adviser

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) 131, 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.

Modification of this sequence will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

For the requirements for the teacher's certificate, consult the bulletin of the College of Education.

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.

† The entire course must be completed before credit is received for any quarter.

Junior College Courses

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w†§	Beginning Latin ..... (10 cred.; all; no prereq.)	VI	MTWThF	109F	Mr. Cram, Mrs. Babcock
3s	Caesar ..... (5 cred.; all.; prereq., 1-2, or 1 yr. Latin)	VI	MTWThF	109F	Mrs. Babcock
11f	Virgil I and II ..... (5 cred.; all; prereq., 1-2, 3, or 2 yrs. Latin)	III	MTThFS	109F	Mr. Cram, Mrs. Babcock
12w	Virgil III and IV ..... (5 cred.; all; prereq., 1-2, 3, or 2 yrs. Latin)	III	MTThFS	109F	Mr. Cram, Mrs. Babcock
13s	Ovid ..... (5 cred.; all; prereq., 1-2, 3, or 2 yrs. Latin)	III	MTThFS	110F	Mrs. Babcock
21f	Selections ..... (5 cred.; all; prereq., any two of 11, 12, 13, or 3 or 4 yrs. of Latin)	IV	MTWFS	109F	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	109F	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	109F	Mr. Cram

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

No.	Title	Hour	Day	Bldg.	Instructor
51f	Pliny's Letters ..... (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	I	TThS	109F	Mr. Cram
52	*Horace's Satires and Epistles* .. (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	*Not offered in 1928-29*			
53s	Suetonius, Selected Lives ..... (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	I	TThS	109F	Mr. Cram
62w	Horace's Odes and Epodes .... (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	I	TThS	109F	Mr. Cram
63	*Apuleius* ..... (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	*Not offered in 1928-29*			
71	*Cicero's De Amicitia and De Senectute* ..... (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	*Not offered in 1928-29*			

† The entire course must be completed before credit is received for any quarter.

§ Credit is usually not given for more than one beginning language. See paragraph 2, page 7.

No.	Title	Hour	Day	Bldg.	Instructor
73s	Advanced Grammar and Composition* ..... (3 cred.; jr., sr.; prereq., 51 and 52, or 71 and 62)	III	MWF	109F	Mr. Pike
121	*Advanced Virgil* ..... (3 cred.; jr., sr., grad.; prereq., any one of 51, 52, 53, or equiv.)	*Not offered in 1928-29*			
122w	Cicero's Letters ..... (3 cred.; jr., sr., grad.; prereq., any one of 51, 52, 53, or equiv.)	II	MWF	109F	Mr. Pike
123s	Medieval Latin ..... (3 cred.; jr., sr., grad.; prereq., any one of 51, 52, 53, or equiv.)	II	MWF	109F	Mr. Pike
131f	Juvenal ..... (3 cred.; jr., sr., grad.; prereq., any one of 51, 52, 53, or equiv.)	II	MWF	109F	Mr. Pike
132	*Seneca's Epistles* ..... (3 cred.; jr., sr., grad.; prereq., any one of 51, 52, 53, or equiv.)	*Not offered in 1928-29*			
133	*Vulgar Latin* ..... (3 cred.; jr., sr., grad.; prereq., any one of 51, 52, 53, or equiv.)	*Not offered in 1928-29*			
201-202-203	*Grad. Seminar: Tacitus* ..... (9 cred.)	*Not offered in 1928-29*			
211-212-213	*Grad. Seminar: Lucretius* ..... (9 cred.)	*Not offered in 1928-29*			
221-222-223	*Graduate Seminar: Cicero's Phil. Works* ..... (9 cred.)	*Not offered in 1928-29*			
231f-232w-233s	Graduate Seminar: Cicero's Rhetorical Works ..... (9 cred.)	VIII, IX	T	312Lib	Mr. Pike

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
101-102	*Bibliographic Seminar* ..... (4 cred.; sr., grad., prereq., foreign language‡)	*Not offered in 1928-29*			

NOTE.—For courses in hospital library service, consult special bulletin.

* Required of students who expect a teaching recommendation.

‡ Enough of one foreign language to meet the requirement for admission to the Senior College, and 9 additional credits in the same or another foreign language.

§ For students in the College of Science, Literature, and the Arts. Others must obtain a special card from the junior college office.

MATHEMATICS

Major Advisers

Professor Jackson; Associate Professors Brink and Underhill.

Major Sequence

Courses 50, 51, 52, 62; and either 15 additional credits in senior college courses, other than 70, or 6 additional credits in senior college courses, other than 70, and 10 credits of Physics 101-103-105.

(Prerequisite: Mathematics 30.)

Modification of this sequence will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

For the requirements for the teacher's certificate, consult the bulletin of the College of Education.

Placement tests.—In each of Courses 3, 4, 5, 6, and 8, students who fail to pass certain tests will be dropped from the course during the first two weeks. A student who is dropped from Course 4, or 6, or 8 must complete Course 3 or 5 before taking any other course in Mathematics. A student dropped from Course 3 or 5 must pass Subfreshman Mathematics in the Extension Division before returning to Course 3 or 5.

Junior College Courses

No.	Title	Hour	Day	Bldg.	Instructor
3f*	Higher Algebra, Short Course .. (4 cred.; all; prereq., 1 yr. elem. alg.)	VII	MTThF	105F	Ar
3w*	Higher Algebra, Short Course .. (See 3f)				
	Sec. 1	VIII	MTThF	105F	Ar
	2	IV	MTWF	105F	Ar
4f*	Trigonometry, Short Course .... (4 cred.; all; prereq., 3 or 5 or prep. higher alg.)	VIII	MTThF	105F	Ar
4w*	Trigonometry, Short Course .... (See 4f)	VII	MTThF	105F	Ar
4s*	Trigonometry, Short Course .... (See 4f)				
	Sec. 1	VIII	MTThF	105F	Ar
	2	IV	MTWF	104F	Ar
5f	Higher Algebra ..... (5 cred.; all; prereq., 1 yr. elem. alg.)				
	Sec. 1	II	MWThFS	133Ph	Ar
	2	VI	MTWThF	133Ph	Ar
5w	Higher Algebra ..... (See 5f)	VI	MTWThF	166Ph	Ar
5s	Higher Algebra ..... (See 5f)	I	TWThFS	OPhAud	Ar

* For pre-med. and pre-dent. students, and others who desire only that mathematics which is needed in the first course in physics.

No.	Title	Hour	Day	Bldg.	Instructor
6f¶	Trigonometry ..... (5 cred.; fr. with cert. of apt., soph., jr., sr.; prereq., 3 or 5, or prep. higher algebra)	II	MWThFS	104F	Ar
6w¶	Trigonometry ..... (See 6f)	VI	MTWThF	105F	Ar
6s¶	Trigonometry ..... (See 6f)	IV	MTWFS	105F	Ar
7f¶	College Algebra ..... (5 cred.; all; prereq., 6)	I	TWThFS	102F	Ar
7w¶	College Algebra ..... (See 7f)	II	MWThFS	104F	Ar
7s¶	College Algebra ..... (See 7f)	VI	MTWThF	104F	Ar
8f¶	Commerce Algebra ..... (5 cred.; pre-bus. stud.; 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
20w	Mathematics of Investment ..... (5 cred.; all; prereq., 8, or 6 and 7)	I	TWThFS	133Ph	Ar
20s	Mathematics of Investment .... (See 20w)	II	MWThFS	OPhAud	Ar
30f	Analytical Geometry ..... (6 cred.; all; prereq., 6 and 7)	III	MTWThFS	104F	Miss Gibbens
30w	Analytical Geometry ..... (See 30f)	I	MTWThFS	104F	Mr. Underhill
30s	Analytical Geometry ..... (See 30f)	II	MTWThFS	104F	Mr. Underhill
47-48-49	*Mathematics for Students of Statistics* ..... (12 cred.; jr., sr.; prereq., 5 or prep. higher algebra)	*Not offered in 1928-29*			

Senior College Courses

No.	Title	Hour	Day	Bldg.	Instructor
50f	Calculus I ..... (5 cred.; jr., sr.; prereq., 30)	III	MTThFS	105F	Mr. Jackson
50w	Calculus I ..... (See 50f)	III	MTThFS	104F	Miss Gibbens
51w	Calculus II ..... (5 cred.; jr., sr.; prereq., 50)	III	MTThFS	105F	Mr. Jackson
51s	Calculus II ..... (See 51w)	III	MTThFS	104F	Miss Gibbens
52f	Calculus III ..... (5 cred.; jr.. sr.; prereq., 51)	II	MWThFS	101F	Mr. Underhill
52s	Calculus III ..... (See 52f)	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.

No.	Title	Hour	Day	Bldg.	Instructor
60s	Synthetic Metric Geometry ..... (3 cred.; jr., sr.; prereq., 30)	VI	MWF	102F	Miss Gibbens
62w	Theory of Equations I ..... (3 cred.; jr., sr.; prereq., 50)	VII	MWF	101F	Mr. Bussey
63s	Theory of Equations II ..... (3 cred.; jr., sr.; prereq., 62)	VII	MWF	101F	Mr. Bussey
70	*Hist. of Elem. Math.* ..... (3 cred.; jr., sr.; prereq., 30)	*Not offered in 1928-29*			
71	*Solid Analytic Geometry* ..... (3 cred.; jr., sr.; prereq., 50)	*Not offered in 1928-29*			
102-103-104	*Adv. Analytic and Synthetic Geometry* ..... (9 cred.; jr., sr., grad.; prereq., 50)	*Not offered in 1928-29*			
106f	Differential Equations ..... (3 cred.; jr., sr., grad.; prereq., 51)	III	MWF	103F	Mr. Underhill
107w-108s	Advanced Calculus ..... (6 cred.; jr., sr., grad.; prereq., 52)	III	MWF	103F	Mr. Underhill
115-116-117	*Differential Geometry* ..... (9 cred.; jr., sr., grad.; prereq., 51)	*Not offered in 1928-29*			
118-119-120	*Vector Analysis* ..... (9 cred.; jr., sr., grad.; prereq., 51)	*Not offered in 1928-29*			
121f-122w-123s	Math. Theory of Statistics ..... (9 cred.; jr., sr., grad.; prereq., 51 or 47-48-49)	Ar	Ar	Ar	Mr. Brink
206f-207w-208s	Theory of Functions ..... (9 cred.; sr., grad.; prereq., 106, 107-108, or Math. and Mech. 151, 152-153*)	Ar	Ar	Ar	Mr. Jackson

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

NOTE.—Students will register for these courses in the order 11-12-13. They may be reassigned by the department as the enrolment demands. A student transferred to 12 for his first quarter will follow this by 13 and then 11; a student transferred to 13 for his first quarter will follow this by 11 and then 12.

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 MF	ME(f,w) (spring)	Mr. Shipley and others

* See bulletin of the College of Engineering.

‡ Students having conflicts with this program may register with one of the engineering or chemistry sections, with permission from Mr. Shipley.

§ Does not carry credit except for pre-dental students.

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	IV	MWF	A	Ar
	4	V	MWF	A	Ar
	5	VI	MWF	A	Ar
	6	VII	MWF	A	Ar
	7	VIII	MWF	A	Ar
3s	First Year Basic Course	VII,VIII,IX	T or W	A	Ar
	(No cred.; fr.; no prereq.)				
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	IV	MWF	A	Ar
	4	V	MWF	A	Ar
	5	VI	MWF	A	Ar
	6	VII	MWF	A	Ar
	7	VIII	MWF	A	Ar
6s	Second Year Basic Course	VII,VIII,IX	T or W	A	Ar
	(No cred.; soph.; prereq., 1-2-3)				
51f-52w	First Year Advanced Course ...	Total of five hours selected from the following:			
	(Cred.‖; prereq., 4-5-6)	II	MWF	A	Ar
		III	MWF	A	Ar
		VI	MWF	A	Ar
		VIII	MWF	A	Ar
		(One two-hour period to be arranged)			
53s	First Year Advanced Course ...	VII,VIII,IX	T or W	A	Ar
	(Cred.‖; prereq., 4-5-6)	(One two-hour period to be arranged)			
54f-55w	Second Year Advanced Course ..	Total of five hours selected from the following:			
	(Cred.‖; prereq., 51-52-53)	II	MWF	A	Ar
		III	MWF	A	Ar
		VI	MWF	A	Ar
		VIII	MWF	A	Ar
		(One two-hour period to be arranged)			
56s	Second Year Advanced Course ..	VII,VIII,IX	T or W	A	Ar
	(Cred.‖; prereq., 51-52-53)	(One two-hour period to be arranged)			

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 pages 8 and 9, 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 or Composition 4-5-6,* foreign language, History 11-12-13, and Psychology 1-2 and 4-5 or 7, and the following courses

‖ For the amount of credit given for the work of the Advanced R.O.T.C., see page 16.
* Unless exempted by placement tests. See Composition program.

in music: 1-2-3, 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, Ferguson, and Killeen.

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 86-87-88, 89-90-91, 106-107-108, 109-110-111, 112-113-114.

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w-3s†	Harmony ..... (9 cred.; fr. mu.; no prereq.)				
	Sec. 1	II	MWF	103Mu	Mr. Scott
	2	VI	MWF	103Mu	Mr. Scott
4f-5w-6s†	Counterpoint ..... (6 cred.; soph. mu.; prereq., 1-2-3)	III	TTh	103Mu	Mr. Ferguson
7f-8w-9s†	Ear Training ..... (3 cred.; fr., soph. mu.; no prereq.)	VI	TTh	Mu	Mrs. Twichell, Miss Kendall
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

† The entire course must be completed before credit is received for any quarter.

§ Entrance requirements, according to instrument selected, are:

Piano: Any major or minor scale in octaves, thirds, sixths, or tenths, M.M. quarter notes=108; Bach Invention or dance from one of the suites; a sonata by Haydn or Mozart; a modern composition of equal difficulty with the sonata.

Voice: Good natural equipment and 2 years of piano.

Violin: Major and minor scales, arpeggios; the simpler Kreutzer Etudes; a sonata by Handel, Haydn, Mozart, or Schubert; a more modern work displaying special technic peculiar to the violin.

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
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 ..... (3 cred.; jr., sr.)	7:30 p.m.	W	MuAud	Mr. Pepinsky
43f-44w-45s¶	University Chorus‡ ..... (3 cred.; fr. and soph. mu., acad. jr., sr.)	IX	T	MuAud	Mr. Killeen
86 87-88	*Normal Piano* ..... (6 cred.; jr.; prereq., 2 yrs. piano)	*Not offered in 1928-29*			
89f-90w-91s	Adv. Normal Piano ..... (6 cred.; sr.; prereq., 86-87-88)	VIII	MWF	Mu	Miss Kendall
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	4Mu	Mr. Pepinsky
106f-107w-108s†	History of Music ..... (9 cred.; jr., sr.; prereq., 1-2-3)	II	MWF	4Mu	Mr. Ferguson
109f-110w-111s†	Bach and Beethoven ..... (9 cred.; sr.; prereq., 106-107-108)	VII, VIII	TTh	104Mu	Mr. Ferguson
112f-113w-114s	Ensemble ..... (6 cred.; jr.)				
	Sec. 1	II	TTh	4Mu	Mr. Pepinsky
	(For voice students) 2	II	TTh	104Mu	Miss Hull
115f-116w-117s	Adv. Ensemble ..... (6 cred.; sr.; prereq., 112-113-114)				
	Sec. 1	IV	MW	4Mu	Mr. Pepinsky
	(Voice) 2	VI	MW	4Mu	Mr. Killeen
121f-122w-123s	Romantic Movement ..... (6 cred.; jr., sr.; prereq., 106-107-108)	VII	WF	104Mu	Miss Kendall
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 ..... (10 cred.; entering freshmen with cert. of apt.; no prereq.)				
	Lect.	VI§	M	OLAud	
	Sec. 1	I	TWThFS	5Lib	
	2	II	MWThFS	213F	
	3	III	MTThFS	5Lib	
	4	VI	MTWThF	25F	
	5	VII	MTWThF	5Lib	

* Students majoring in music may take 4 years of orchestra.

† The entire course must be completed before credit is received for any quarter.

‡ Does not carry credit for academic freshmen and sophomores.

¶ Students may receive credit for 2 years of chorus.

§ There will be five meetings of the class each week, sometimes five recitations, sometimes four recitations and one lecture.

No.	Title	Hour	Day	Bldg.	Instructor
1w-2s†	Orientation ..... (See 1f-2w)	III	MTThFS	211OL	

PHILOSOPHY

Major Adviser

Professor Wilde.

Major Sequence

From 27 to 36 credits in senior college courses, including Courses 50-51; 124 or 135-136; 141 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	321F	Mr. Conger
	2	II	MWThFS	321F	Mr. Brown
1w	Problems of Philosophy ..... (See 1f)				
	Sec. 1	III	MTThFS	321F	Mr. Swenson
	2	VII	MTWThF	321F	Mr. Conger
1s	Problems of Philosophy ..... (See 1f)	IV	MTWFS	321F	Mr. Conger
2f	Logic ..... (5 cred.; soph., jr., sr.; no prereq.)				
	Sec. 1	III	MTThFS	322F	Mr. Swenson
	2	IV	MTWFS	321F	Mr. Brown
2w	Logic ..... (See 2f)	VI	MTWThF	321F	Mr. Brown
2s	Logic ..... (See 2f)				
	Sec. 1	III	MTThFS	321F	Mr. Brown
	2	VII	MTWThF	321F	Mr. Brown
3f	Ethics ..... (5 cred.; soph., jr., sr.; no prereq.)	IV	MTWFS	322F	Mr. Wilde
3w	Ethics ..... (See 3f)	I	TWThFS	321F	Mr. Brown
3s	Ethics ..... (See 3f)	I	TWThFS	322F	Mr. Wilde
10s	Science and Religion ..... (2 cred.; soph., jr., sr.; prereq., 10 cred. in phil. or a science)	VII	TTh	204F	Mr. Swenson
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

† The entire course must be completed before credit is received for any quarter.

No.	Title	Hour	Day	Bldg.	Instructor
100f	History of Religions ..... (3 cred.; jr., sr., grad.; prereq., 10 cred.)	II	TThS	322F	Mr. Conger
101w	Psychology of Religion ..... (3 cred.; jr., sr., grad.; prereq., 10 cred.)	II	TThS	322F	Mr. Conger
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 1928-29*			
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 1928-29*			
110w	Contemporary Philosophy ..... (3 cred.; jr., sr., grad.; prereq., 50 or 51)	III	MWF	322F	Mr. Conger
120	*Scandinavian Philosophy* ..... (3 cred.; jr., sr., grad.; prereq., 10 cred.)	*Not offered in 1928-29*			
124f	Political and Social Ethics .... (Same as Pol. Sci. 165. 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
141s	Metaphysics ..... (5 cred.; jr., sr., grad.; prereq., 10 cred. in phil. incl. 2)	III	MTWThF	322F	Mr. Conger
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 1928-29*			
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, Mr. Conger

PHYSICAL EDUCATION FOR MEN

A physical examination is required of all new matriculants, and of all others using the departmental 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 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	MW	Field House	
		2	II	TTh	Field House	
		3	III	MW	Field House	
		4	III	TTh	Field House	
	(Limit 60)	5	IV	MW	Field House	
		6	VI	MW	Field House	
		7	VI	TTh	Field House	
		8	VII	MW	Field House	
		9	VII	TTh	Field House	
		10	VIII	TTh	Field House	(Boxing)
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	II	T	301F	Dr. Cooke
		2	IV	T	301F	
		3	II	F	301F	
7f,8w,9s	Advanced Leaders ..... (3 cred.; soph., jr., sr.; prereq., 1-2-3)					
		Lect.	IV	T	Armory	Mr. Keller
		Lab.	Ar			
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		

* Course 3 in Preventive Medicine may be substituted for Course 4 in Physical Education.

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 body 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 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 must be taken for six consecutive quarters except by petition. It 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 Courses 7 to 31). 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 41, 42, 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, for which registration is required, except Course 24, $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	V	MWF	3,151,153WGm	Ar
	4	VI	MWF	3,151,153WGm	Ar
	5	VIII	MWF	3,151,153WGm	Ar
	6	III	TThS	3,151,153WGm	Ar
4f	Preliminary Hygiene (for nurses and dental hygienists) ..... (No cred.; required of all students; no prereq.)	Ar	Ar	Ar	
4w	Preliminary Hygiene ..... (See 4f)				
	Sec. 1	I	M	OPhAud	
	2	II	T	206OLaw	
	3	III	W	206OLaw	
	4	IV	M	OLAud	
	5	VI	T	OLAud	
	6	III	Th	206OLaw	

‡ Students may enter course in any quarter.

No.	Title	Hour	Day	Bldg.	Instructor
4s	Preliminary Hygiene	II	T	201WGm	
	(See 4f)				
7f-8w¶	Sophomore Danish Gymnastics ..	IV	TS	153WGm	Ar
	(No cred.; soph.; prereq., 1-2-3)				
9s	Sophomore Archery				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	II	MW	151WGm	Ar
	2	IV	TS		Ar
10f-11w‡	Sophomore Orthopedic and Individual Gymnastics				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	IV	TS	3WGm	Dr. Tolg
	2	VI	TTh	3WGm	Miss Denny
	3	II	MW	3WGm	Miss Denny
12s	Sophomore Orthopedic and Individual Gymnastics	IV	TS	3WGm	Dr. Tolg
	(See 10-11)				
13f-14w-15s*	Sophomore Interpretive Dancing	VI	TTh	151WGm	Miss Baker
	(No cred.; soph.; prereq., 1-2-3)				
13f,w-14s*	Sophomore Interpretive Dancing	II	MW	151WGm	Miss Bockstruck
	(See 13f-14w-15s)				
16f-17w	Sophomore Games and Folk Dancing	I	MW	151WGm	Miss Warnock
	(No cred.; soph.; prereq., 1-2-3)				
18s	Tennis				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	VII	WF	151WGm	Ar
	2	I	TTh	151WGm	Ar
	3	IV	TS	151WGm	Ar
	4	VIII	TTh	151WGm	Ar
	5	VI	TTh	151WGm	Ar
19f	Sophomore Hockey				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	VII	WF	151WGm	Ar
	2	V	TTh	151WGm	Ar
	3	VIII	TTh	151WGm	Ar
20w	Sophomore Basket-Ball				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	VII	WF	151WGm	Ar
	2	V	TTh	151WGm	Ar
	3	VII (3:00)	TTh	151WGm	Ar
	4	VIII	TTh	151WGm	Ar
21s	Sophomore Baseball				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	VII	WF	151WGm	Ar
	2	V	TTh	151WGm	Ar
22f,s-23w§*	Sophomore Elem. Swimming ...				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	III	MW	51WGm	Ar
	2	IV	MW	51WGm	Ar
	3	II	TTh	51WGm	Ar
	4	IV	TS	51WGm	Ar
	5	VII	TTh	51WGm	Ar
	6	VIII (3:30)	TTh	51WGm	Ar
	7	VIII (4:00)	TTh	51WGm	Ar

* The spring quarter is not open to students who have not had either fall or winter 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.

¶ The winter quarter is not open to students who have not had the fall quarter.

No.	Title	Hour	Day	Bldg.	Instructor
22f,w,s	Sophomore Elem. Swimming .... (See 22f,s-23w)	VII	MW	51WGm	Ar
24f,s‡	Sophomore Horseback Riding .. (No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	VIII	MW	Ar	Miss Lane
	2	IX	MW	Ar	Miss Lane
25f,s-26w§*	Sophomore Intermed. Swimming (No cred.; soph.; prereq., 1-2-3, elementary swimming test)				
	Sec. 1	VIII½ (4:00)	MW	51WGm	Ar
	2	III	TTh	51WGm	Ar
	3	II	WF	51WGm	Ar
27f¶	Sophomore Golf—Advanced ..... (No cred.; soph.; prereq., 1-2-3)	VI	TTh	Ar	
27s¶	Sophomore Golf—Elementary .... (No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	I	TTh	Ar	
	2	II	TTh	Ar	
28f,s-29w§*	Sophomore Advanced Swimming (No cred.; soph., jr., sr.; prereq., 1-2-3, inter. swim. test)	VIII (3:30)	MW	51WGm	Ar
30s	Sophomore Life Saving and Water Sports ..... (No cred.; soph., jr., sr.; prereq., 1-2-3 and adv. swim. test)	IX	MW	51WGm	Ar
31w‖	Sophomore Skating ..... (No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	VII	WF		Miss Lane
	2	II	TTh		
41f,42w	Health Projects ..... (2 cred.; jr., sr.; prereq., 6 qtrs.)	Ar	Ar		
43f-44w-45s	Play and Playground ..... (4 cred.; jr., sr.; prereq., 6 qtrs.)				Miss Kissock
	Lab.	II	TTh	(fall)	
	Lect.	III	MWF	(winter)	
	Lab.	V	MW	(spring)	
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	153WGm	Miss Baker

Activities for Which No Registration Is Required

Elective Sports** ..... (Fall)—field hockey, volley ball; (Winter)—basket-ball, ice hockey; (Spring)—track, baseball, swimming	IX	MTWTh	151WGm	
General Swimming	IX	MTWF	51WGm	

* The spring quarter is not open to students who have not had either fall or winter quarter.

† The entire course must be completed before credit is received for any quarter.

‡ Students registering for this course will pay for riding lessons at about $1 per lesson, but not the regular physical education fee. Attendance at class hour is required for credit.

¶ Students must supply their own golf equipment.

§ No student may register for more than two quarters of swimming without permission, Course 22 is never closed for senior registration.

‖ Class meetings will be sixty minutes in length, since weather and ice conditions will cause omissions at times.

** With permission of director.

PHYSICS

Major Advisers

Professors Erikson, Miller, Tate, Valasek, and Zeleny.

Major Sequence

Courses 101-103-105, plus 6 additional credits, and Mathematics 50, 51, and 52.

Modification of this sequence will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

For the requirements for the teacher's certificate, consult the bulletin of the College of Education.

Courses 3, 4, 9, 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.

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	150Ph	Mr. Erikson
		Quiz	II	Th	150Ph	
			or IX	Th	150Ph	
3w	Elem. of Mechanics and Sound (See 3f)					
		Lect.	VIII	MWF	150Ph	Mr. Erikson
		Quiz	IX	F	150Ph	
3s	Elem. of Mechanics and Sound (See 3f)					
		Lect.	III	TThS	150Ph	Mr. Erikson
		Quiz	IX*	F	150Ph	
4f,w,s	Elem. of Mechanics Lab. ..... (1 cred.; all; prereq., 3 or reg. in 3)					
		Sec. 1	VI, VII	T	153Ph	Mr. Buchta and assistants
		2	VIII, IX	T	153Ph	
		3	I, II	Th	153Ph	
		4	VIII, IX	Th	153Ph	
9s‡	Acoustics ..... (3 cred.; all; no prereq.)		VIII	MWF	133Ph	Mr. Buchta
23f	Heat ..... (3 cred.; all; prereq., 3)					
		Lect.	III	TThS	166Ph	Mr. Miller
		Quiz	IX	Th	166Ph	Mr. Miller
23w	Heat ..... (See 23f)					
		Lect. Sec. 1	II	MWF	150Ph	Mr. Miller
		2	VI	MWF	150Ph	
		Quiz Sec. 1	II	Th	150Ph	
		2	IX	Th	150Ph	

* 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.

No.	Title	Hour	Day	Bldg.	Instructor
24f	Heat Laboratory ..... (1 cred.; all; prereq., 4, 23, or reg. in 23)				
	Sec. 1	VI, VII	M	244Ph	Mr. Miller
	2	VIII, IX	M	244Ph	and assistants
	3	VI, VII	T	244Ph	
	4	VIII, IX	T	244Ph	
24w	Heat Laboratory ..... (See 24f)				
	Sec. 1	VI, VII	T	244Ph	Mr. Miller
	2	VIII, IX	T	244Ph	and assistants
	3	I, II	Th	244Ph	
	4	VIII, IX	Th	244Ph	
33f,s	Optics ..... (3 cred.; all; prereq., 3)				
	Lect.	I	TThS	133Ph	Mr. Valasek
	Quiz	IX	F	133Ph	
34f,s	Optics Laboratory ..... (1 cred.; all; prereq., 4 and 33 or 35 or reg. in 33 or 35)				
	Sec. 1	VI, VII	Th	236Ph	Mr. Valasek
	2	VI, VII	F	236Ph	and assistants
43w	Electricity ..... (3 cred.; all; prereq., 3)				
	Lect.	III	TThS	166Ph	Mr. Zeleny
	Quiz	IX	Th	150Ph	Mr. Zeleny
43s	Electricity ..... (See 43w)				
	Lect. Sec. 1	II	MWF	166Ph	Mr. Zeleny
	2	VI	MWF	166Ph	
	Quiz Sec. 1	II	Th	150Ph	
	2	IX	Th	150Ph	
44w	Electricity Laboratory ..... (1 cred.; all; prereq., 4, 43 or reg. in 43)				
	Sec. 1	VI, VII	T	231Ph	Mr. Zeleny
	2	VIII, IX	T	231Ph	and assistants
	3	VI, VII	W	231Ph	
44s	Electricity Laboratory ..... (See 44w)				
	Sec. 1	VI, VII	T	231Ph	Mr. Zeleny
	2	VIII, IX	T	231Ph	and assistants
	3	I, II	Th	231Ph	
	4	VIII, IX	Th	231Ph	
	Intermediate Courses				
52f,w,s	Laboratory Arts ..... (3 cred.; jr., sr.; prereq., 16 cred.)	VI, VII, VIII	TTh	39Ph	Ar
101f-103w-105s	Theoretical Physics ..... (15 cred.; jr., sr., grad.; prereq., 12 cred. in phys., Math. 51)	IV	MTWFS	145Ph	Mr. Tate
104	*Precision Mechanics* ..... (3 cred.; jr., sr., grad.; prereq., 12 cred. and Math. 51)	*Not offered in 1928-29*			

No.	Title	Hour	Day	Bldg.	Instructor
114f-116w-118s	Elem. Phys. Investigation ..... (3 cred.; jr., sr., grad.; prereq., 104, Math. 51)	Ar	Ar	160Ph	Ar
115f-117w-119s	Problem Course ..... (3 cred.; jr., sr., grad.; prereq., 12 cred., Math. 51)	Ar	Ar	145Ph	Mr. Buchta
124s	Pyrometry and Heat ..... (3 cred.; jr., sr., grad.; prereq., 23 and 24)	V-IX or Ar	MW	245Ph	Mr. Miller
134f,w	Experimental Optics ..... (3 cred.; jr., sr., grad.; prereq., 34)	VI, VII, VIII	MW	79Ph	Mr. Valasek
136w	Spectrum Analysis ..... (3 cred.; jr., sr., grad.; prereq., 34)	VI, VII, VIII	MW	79Ph	Mr. Valasek
144f	Elect. Measurements ..... (3 cred.; jr., sr., grad.; prereq., 43 and 44)	See 144f, Engineering program			Mr. Zeleny
146w	Advanced Electrical Measurement (3 cred.; by permission from instructor; prereq., 144)	Ar	Ar	232Ph	Mr. Zeleny
148w	Radioactivity ..... (3 cred.; jr., sr., grad.; prereq., 43, 44)	VI, VII, VIII	TTh	145Ph	Mr. Erikson
150f	Conduction Through Gases .... (3 cred.; jr., sr., grad.; prereq., 144)	VI, VII, VIII	TTh	145Ph	Mr. Erikson
152s	X-Rays ..... (3 cred.; jr., sr., grad.; prereq., 43, 44)	VI, VII, VIII	TTh	145Ph	Mr. Erikson

POLITICAL SCIENCE

Major Advisers

Professors Anderson, Lambie, Quigley, and Young.

Major Sequences

Prerequisites: 10 credits in history or economics and 15 credits in political science. In addition the student is urged to take one or more of the following courses: History 33, English Legal Institutions; Economics 6-7, Principles of Economics; Psychology 1-2, General Psychology; and Sociology 45, Social Statistics.

The student majoring in political science, unless he is in the Honors Course, must earn at least 12 credits in courses numbered from 101 to 140, 6 credits in courses numbered from 141 to 180, 6 credits in courses numbered from 181 to 199, inclusive, and enough additional credits from these three groups of courses and the following to make a total of 33 credits. The additional courses which may be included are Political Science 51-52-53, and, with the consent of the major adviser, Economics 105; 106; 154; 161; 162; 164; 176; 191-192; 193; History 124; 143; 168; Preventive Medicine 106; Psychology 140; 160; Sociology 100; 101; 102; 140; 141.

Minor Sequences

Nine credits in political science courses numbered from 101 to 199.

Honors Course

A limited number of students entering the Senior College in 1928-29 will be accepted on the basis of their records for registration in the Honors Course. Instead of following a regular major sequence, a student in the Honors Course will pursue a comprehensive plan of study adapted to his particular interests and approved by the departmental tutors. Normally, he will carry in the junior year not less than nine credit hours of regular courses each quarter, and in the senior year not less than six credit hours of regular courses. The rest of his work will consist of assigned readings and reports, regular consultations with his tutor, and in the senior year intensive and specialized study in one or two branches of political science and possibly the preparation of a thesis, according to the plan adopted.

In certain cases the work done in five quarters of residence in the Senior College may be accepted as satisfying the requirements of the Honors Course. A part of the reading and other work may also be done in summer vacation periods, but the work so done will be covered in the annual comprehensive examination. Each student electing the course will be assigned to a tutor, whom he will meet at stated times for consultation, and at the end of each year he will take a comprehensive examination upon his work. See Courses 81-82-83 and 91-92-93, below.

Bureau for Research in Government

This bureau, with its special library, serves as a center of study for advanced and graduate students in political science, and also as an agency for conducting and directing investigations into problems of politics, legislation, and administration, national, state, and local.

Training for Diplomatic and Consular Service

A special program taking the place of a major sequence will be arranged for students of good standing who intend to enter this field of work. The courses in this program will be drawn from political science, economics, history, geography, and related departments. Consult Mr. Quigley.

For the requirements for the teacher's certificate, consult the bulletin of the College of Education.

Courses numbered above one hundred have been renumbered according to the following schedule:

New Number	Old Number	New Number	Old Number	New Number	Old Number
101-102	151-152	119	190	171	171
103	141	131-132-133	130-131-132	175	102
105-106	146-147	137	113	181-182	121-122
107	157	145-146	161-162	183	123
108	145	149-150	166-167	184	124
109	158	153-154	136-137	187-188	125-126
111	159	161-162		189	127
113	155	165	181	191-192	138-139
115-116	111-112	169	187	193	
				195	105

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	MWF	221OL	
	2	I	TThS	15F(f), 221OL(w), 112OL(s)	
	3	II	TThS	111OL(f), 25F(w), 209OL(s)	
	4	III	TThS	111OL	
	5	III	MWF	111OL	
	6	VI	MWF	9F(f,w)	112OL(s)
	7	VII	MWF	112OL	
2f,w,s	State Government ..... (5 cred.; soph., jr., sr.; prereq., 1)				
	Lect.	IV	MTWFS	211OL	Mr. Lambie, Mr. Field
3f,w,s	Comparative European Government ..... (5 cred.; soph., jr., sr.; prereq., 1)	II	MWThFS	112OL(f,w)	111OL(s) Mr. Starr
11f,s	Municipal Government ..... (5 cred.; soph., jr., sr.; prereq., 1)	I	TWThFS	209OL	Mr. Anderson
15f,w,s	Introduction to Political Science (5 cred.; soph., jr., sr.; prereq., 1)	III	MTThFS	201OLaw	Mr. Saunders
25f,w,s	World Politics ..... (5 cred.; soph., jr., sr.; prereq., 1, or Hist. 1-2 or 2-3)	VI	MTWThF	209OL	Mr. Mills
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)				
	Lect.	II	WF	OLAud	Mr. Young, Mr. Dalzell
	Sec. 1	I	M	15F(f,w)	105F(s)
	2	II	M	15F(f)	9F(w) 5F(s)
	3	III	M	25F(f)	114F(w,s)
	4	I	T	201F	
	5	II	T	201F	
	6	III	T	201F	
	7	IV	T	201F	
81f-82w-83s	Readings for Honors ..... (Junior course. Cred. ar.)				Mr. Anderson, Mr. Quigley
91f-92w-93s	Readings and Theses for Honors (Senior course. Cred. ar.)				Mr. Anderson, Mr. Quigley
101f-102w	Constitutional Law ..... (6 cred.; jr., sr., grad.; prereq., 15 cred.)	VI	MWF	221OL	Mr. Field
103s	State Constitutional Law ..... (3 cred.; jr., sr., grad.; prereq., 15 cred.)	VI	MWF	221OL	Mr. Field

† The entire course must be completed before credit is received for any quarter.

No.	Title	Hour	Day	Bldg.	Instructor
105-106	*American Constitutional Development* ..... (6 cred.; jr., sr., grad.; prereq., 15 cred. in pol. sci., or Hist. 7-8)	*Not offered in 1928-29*			
107f	Recent Social Legislation ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. 10 cred. in pol. sci.)	II	TThS	211OL	Mr. Young
108w	Legislative Power and Methods (3 cred.; jr., sr., grad.; prereq., 15 cred.)	II	TThS	211OL	Mr. Young
109s	Government and Business ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci., incl. 10 cred. in pol. sci.)	II	TThS	211OL	Mr. Young
111f	Law of Public Utilities ..... (3 cred.; jr., sr., grad.; prereq., 15 cred., or Econ. 154)	I	TThS	221OL	Mr. Field
113s	Administrative Law ..... (3 cred.; jr., sr., grad.; prereq., 15 cred.)	I	TThS	221OL	Mr. Field
116s	Municipal Powers and Functions ..... (5 cred.; jr., sr., grad.; prer q., 15 cred. incl. 11)	III	MTThFS	12Lib	Mr. Anderson
119*	Jurisprudence ..... (2 cred.; grad., and sr. of suitable preparation)	See Law School bulletin			Mr. Rottschaefer
131f-132w	Principles of Public Administration ..... (6 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci., incl. 10 cred. in pol. sci.)	II	MWF	12Lib	Mr. Lambie
133s	Problems in Public Administration ..... (3 cred.; jr., sr., grad.; prereq., 131-132)	II	MWF	12Lib	Mr. Lambie
137w	Municipal Administration ..... (5 cred.; jr., sr., grad.; prereq., 10 cred. incl. 11)	III	MTThFS	112OL	Mr. Anderson
145w-146s	Comparative Federal Government ..... (6 cred.; jr., sr., grad.; prereq., 15 cred.)	VIII	MWF	209OL	Mr. Saunders
149f-150w	Government and Politics of the British Empire ..... (6 cred.; jr., sr., grad.; prereq., 15 cred. or Hist. 109)	III	MWF	209OL	Mr. Mills
153f-154w	Far Eastern Government and Politics ..... (6 cred.; jr., sr., grad.; prereq., 3 or 10 cred. and Hist. 1-2)	VII	MWF	209OL	Mr. Quigley

* Second semester.

No.	Title	Hour	Day	Bldg.	Instructor
161-162	*Current Political Thought* ..... (6 cred.; jr., sr., grad.; prereq., 165 or 15 cred. incl. 15)	*Not offered in 1928-29*			
163f	American Political Ideas ..... (3 cred.; jr., sr., grad.; prereq., 15 cred.)	VIII	MWF	209OL	Mr. Saunders
165w	Dev. of Political Thought ..... (5 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 10 cred. in phil. Same as Phil. 124)	I	TWThFS	322F	Mr. Wilde
169	*Problems of Democracy* ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci., incl. 10 cred. in pol. sci.)	*Not offered in 1928-29*			
171s	Political Psychology ..... (3 cred.; jr., sr., grad.; prereq.§)	See Psychology 141			
175f	Political Parties ..... (3 cred.; jr., sr., grad.; prereq., 15 cred.)	III	TThS	211OL	Ar
181f-182w	International Law ..... (6 cred.; sr., grad.; prereq., 20 cred. in soc. sci., incl. 10 cred. in pol. sci.)	IV	MWF	209OL	Mr. Quigley
183s	International Organization ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci.)	IV	MWF	209OL	Mr. Quigley
184	*Problems in International Law* .. (3 cred.; sr., grad.; prereq., 181-182)	*Not offered in 1928-29*			
187f-188w	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
189s	*Topics in American Foreign Relations* ..... (5 cred.; jr., sr., grad.; prereq., 20 cred. in hist. incl. 9, or 20 cred. in pol. sci.)	VIII, IX	TTh	339Lib	Mr. Shippee
191-192	*Far Eastern Diplomacy* ..... (6 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. 25, or 10 cred. in pol. sci. and Hist. 1-2)	*Not offered in 1928-29*			
193s	Problems of the Pacific ..... (3 cred., jr., sr., grad., prereq., 153-154 or 191-192)	VIII, IX	W	12Lib	Mr. Quigley
195s	Colonization ..... (3 cred.; jr., sr., grad.; prereq., 15 cred. or 20 cred. in soc. sci. incl. 10 cred. in pol. sci.)	III	MWF	101F	Mr. Mills

§ Open to majors in social science who have had Psy. 1-2 and 4-5 or 7 or Zoology 1-2 and to majors in psychology who have had Psy. 140 or 20 credits in social science.

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.

No.	Title	Hour	Day	Bldg.	Instructor
2f-w	First Aid ..... (1 cred.; prereq., 10 cred. zool.) (Limited to 20 women)	VI, VII	W	§	Miss Fisher
3f,w,s‡	Personal Hygiene and Elementary Sanitation ..... (2 cred.; fr., with cert. of apt., soph.; no prereq.) (3 sections for men, 40 each) (2 sections for women, 40 each)	IV	TS	101bMH	Dr. Lees, Dr. Daniels, and others
4s	Increasing the Span of Human Life ..... (3 cred.; fr., soph.; prereq., 3, or Phys. Ed. 4)	III	TThS	101bMH	Dr. Myers
50f,w,s	Public and Personal Health .... (3 cred.; jr., sr.; Zool. 1-2 and Psy. 1-2 or permission of instructor)	V	MWF	101bMH	Dr. O'Brien
52f,w,s	Health Care of the Family .... (3 cred.; jr., sr.; prereq., Bact. 41, Physiol. 4) (Lab. sections limited to 20)				
	Lect.	I	S	213HE	Dr. Boynton
	Sec. 1	VI, VII	TTh	§	Miss Fisher
	2	VI, VII (f, s, only)	MF	§	Miss Fisher
53f,s	Elements of Preventive Medicine (3 cred.; jr., sr.; prereq., Psy. 1-2; Bact. 41 or equiv.)	II	MWF	101bMH	Dr. Diehl
57f	Health of Infant and Pre-school Child ..... (2 cred.; jr., sr.; prereq., Zool. 1-2, Psy. 1-2; or 50, or 53)	IV	TS	101bMH	Dr. Boynton
58w	Maternal and Child Hygiene ... (2 cred.; jr., sr.; prereq., 50 or 52 or 53) (For public health nurses)	VI	MW	101bMH	Dr. Boynton
60w	Tuberculosis and Its Control ... (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)	III	Th	101bMH	Dr. de Berry
62f,w	Principles of Public Health Nursing ..... (3 cred.; jr., sr.; for public health nurses)	Ar	Ar	101bMH	Miss Butzerin

‡ Students who take this Course 3 need not take Physical Education for Men 4.
§ Woman's Hall, University Farm.

No.	Title	Hour	Day	Bldg.	Instructor
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
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, Miss Houlton
70f,w	Home Nursing and Child Care (3 cred.; public health nurses; prereq., 62, 63, or equiv.)	Ar	Ar	Ar	Miss Butzerin
73w	Occupational Hygiene and Disease ..... (2 cred.; jr., sr.; prereq., 53)	IV	MW	101bMH	Dr. Myers
80w	Health Supervision of the School Child ..... (3 cred.; jr., sr.; prereq., 50 or 52 or 53)	II	MWF	101bMH	Dr. Diehl
102w	Sanitation ..... (Cred. ar.; jr., sr., grad.; prereq., Bact. 101; Anal. Chem. 1-2 or 7; Org. Chem. 2 or 53; Phys. 24, 34, 44)	Ar	Ar	*	Mr. Whittaker
103s	Public Health Bacteriology ..... (3 cred. or ar.; jr., sr., grad.; prereq., Bact. 101, 116)	VII, VIII or ar	MWF or ar	*	Miss Wade
106f,w,s	Public Health Administration .. (Cred. ar.; jr., sr., grad.; prereq., 53 or 101)	Ar	Ar	Ar	Dr. Diehl
107s	Sanitary Surveys ..... (2 cred.; jr., sr., grad.; prereq., 53 or 100)	Ar	Ar	Ar	Dr. Diehl

PSYCHOLOGY

Major Advisers

Professors Elliott and Paterson; Assistant Professors Bird and Tinker.

Major Sequences

Prerequisites: For Sequence A, 1-2 and 4-5 or 7. Course 15 is recommended. For Sequence B, 9 credits. For Sequence C, 1-2 and 4-5 or 7. Course 3 is recommended.

A. General psychology. Courses 101-102; 125-126; 108; 109 and 12 additional credits in senior college courses, excepting 56.

* State Board of Health.

B. Human and animal behavior. Courses 114-115; 144-145; 151-152-153; and either 125-126 or Zoology 109-110. Zoology 183 is recommended.

C. Differential psychology. Courses 101-102; 125-126; 144-145; either 124 and 140 or 141, or Zoology 183; Educational Psychology 134-135.

Modifications 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.

No.	Title		Hour	Day	Bldg.	Instructor
1f-2w†	General Psychology ..... (6 cred.; soph., jr., sr.; no prereq.)					Mr. Elliott and others
	Div. A	Lect.	I	MW	OLAud	
		Quiz*	I	F		
		Rec. (one hour)	I	Th or F or S	Psy	
			II	Th or F	Psy	
			VII	Th or F	Psy	
	Div. B	Lect.	III	MWF	OLAud	
		Quiz*	I	F		
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)					
		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) (Sections limited to 48)					
		Sec. 1	I, II	TTh	211Psy	Mr. Tinker and others
	(For pre-leg. stud.)	2	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.Tinker and others
		2	III, IV	MTWF	211Psy	
9s	Introd. to Animal Psychology .. (3 cred.; soph., jr., prereq., 1-2)		III	MWF	109Psy	Mr.Heron

* Three times during quarter. All students must register for this hour.
† The entire course must be completed before credit is received for any quarter.
‡ Offered VI MWF, VII MWF, VIII MWF.
§ Offered II MTWThFS, III MTWThFS.

No.	Title	Hour	Day	Bldg.	Instructor
15s	Psychology of Sensation ..... (3 cred.; soph., jr., sr.; prereq., 1-2)	II	TThS	211Psy	Mr. Tinker
56w*	Psychology of Advertising ..... (3 cred.; jr., sr.; prereq., 1-2, and Prin. of Econ.)	VII	MWF	133Ph	Mr. Longstaff
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. Tinker
108f	Systems of Psychology ..... (3 cred.; jr., sr., grad.; prereq., 1-2; 4-5 or 7)	III	TThS	109Psy	Miss Heidbreder
109w	Readings in Psychology ..... (3 cred.; jr., sr., grad.; prereq., 1-2; 4-5 or 7, or Zool. 1-2; and permission of instructor)	III	TThS	109Psy	Miss Heidbreder
114w-115s†	Human Behavior ..... (6 cred.; jr., sr., grad.; prereq., 1-2; 4-5 or 7, or Zool. 1-2)	II	TThS	115Psy	Mr. Elliott
124f	Psychology of Learning ..... (3 cred.; jr., sr., grad.; prereq., 1-2; 4-5 or 7)	IV	MWF	109Psy	Mr. Heron
125f-126w†-127s	Psy. of Individual Differences .. (6 or 9 cred.; jr., sr., grad.; prereq., 1-2; 4-5 or 7, or Ed. Psy. 116-117)	II	MWF	115Psy	Mr. Paterson
130s	Vocational Psychology ..... (2 cred.; jr., sr., grad.; prereq., 1-2, 4 additional cred. in psy., ed., or a soc. sci.)	IX, X	F	301F	Mr. Paterson
137s	Psychology of Learning ..... (3 cred.; jr., sr., grad.; prereq., 124 or equiv.)	III	TThS	109Psy	Mr. Heron
140w	Social Psychology ..... (3 cred.; jr., sr., grad.; prereq., 1-2; 4-5 or 7, or Zool. 1-2 or 20 cred. in a soc. sci.)	III	TThS	115Psy	Mr. Bird
141s	Political Psychology ..... (3 cred.; jr., sr., grad.; prereq.‡)	III	TThS	115Psy	Mr. Bird
144w-145s†	Abnormal Psychology ..... (6 cred.; jr., sr., grad.; prereq., 1-2; 4-5 or 7, or Zool. 1-2 or 10 cred. in a soc. sci.)	IV	MWF	133Ph	Miss Heidbreder
151f-152w†-153s	Animal Psychology ..... (6 or 9 cred.; jr., sr., grad.; prereq., 1-2, 4-5 or 7, Zool. 1-2)	VI Lab.	MWF Ar	Ar	Mr. Heron
160f	Psychology in Personnel Work .. (3 cred.; jr., sr., grad.; prereq., 1-2, and Prin. of Econ. or 10 cred. in pol. sci.)	VII	MWF	115Psy	Mr. Longstaff

* Cannot be counted for a minor sequence.

† Two quarters must be completed before credit is received for any quarter.

‡ Open to majors in social science who have had Courses 1-2 and 4-5 or 7, or Zoology 1-2 and to majors in psychology who have had Course 140 or 20 credits in social science.

No.	Title	Hour	Day	Bldg.	Instructor
168w	Perception of Space ..... (3 cred.; jr., sr., grad.; prereq., 101-102 or permission of instructor)	Ar	Ar	Ar	Mr. Heron
172	*Reaction Time* ..... (3 cred.; jr., sr., grad.; prereq., 101-102 or permission of instructor)	*Not offered in 1928-29*			

ROMANCE LANGUAGES

Major Advisers

Professors Olmsted, Searles, Phelps, and LeCompte; Associate Professors Barton and Sirich; Assistant Professors Clefton and Arjona.

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 in all.

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 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 in all.

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 in all.

Modifications of these sequences will be permitted upon petition approved by the major adviser and the assistant dean for the Senior College.

For the requirements for the teacher's certificate, consult the bulletin of the College of Education.

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
1f-2w†*	Beginning French	I	TWThFS	213F	Ar
	(10 cred.; fr. with cert. of apt.,	II	MWThFS	227F	Ar
	soph., jr., sr.; no prereq.)	IV	MTWFS	227F	Ar
		VI	MTWThF	226F	Ar
		VII	MTWThF	202F	Ar
1w-2s†*	Beginning French	IV	MTWFS	202F	Ar
	(See 1f-2w)	VI	MTWThF	202F	Ar
1s†*	Beginning French	I	TWThFS	227F	Ar
	(See 1f-2w)	IV	MTWFS	212F	Ar
2f†*	Beginning French	I	TWThFS	202F	Ar
	(2nd qtr. of 1-2. See 1f-2w)	VI	MTWThF	213F	Ar
3f-4w	Intermediate French	I	TWThFS	124F	Ar
	(10 cred.; fr. with cert. of apt.,	III	MTThFS	226F	Ar
	soph., jr., sr.; prereq., 1-2, or	VII	MTWThF	213F	Ar
	2 yrs. high school French)				
3w-4s	Intermediate French	I	TWThFS	202F	Ar
	(See 3f-4w)	VI	MTWThF	213F	Ar
3s	Intermediate French	I	TWThFS	213F	Ar
	(First qtr. of 3-4. See 3f-4w)	II	MWThFS	227F	Ar
		IV	MTWFS	227F	Ar
		VI	MTWThF	226F	Ar
		VII	MTWThF	202F	Ar
4f	Intermediate French	II	MWThFS	113F	Ar
	(2nd qtr. of 3-4. See 3f-4w)	IV	MTWFS	124F	Ar
		VI	MTWThF	202F	Ar
8f-9w-10s§	Scientific French (pre-medic.) ..	I	MWF	201F	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	Mr. Frelin
	yrs. high school French)				
20s‡	Oral and Written French	I	TWThFS	105F	Ar
	(See 20f)	III	MTThFS	226F	Ar
		VII	MTWThF	213F	Mr. Frelin
21f-22w-23s†	Survey of French Lit.	II	TThS	209½F	Mr. LeCompte
	(9 cred.; all; prereq., 3-4 or 20	III	TThS	227F	Mr. Barton
	or 4 yrs. high school French)	VII	MWF	201F	Mr. Searles
24w-25s†	Survey of French Lit.	III	MTThFS	303F	Miss Nissen
	(10 cred.; all; prereq., 3-4 or 20	VII	MTWThF	226F	Mr. Owens
	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)				

* Credit is upsually not given for more than one beginning language. See paragraph 2, page 7.

† The entire course must be completed before credit is received for any quarter.

§ Students may enter any quarter.

‡ See departmental requirements, note on freshmen entering with three years' high school French (or Spanish).

No.	Title	Hour	Day	Bldg.	Instructor
50f-51w-52s	French Conversation¶	III	MW	201F	Mr. Olmsted
	(3 cred.; jr., sr.*; prereq., 3-4)	VI	MW	304F	Miss Nissen
53f-54w-55s	French Composition	III	F	201F	Mr. Olmsted
	(3 cred.; jr., sr.*; prereq., 3-4)	VI	F	304F	Miss Nissen
62w	Practical French Phonetics	VIII	MWF	203F	Miss Guinotte
	(3 cred.; jr., sr.*; prereq., 49)				
63f	Adv. French Composition	II	MWF	203F	Mr. Clefton
	(3 cred.; jr., sr.*; prereq., 53-54-55 or 20 with a grade of B)	VII	MWF	203F	Mr. Barton
64w-65s	Adv. French Conversation	II	MWF	203F	Miss Guinotte
	(6 cred.; jr., sr.*; prereq., 50-51-52 or 20 with a grade of B)	VII	MWF	203F	Mr. Morand
80f-81w-82s	French Lit.: 19th Century	IV	MWF	201F	Mr. Barton
	(9 cred.; jr., sr.*; prereq., 21-22-23 or 24-25)	VII	MWF	206F	Mr. Clefton
100s	French Oral Diction	VIII	MTWF	203F	Miss Guinotte
	(4 cred.; jr., sr., grad.; prereq., 62)				
103f-104w-105s	French Syntax and Comp.	VI	F	203F	Mr. Barton
	(3 cred.; jr., sr., grad.; prereq., 59-60-61)				
115f-116w-117s	French Lit.: 17th Century	III	MWF	227F	Mr. Searles
	(9 cred.; jr., sr., grad.; prereq., 21-22-23, or 24-25)				
118f-119w-120s	French Lit.: 18th Century	III	TThS	114F	Mr. Sirich
	(9 cred.; jr., sr., grad.; prereq., 21-22-23, or 24-25)				
121f-122w-123s	French Lit.: 16th Century	III	MWF	113F	Mr. Morand
	(9 cred.; jr., sr., grad.; prereq., 80-81-82, or 115-116-117 or 118-119-120)				
145w-146s	Explication de Textes	VII	TTh	203F	Mr. Morand
	(4 cred.; jr., sr., grad.; prereq., 80-81-82 or 115-116-117, or 118-119-120)				
150f-151w-152s	French Dramatic Lit.	III	TTh	203F	Mr. Olmsted
	(6 cred.; jr., sr., grad.; prereq., 21-22-23 or 24-25)				
153s	Contemporary French Lyric Poetry	VI	MTWTh	209F	Mr. LeCompte
	(4 cred.; jr., sr., grad.; prereq., 20-21-22 or 24-25)				
154	*Corneille*	*Not offered in 1928-29*			
	(4 cred.; jr., sr., grad.; prereq., 21-22-23 or 24-25)				
155w	Racine	IV	MTWF	212F	Mr. Searles
	(4 cred.; jr., sr., grad.; prereq., 21-22-23 or 24-25)				
156	*Molière*	*Not offered in 1928-29*			
	(4 cred.; jr., sr., grad.; prereq., 21-22-23 or 24-25)				

* Open without petition to sophomores who have an average of C in all their previous work and in the prerequisite courses.

¶ Course 50-51-52 may be taken only when accompanied by Course 53-54-55. Course 53-54-55 may be taken separately.

No.	Title	Hour	Day	Bldg.	Instructor
157w	Modern French Novel ..... (4 cred.; jr., sr., grad.; prereq., 21-22-23 or 24-25)	VI	MTWTh	217F	Mr. Barton
171f-172w-173s†	History of French Language ... (3 cred.; jr., sr., grad.; prereq., 59-60-61)	VIII	Th	203F	Mr. LeCompte
174f-175w-176s	Contemp. French Novel and Drama: 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

NOTE.—Students may receive credit for Italian 1-2 in addition to one other beginning language.

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w,†	Beginning Italian ..... (10 cred.; all; no prereq.)	IV	MTWFS	226F	Miss Phelps
3s	Intermediate Italian ..... (First qtr. of 3-4. 10 cred.; all; prereq., 1-2)	IV	MTWFS	202F	Miss Phelps
4f	Intermediate Italian ..... (See 3s)	IV	MTWFS	205F	Miss Nissen
70f	Survey of Italian Lit. ..... (3 cred.; jr., sr.*; prereq., 3-4‡)	III	MWF	217F	Miss Phelps
71w	Modern Poetry (Leopardi, Carducci) ..... (3 cred.; jr., sr.*; prereq., 3-4‡)	III	MWF	217F	Miss Phelps
72	*Modern Drama (Giacosa, Bracco, Pirandello)* ..... (3 cred.; jr., sr.*; prereq., 3-4‡)	*Not offered in 1928-29*			
73s	Boccaccio ..... (3 cred.; jr., sr.*; prereq., 3-4‡)	III	MWF	217F	Miss Phelps
74	*Petrarch* ..... (3 cred.; jr., sr.*; prereq., 3-4‡)	*Not offered in 1928-29*			
159-160	*Dante* ..... (6 cred.; jr., sr., grad.; prereq., one course above 50)	*Not offered in 1928-29*			
161f-162w	The Sixteenth Century ..... (6 cred.; jr., sr., grad.; prereq., one course above 50)	VII	MWF	217F	Miss Phelps
164s	Dante (in English) ..... (3 cred.; jr., sr., grad.; prereq., French 21-22-23 or 24-25, or 8 cred. in Eng. above 50)	VII	MWF	212F	Miss Phelps

SPANISH

1f-2w†‖	Beginning Spanish ..... (10 cred.; all; no prereq.)	I	TWThFS	226F	Ar
		IV	MTWFS	125F	Ar
		VI	MTWThF	201F	Ar

* 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.

‖ Credit is usually not given for more than one beginning language. See paragraph 2, page 7.

No.	Title	Hour	Day	Bldg.	Instructor
1w-2s†‖	Beginning Spanish ..... (See 1f-2w)	VII	MTWThF	227F (winter)	Ar
		VII	MTThF	(spring)	
		V	W	(spring)	
1s†‖	Beginning Spanish ..... (First qtr. of 1-2)	II	MWThFS	201F	Ar
2f	Beginning Spanish ..... (2nd qtr. of 1-2. See 1f-2w)	III	MTThFS	202F	Ar
3f-4w	Intermediate Spanish ..... (10 cred.; all; prereq., 1-2 or 2 yrs. high school Spanish)	II	MWThFS	201F	Ar
		VI	MTWThF	102F	Ar
3w-4s	Intermediate Spanish ..... (See 3f-4w)	III	MTThFS	202F	Ar
3s	Intermediate Spanish ..... (First qtr. of 3-4. See 3f-4w)	I	TWThFS	226F	Ar
		IV	MTWFS	125F	Ar
		VI	MTWThF	201F	Ar
4f	Intermediate Spanish ..... (2nd qtr. of 1-2. See 1f-2w)	II	MWThFS	202F	Ar
		VI	MTWThF	227F	Ar
20s§	Oral and Written Spanish ..... (5 cred.; all; prereq., 4, or 3 yrs. high school Spanish)	III	MTThFS	213F	Ar
30s	Spanish Commercial Correspondence ..... (3 cred.; all; prereq., 3)	VII	MWF	209F	Ar
50f-51w-52s	Spanish Conversation¶ ..... (3 cred.; jr., sr.*; prereq., 3-4)	II	MW	302F	Ar
53f-54w-55s	Spanish Composition ..... (3 cred.; jr., sr.*; prereq., 3-4)	II	F	302F	Ar
56f-57w-58s	Adv. Spanish Conversation .... (6 cred.; jr., sr.*; prereq., 50-51-52 or 20 with grade of B)	VI	MW	203F	Mr. Arjona
59f-60w-61s	Adv. Spanish Composition ..... (3 cred.; jr., sr.*; prereq., 53-54-55 or 20 with grade of B)	VI	F	217F	Mr. Arjona
65f-66w-67s†	Survey of Spanish Lit. ..... (9 cred.; jr., sr.*; prereq., 3-4)	II	TThS	302F	Ar
68w-69s†	Survey of Spanish Lit. ..... (10 cred.; jr., sr.*; prereq., 3-4)	VI	MTWThF	227F	Ar
110f-111w-112s	Spanish Lit.: 19th Century .... (9 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	IV	MWF	108F	Mr. Arjona
115f-116w-117s	Spanish Lit.: 17th Century .... (9 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	II	TThS	305F	Mr. Arjona
141	*Modern Spanish Novel* ..... (4 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	*Not offered in 1928-29*			

* 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.

§ See departmental requirements, note on freshman entering with three years' high school French (or Spanish).

¶ Course 50-51-52 may be taken only when accompanied by Course 53-54-55. Course 53-54-55 may be taken separately.

‖ Credit is usually not given for more than one beginning language. See paragraph 2, page 7.

No.	Title	Hour	Day	Bldg.	Instructor
150s	Modern Spanish Drama ..... (4 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	III	TThFS	102F	Ar
156-157-158	*Spanish Lit.: 16th Century* .... (9 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	*Not offered in 1928-29*			
174f-175w-176s	Contemporary Spanish Literature: 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.; fr. with cert. of apt., soph., jr., sr.; no prereq.)	I	TWThFS	206F	Mr. Bothne
3s	Intermediate Norwegian ..... (5 cred.; fr. with cert. of apt., soph., jr., sr.; 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
110w	Ibsen ..... (3 cred.; sr., grad.; prereq., 101-102-103)	Ar	Ar	110F	Mr. Bothne
111f-112w-113s	Old Norse (Icelandic) ..... (6 cred.; sr., grad.; prereq., consent of instructor)	Ar	Ar	Ar	Mr. Bothne

* Credit is usually not given for more than one beginning language. See paragraph 2, page 7.
§ Does not count as a senior college course. Not open to sophomores. See Course Numbering, page 21.

No.	Title	Hour	Day	Bldg.	Instructor
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 1928-29*			
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 1928-29*			
134-135	*The Landsmaal Movement* ..... (6 cred.; sr., grad.; prereq., 101-102-103, or 130-131-132)	*Not offered in 1928-29*			
136w	Björnson ..... (3 cred.; sr., grad.; prereq., 101-102-103, or 130-131-132)	II	MWF	110F	Mr. Bothne

SOCIOLOGY AND SOCIAL WORK

Major Advisers

Professors Chapin, Mudgett, Sorokin, Sutherland and Willey; Lecturer Colcord.

Major Sequences

Prerequisites: A total of 25 credits from among the following departments: Sociology, Economics, Education, History, Philosophy, Political Science, Psychology, and Zoology. Students who are deficient in prerequisites may be required to make up their deficiencies in junior college courses.

Sequence A. General sociology. Courses 52 or 53 or 55; three of 100, 101, 102, 103; two of 116, 119, 158 or 160; two of 121, 122, 123; two of 120, 140, 141; 110 or 112 or 114.

Sequence B. Applied sociology. Courses 52, 53, 70; 55 or 60; 126 or 130; two of 128, 133, 134, 138, 139; two of 100, 101, 102, 103; two of 116, 119, 158 or 160; 120 or 122.

Sequence C. Rural sociology. Courses as follows: two of 52, 53, 60; two of 100, 101, 102, 103, two of 116, 119, 158 or 160; 121 or 122; 120 or 140 or 141; 110, 112, 114.

Modifications 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 11 to 13 of this bulletin, and in a special bulletin issued by the Department of Sociology and Social Work.

Honors Course

Students entering the Senior College in 1928-29 will be accepted for registration in the Honors Course if they have had at least two courses in this department, if their grades in this department have averaged B and in other departments C, and if they are approved by a committee of the department. Instead of following a regular major

sequence, a student in the Honors Course will pursue a comprehensive plan of study adjusted to his particular interests and approved by the department. He will be assigned to a member of the department who will serve as his tutor, and with whom he will meet at stated times for consultation. The group of honors students will meet once a week with one or more members of the staff for group discussions. At the end of each year the honors student will be expected to pass a comprehensive examination upon his work.

In no case will less than five quarters of work in residence in the Senior College be accepted as satisfying the requirements of the Honors Course. The proportion of the student's time devoted to the Honors Course is limited and subject to approval by the department.

No.	Title		Hour	Day	Bldg.	Instructor
1f,w	Introd. to Sociology ..... (5 cred.; soph., jr., sr., and 3d qtr. fr. with cert. of apt.; no prereq.)					
		Lect.	I	TTh	OLAud	Mr. Willey, Mr. Sutherland, and others
		Sec. 1	I	MWF	23OPh	
		2	III	MWF	15OPh	
		3	IV	MWF	23OPh	
		4	V	MWF	16OPh	
		5	VI	MWF	23OPh	
		6	VII	MWF	15OPh	
		7	III	TThS	15OPh	
	(Univ. Farm, 3 cred.)	8	IV	MWF	*	
1s	Introd. to Sociology ..... (See 1f)					
		Lect.	I	TTh	OLAud	Mr. Willey, Mr. Sutherland, and others
		Sec. 1	I	MWF	23OPh	
		2	II	MWF	16OPh	
		3	III	MWF	15OPh	
		4	IV	MWF	23OPh	
		5	V	MWF	16OPPh	
		6	VI	MWF	15OPh	
		7	VII	MWF	15OPh	
		8	VII	MWF	23OPh	
		9	II	TThS	15OPh	
		10	III	TThS	15OPh	
	(Univ. Farm, 3 cred.)	11	IV	MWF	*	
6f,w	Social Interaction ..... (3 cred.; soph., jr., sr.; prereq., 1)					
		Lect.	II	WF	OPhAud	
		Sec. 1	I	M	3F	
		2	I	M	6F	
		3	II	M	110F (fall), 114F (winter)	
		4	II	T	15OPh	
		5	II	T	3F	
6s	Social Interaction ..... (See 6f)					
		Lect.	III	MF	OPhAud	
		Sec. 1	III	T	16OPh	
		2	III	W	6F	
		3	III	Th	16OPh	
		4	III	W	109F	
		5	II	T	16OPh	

* Consult the bulletin of College of Agriculture, Forestry, and Home Economics.

No.	Title		Hour	Day	Bldg.	Instructor
14f,w,s	Rural Sociology ..... (3 cred.; soph., jr., sr.; prereq., 1)					Mr. Zimmerman and others
		Lect.	IV	MW	OPhAud	
		Sec. 1	III	S	10OPh	
		2	IV	F	15OPh	
		3	IV	S	15OPh	
		4	VI	Th	23OPh	
		5	VI	F	2F	
45f,w	Social Statistics ..... (5 cred.; soph., jr., sr.; prereq., 1)		VII	MTWThF	23OPh	
49f,w,s	The Occurrence of the Socially Inadequate ..... (3 cred.; 3d qtr. soph., jr., sr.; prereq., 10 cred. in soc. or Soc. 1 and 10 cred. in soc. sci. or psy.)		I	MWF	15OPh	Miss Wheeler
52f,w,s	Elem. Case Work ..... (3 cred.; jr., sr.; prereq., 49, 90)		I	TThS	15OPh	Miss Colcord
53f,w,s	Elem. of Criminology ..... (3 cred.; jr., sr.; prereq., same as for 49)		III	MWF	16OPh	Mr. Sutherland, Mr. Vold
55w	Housing Problems ..... (3 cred.; jr., sr.; prereq., same as for 49)		I	MWF	11OPh	Miss Salsberry
60f,w	Child Welfare ..... (3 cred.; jr., sr.; prereq., 49 and 52)		IX	MWF	23OPh	Mrs. Doyle
70f,w	Group Work in the Community (3 cred.; jr., sr.; prereq., 49)		I	MWF	16OPh	Miss Mead
71f,w	Elementary Field Training in Group Work ..... (2 cred.; jr., sr.; prereq., 49, 70, or simultaneously)		Ar	Ar	Ar	Mrs. Mudgett and Miss Jones
90f,w,s-91f,w,s-92f,w,s	Elementary Field Training in Case Work ..... (2 cred. each qtr.; jr., sr.; prereq., 49, and 52 simultaneously with 90)					
	(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	TTh		
	(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		
	(Spring)	Sec. 1	VI, VII, VIII	MW		Mrs. Mudgett
		2	VI, VII, VIII	WF		
		3	II, III, IV	TTh		
		4	VI, VII, VIII	TTh		

No.	Title	Hour	Day	Bldg.	Instructor
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	16OPh	
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	23OPh	Mr. Sorokin
102s	Social Control ..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	II	MWF	15OPh	Mr. Willey
103s	Sociology of Conflict ..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	II	MWF	23OPh	Mr. Sutherland
110w	Rural Organization ..... (2 cred.; jr., sr., grad.; prereq., same as for 101)	VIII, IX	Th	15OPh	Mr. Zimmerman
112f	The Rural Social Survey ..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	VIII	MWF	15OPh	Mr. Zimmerman
114s	Rural Social Institutions ..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	I	MWF	*	Mr. Lundquist
116w	The Newspaper As a Social Institution ..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	IV	MWF	16OPh	Mr. Willey
119f	The Family ..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	III	TThS	16OPh	Mr. Sutherland
120f	Social Progress ..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	II	MWF	16OPh	Mr. Wallis
121w	Advanced Statistical Methods .. (3 cred.; jr., sr., grad.; prereq., 4 courses in soc., including 45 or its equivalent)	VII	MWF	16OPh	
122w-123s	Methods of Social Investigation (6 cred.; jr., sr., grad.; prereq., same as for 101)	VIII	MWF	15OPh	Mr. Sutherland
126s	Technique of Leadership in Group Work ..... (3 cred.; sr., grad.; prereq., 70, 71)	I	TThS	16OPh	Miss Mead
128s	Principles of Administration Applied to Social Work ..... (2 cred.; jr., sr., grad.; prereq., same as for 101)	VIII, IX	Th	15OPh	Mr. Bradley
130s	Advanced Case Work ..... (2 cred.; sr., grad.; prereq., as for 101 incl. 49 and 52)	VIII, IX	T	15OPh	Miss Colcord
132	*Juvenile Courts and Probation* .. (2 cred.; jr., sr., grad.; prereq., 49, 52, 53)	*Not offered in 1928-29*			

* Consult the bulletin of the College of Agriculture, Forestry, and Home Economics.

No.	Title	Hour	Day	Bldg.	Instructor
133f	Social Case Work in Health Problems ..... (3 cred.; jr., sr., grad.; prereq., 52, 90, and Prev. Med. 50, or 53, or simultaneously)	III, IV ar	S and ar	23OPh	
134s	Legal Protection of the Child .. (3 cred.; jr., sr., grad.; prereq., same as for 101 incl. 60)	I	MWF	16OPh	Mr. Waite
135s	Field Practice in Legal Protection of the Child ..... (2 cred.; jr., sr., grad.; prereq., 90, open to students taking 134)	Ar	Ar	15F	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)	III, IV	S and ar	23OPh	
140w	History of Social Theory ..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	II	MWF	23OPh	Mr. Sorokin
141s	Contemp. Social Theory ..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	II	TThS	23OPh	Mr. Sorokin
152	*Seminar: Problems of Institutional Administration* ..... (2 cred.; sr., grad.; prereq., consent of director)	*Not offered in 1928-29*			
153f,w,s-154f,w,s-155f,w,s	Advanced Field Training in Group or Case Work ..... (3 cred. per qtr.; jr., sr., grad.; prereq., 90 and 91)	Ar	Ar	Ar	Mrs. Mudgett and Miss Jones
158f	The Sociology of Revolution ... (3 cred.; jr., sr., grad.; prereq., same as for 101)	III	MWF	10OPh	Mr. Sorokin
160	*Population Problems* ..... (3 cred.; jr., sr., grad.; prereq., 4 courses in soc., or Soc. 1 and 15 cred. in soc. sci., ed., phil., or psy.)	*Not offered in 1928-29*			

SPEECH

Major Advisers

Professor Rarig; Assistant Professor Bryngelson.

Major Sequences

Prerequisites: 41-42-43; Psychology 1-2. Physiology 4 is recommended for Sequence C.

A. Courses 81-82-83; either 55-56-57 or 101-102 and 105; 67, 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; 67, 121-122; English 129 or 136.

C. Courses 55-56-57; 61; 67, 81-82-83; 121-122; 162-163.

No.	Title	Hour	Day	Bldg.	Instructor
41f-42w†-43s*	Fundamentals of Speech ..... (9 cred.; soph., jr., sr.; prereq., Eng. A-B-C or Comp. 4-5-6 or exemption)				Mr. Rarig and others
	Sec. 1	I	MWF	308F	
	2	II	MWF	308F	
	3	VI	MWF	308F	
	4	I	TThS	311F	
	5	III	TThS	308F	
	6	II	TThS	308F	
41w-42s†*	Fundamentals of Speech ..... (See 41f-42w-43s)	II	MWF	311F	
43f*	Fundamentals of Speech ..... (3d qtr. of 41-42-43. See 41f-42w-43s)	II	MWF	306F	
45f-46w*	Fundamentals of Speech ..... (10 cred.; soph., jr., sr.; prereq., Eng. A-B-C or Comp. 4-5-6 or exemption)				
	Sec. 1	III	MTThFS	101F	
	2	IV	MTWFS	6F	
	3	VI	MTWThF	5F	
	4	VII	MTWThF	308F	
	5	VIII	MTWThF	308F	
45w-46s*	Fundamentals of Speech ..... (See 45f-46w)				
	Sec. 1	IV	MTWFS	101F	
	2	VI	MTWThF	3F	
45s*	Fundamentals of Speech ..... (First qtr. of 45-46. See 45f-46w)				
	Sec. 1	III	MTThFS	25F	
	2	IV	MTWFS	3F	
	3	VI	MTWThF	125F	
	4	VII	MTWThF	308F	
46f*	Fundamentals of Sp-ech ..... (2nd qtr. of 45-46. See 45f-46w)				
	Sec. 1	IV	MTWFS	204F	
	2	VI	MTWThF	3F	
51s*	Advanced Public Speaking .... (3 cred.; jr., sr.; prereq., 41-42-43 or 45-46)	II	MWF	110F	Mr. Holmes
55f-56w-57s‡*	Arg. and Debating ..... (9 cred.; jr., sr.; prereq., 41-42-43 or 45-46)	VII VII, VIII	T Th	OLAud	Ar
61f	Speech Correction ..... (4 cred.; jr., sr.; prereq., 41-42-43 or 45-46; Psy. 1-2)	VI	MTThF	306F	Mr. Bryngelson
67s*	Phonetics ..... (3 cred.; jr., sr.; prereq., 41-42-43 or 45-46)	IV	MWF	19Mu	Mr. Bryngelson

* Students taking these courses are required to pay a laboratory fee of $1 each quarter.
† Two quarters must be completed before credit is received for either quarter.
‡ The entire course must be completed before credit is received for any quarter.

No.	Title	Hour	Day	Bldg.	Instructor
71f-72w-73s*	Elements of Play Production .. (9 cred.; jr., sr.; prereq., 41-42-43 or 45-46)	Ar	Ar	19Mu	Mr. Staadt
81f-82w-83s*	Interpretative Reading ..... (9 cred.; jr., sr.; prereq., 41-42-43 or 45-46)				
	Sec. 1	IV	MWF	308F	Mr. Rarig
	2	I	TThS	308F	Mr. Rarig
91f-92w-93s*	Stagecraft and Direction ..... (9 cred.; jr.. sr.; prereq.,¶ 81-82-83, Eng. 55-56)	VII	MWF	19Mu	Mr. Staadt
97f,w,s	Intercollegiate Oratory and Debate ..... (3 cred.; jr., sr.; prereq.§)	Ar	Ar	308F	Mr. Rarig
101f-102w†	Advanced Speech Composition .. (6 cred.; jr., sr., grad.; prereq., 41-42-43 or 45-46; Psy. 1-2; 10 cred. soc. sci.)	IV	MWF	213F	Mr. Rarig
105	*Theory of Reading and Acting* .. (3 cred.; jr., sr., grad.; prereq., 41-42-43 or 45-46; 81-82-83, and Psy. 1-2)	*Not offered in 1928-29*			
107s	Seminar in Orators ..... (3 cred.; jr., sr., grad.; prereq., 41-42-43 or 45-46, Psy. 1-2, and 10 cred. in soc. sci.)	IV	MWF	213F	
121f-122w†*	Advanced Speech Problems .... (6 cred.; jr., sr., grad.; prereq., 41-42-43 or 45-46, Psy. 1-2)	III	TThS	409F	Mr. Rarig, Mr. Holmes
162w-163s‡*	Advanced Speech Correction ... (6 cred.; jr., sr., grad.; prereq., 41-42-43 or 45-46; 61; 67; Psy. 1-2)	Ar	Ar	Ar	Mr. Bryngelson

ZOOLOGY

Major Advisers

Professors Riley, Downey, and Chapman; Associate Professor Minnich; Assistant Professors Johnson, Mickel, and Ringoen.

Major Sequences

Prerequisites, 1-2 or equivalent, and one each of the alternatives 21 or 22, 23 or 24, and 25 or 26. If possible beginning chemistry and at least one year of French or German should be completed during the junior college work.

A. In Zoology, Courses 109-110-111 or 117-118-119; 107, 125-126 or 144-145; 148-149; 181-182; 183.

B. In special fields, such as ecology, embryology, entomology, experimental zoology, hematology, histology, parasitology, or protozoology, a major will consist of the re-

* Students taking these courses are required to pay a laboratory fee of $1 each quarter.

† The entire course must be completed before credit is received for any quarter.

‡ Speech Clinic. A service clinic is conducted for university students who have particular speech defects, whether or not registered in courses in Speech. 410F. Mr. Bryngelson.

§ Open to the representative of the University in the Northern Oratoric League and to members of the intercollegiate debate squad.

¶ After 1928-29, Course 71-72-73.

spective one hundred course, five or more credits in a problem course in the special field, and additional credits in approved courses to make a total of 27 credits in senior college courses.

Honors Course in Zoology.—A student who has met all of the requirements for admission to the Senior College and who has maintained a grade of B in his work in the department may enroll for the Honors Course in Zoology. Such a student will carry at least twelve hours of problem work in some special phase of the work and will pursue under the direction of his adviser such special reading, and outlined courses as may be required. The completion of the Honors Course will require a reading knowledge of either French or German.

Courses in human anatomy and embryology may be arranged for with the head of the Department of Anatomy.

Courses in general and human physiology may be arranged for with Dean Lyon.

For the requirements for the teacher's certificate, consult the bulletin of the College of Education.

No.	Title		Hour	Day	Bldg.	Instructor
1f-2w†	General Zoology ..... (10 cred.; fr. with cert. of apt., soph., jr., sr.; no prereq.)					Ar
		Lab. Sec. 1	III, IV	MWF	101Z	
	(Limit, 160)	Lect.	III	TThS		
			IV	T	313Z	
		Lab. 2	V, VII	MWF	101Z	
	(Limit, 160)	Lect.	VI, VII	TTh	313Z	
1w-2s†	General Zoology ..... (See 1f-2w)					Mr. Sigerfoos
		Lab. Sec. 1	I, II	MWF	101Z	
		Lect.	I	T		
			II	TThS	313Z	
1s†	General Zoology ..... (First qtr. of 1-2. See 1f-2w)					
		Lab.	VI, VII, VIII	WF	101Z	Ar
		Lect.	VI, VII	MTh	313Z	
5f-6w-7s†	General Zoology ..... (12 cred.; pre-medical and pre-dental students, fr. with cert. of apt., soph., jr., sr.; no prereq.)					
		Lab. Sec. 1	I, II	TS	101Z	Mr. Ringoen
	(Pre-dental)	Lect.	I	MWF	313Z	
		Lab. 2	III, IV	TS	101Z	Mr. Sigerfoos
	(Pre-medical)	Lect.	IV	MWF	313Z	
	(Spring)	Lab.	III, IV	WF	101Z	
		Lect.	IV	MTS	313Z	
8f,9w	Survey Course ..... (6 cred.; all; no prereq.)		III	MWF	313Z	Ar
14f-15w-16s†	General Zoology ..... (9 cred.; Agr., For., H.E.; no prereq.)		See College of Agriculture bulletin.			

† The entire course must be completed before credit is received for any quarter.

No.	Title	Hour	Day	Bldg.	Instructor
21‡	*Introd. to General Physiology* .. (5 cred.; fr., soph., jr., sr.; prereq., 1-2, chem. or phys. desirable)	*Not offered in 1928-29*			
22s	General Ecology ..... (5 cred.; fr., soph., jr., sr.; prereq., 1-2)	VI, VII, VIII VI, VII, VIII, IX	MW F	401Z	Mr. Chapman
23f	Introd. Entomology ..... (5 cred.; soph., jr., sr.; prereq., 1-2)				
	Lect.	VI	MWF	211Z	Mr. Mickel
	Lab.	VI, VII, VIII	TTh	208Z	
24f	Introd. Animal Parasitology .... (5 cred.; soph., jr., sr.; prereq., 1-2)	VI, VII, VIII	MWF	208Z	Mr. Riley
25w	Histology ..... (5 cred.; soph., jr., sr.; prereq., 1-2 and permission of the head of the dept.)	VI, VII, VIII	MWF	201, 211Z	Mr. Ringoen
26w	Comp. Anatomy ..... (5 cred.; soph., jr., sr.; prereq., 1-2)	III, IV	MTWFS	01Z	Mr. Johnson
27w	Technique ..... (3 cred.; soph., jr., sr.; prereq., 15 cred.)				
	Lect.	V	Th	211Z	Miss Slider
	Lab.	Ar	Ar	213Z	
37f-38w-39s†	General Entomology ..... (9 cred.; soph., jr., sr.; prereq., 1-2)	I, II	MWF	208Z	Mr. Mickel
46w-47s†	Ornithology ..... (6 cred.; soph., jr., sr.; prereq., 1-2 and permission of instructor)	VI, VII, VIII	MW	314Z	Dr. Roberts
75s	Nature Study ..... (3 cred.; jr., sr.; prereq., 20 cred. incl. 1-2)	VI, VII, VIII	TTh	213Z	Mr. Sigerfoos
107f	Protozoology ..... (5 cred.; jr., sr., grad.; prereq., 15 cred. incl. 1-2)	I, II	MTWThF	211, 213Z	Mr. Sigerfoos
109-110-111	*Experimental Zoology* ..... (9 cred.; jr., sr., grad.; prereq., 20 cred.)	*Not offered in 1928-29*			
117f-118w-119s	Ecology of Insects ..... (9 cred.; jr., sr., grad.; prereq., 15 cred. incl. 1-2)	VI, VII, VIII	TTh	401Z	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	208Z	Mr. Mickel
139f-140w	Histol. and Develop. of Insects (6 cred.; jr., sr., grad.; prereq., 1-2 and 37-38-39)	III, IV and ar	TTh	208Z	Mr. Riley

† The entire course must be completed before credit is received for any quarter.
‡ Not open to pre-medical students or to those who have had college physiology.

No.	Title	Hour	Day	Bldg.	Instructor
144f-145w-146s	Animal Parasites and Parasitism (9 cred.; jr., sr., grad.; prereq., 15 cred. in zool., or 1-2 and 1 yr. chem.)	VI, VII, VIII	WF	208Z	Mr. Riley
148f-149w-150s†	Histology and Organology .... (9 cred.; jr., sr., grad.; prereq., 1-2, and 15 cred. in zool., or 1-2 and 1 yr. chem. and permission of head of dept.)	III, IV	MWF	201, 211Z	Mr. Downey
154w-155s†	Hematology ..... (6 cred.; jr., sr., grad.; prereq., histol., embryol.)	VII, VIII, IX	TTh	201, 211Z	Mr. Downey
181f-182w	Embryology ..... (6 cred.; jr., sr., grad.; prereq., 1-3 and 25 or equiv.)	VI, VII, VIII	TTh	202Z	Mr. Ringoen
183s	Genetics and Eugenics ..... (3 cred.; jr., sr., grad.; prereq., 1-3 and 5 other cred. in zool. or botany)	IV V	TS Th	211Z	Ar
197f-198w-199s	Problems ..... (5 or more cred.; jr., 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.

COURSES IN OTHER COLLEGES

Certain courses in other colleges are open to election by seniors, according to General Information, Section 42 (Part I of this bulletin). Students interested in such courses may consult the assistant dean for the Senior College.

† The entire course must be completed before credit is received for any quarter.

SUPPLEMENT TO PART I

GENERAL INFORMATION

1. *Admission to the freshman year.*—Students are admitted to this college either by certificate from an accredited secondary school or by examination. For details concerning the requirements in either case consult the bulletin of general information, pages 27 to 29.

19. *Credits and honor points.*—Revised to read: The grade of F carries minus one honor point per credit. The penalty cannot be removed by repeating the course with a passing grade.

33. Revised to read: No course for which a student has received credit may be repeated by him to raise his grade.

GENERAL REGULATIONS

30. *Eligibility.*—A student who is ineligible because of a condition may become eligible by removing the condition.

A student who is ineligible because of failure in a course required for graduation may become eligible (a) by repeating the course with a passing grade, or (b) by earning an average of one honor point per credit on a program of at least fifteen credits during the quarter immediately preceding participation. The two terms of a Summer Session may count as a quarter for this purpose.

A student who is ineligible because of a failure in a course not required for graduation may become eligible by either of the above methods or by completing one full year of work.

DESCRIPTION OF NEW COURSES

ANTHROPOLOGY

114. The American People. Distinguishing physical and mental characteristics of the old American.

ASTRONOMY

51. General Astronomy. A survey course covering the fundamental facts and principles of astronomy. Similar to Course 11 but intended for senior college students.

52. Astrophysics. A descriptive study of the principles of spectroscopy and their applications to astronomy.

53. Stellar Astronomy. Special emphasis upon the distribution, organization, and evolution of the heavenly bodies.

62. Field Astronomy. Elements of practical astronomy. Field work with the surveyor's transit and the sextant for determining latitude, clock error, longitude, and azimuth.

CHEMISTRY

132, 133. Electrometric Measurements and Titrations.
134. Seminar: Modern Problems in Analytical Chemistry.
101-102-103. Advanced Organic Chemistry.
161-162-163. Radioactivity.
164. Radioactivity Laboratory

DRAWING

81. Advanced Drawing. Composition and layouts for commercial purposes and reproduction. Practice in black and white drawings, in washes, and in opaque colors.
86. Anatomical Drawing. A special course for students of biology and medicine. Diagrammatic and artistic drawings of specimens.

ECONOMICS

1. Business Organization: Marketing. An introduction to the economics of marketing, including descriptions of (1) the marketing processes, (2) produce exchanges and speculation on these exchanges, (3) co-operative marketing institutions, (4) market areas. The operation of supply and demand in marketing.
2. Business Organization: Production. Description of industrial organization. An elementary treatment of the economic principles involved in production.
20. Elements of Accounting. The fundamental principles and processes underlying bookkeeping and accounting. Sufficient practice in technical processes will be given to serve as a background for more advanced work. Preparation and analysis of statements.
30-31‡. Secretarial Training: Shorthand. This course consists of a thoro study of the fundamental principles of shorthand, at the same time stressing the acquisition of a high rate of speed.
32-33-34‡ Secretarial Training: Typewriting. A thoro knowledge of typing technique is acquired and a study made of business forms.
40-41.‡ Secretarial Training: Dictation. Economics 30-31 required as a prerequisite. A dictation and transcription course involving the application of the knowledge acquired in the previous courses.
124. Comparative Banking: British Systems. A study of the existing financial institutions of the various members of the British Empire with regard to development, functions, methods, and problems. Constant comparison is made with the American system.
125. Comparative Banking: European Systems. Similar to Course 124, except that five of the continental systems will be studied instead of the British systems.
166. Contemporary Economic Problems. A survey of current problems including monetary stabilization, reparations, international debts and the Dawes Plan, foreign investments and economic imperialism, international cartels and tariff barriers, international wage levels, population and immigration movements.

‡ Cannot be counted for a degree in this college.

ENGLISH

77-78. Classic Myths and the Classic Tradition in English Poetry. Some ancient literature (in translation), and representative poets from Chaucer to the present.

157-158. Elizabethan Non-Dramatic Literature. Renaissance background: lyric and narrative poetry, prose fiction, pamphlets, translations, critical essays.

GEOLOGY

161. Crystal Structure. Study of point groups and space groups. Diffraction of X-rays by crystals. Interpretation of powder and Laue diagrams.

GERMAN

85-86. Literary Relations between France and Germany.

GREEK

61-62-63. Advanced Composition. Translation into Greek of selected passages of English prose, with review of important principles of syntax.

HISTORY

14-15-16. Foundations of Modern Europe.

133. Ancient Civilization of the Near East. Egypt, Mesopotamia, Israel, and neighboring lands. Archeological discovery and history.

134. Greek and Roman Civilization I. A comparative study of social life, thought, and religion.

135. Greek and Roman Civilization II. Economic aspects: agriculture, manufactures, commerce, slavery. Towns and public works. Ancient exploration, trade routes, travel, and colonization.

HOW TO STUDY

1. How To Study. An analysis of the skills involved in academic work. Intensive study of principles underlying budgeting time, efficient reading, and organization of knowledge.

JOURNALISM

17. Newspaper Reference Library. A study of the use of reference material and of newspaper reference library and filing methods.

PHYSICAL EDUCATION FOR WOMEN

24. Sophomore Horseback Riding. Lessons for beginning and advanced classes under competent instruction, supervised by a member of the Department of Physical Education for Women.

27. Sophomore Golf. The fall quarter is open to students who know the rudiments of golf, and the spring quarter is open only to beginners in golf.

30. Sophomore Life Saving and Water Sports.

PHYSICS

136. Spectrum Analysis. An experimental course dealing with the measurement of wave lengths, intensities, and absorption coefficients in the infra-red, visible, and ultra-violet regions of the spectrum. Two three-hour laboratory periods each week.

POLITICAL SCIENCE

81-82-83. Readings for Honors. Junior course.

91-92-93. Readings for Honors. Senior course.

161-162. Current Political Thought. A study of present-day schools of political thought, and of the manner in which they view the central problems of sovereignty, liberty, political obligation, and the functions and organization of the state.

193. Problems of the Pacific. Intensive study of selected problems, varying from year to year, in the political and constitutional developments, or in the foreign relations, of Far Eastern countries.

PSYCHOLOGY

9. Introduction to Animal Psychology. 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.

168. Perception of Space. An intensive study of visual, auditory, and somaesthetic space perception. Lectures, readings, and a special report or investigation.

172. Reaction Time. The factors which influence reaction time. The significance of reaction time as a measure of complicated neuromuscular activity. Lectures, readings, and a special report or investigation.

ROMANCE LANGUAGES

85-86. Literary Relations between France and Germany.

154. Corneille.

155. Racine.

SOCIOLOGY

116. The Newspaper As a Social Institution. A study of the social rôle of the newspaper in the United States, with special reference to the social changes that have influenced the press, and the corresponding influences of the press upon social life.

SPEECH

71-72-73. Elementary Play Production. Elementary principles of make-up and acting. History of the theater. Reading of plays. Knowledge and use of stage equipment. The organization and management of the production staff.

91-92-93. Stagecraft and Direction. The translation of the writer's meanings into the symbols of the acted drama. Atmosphere, tempo, contrast, climax. The connotation of selected properties. Management of a production from the selection of the play to the presentation.

162-163. Advanced Speech Correction. The physiological and psychological aspects of organic and functional speech problems. Theories of stuttering. Diagnoses, case histories, and treatment of speech cases. Observation of clinical diagnosis and treatment.

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ADMINISTRATION

Lotus Delta Coffman, Ph.D., LL.D., President
William Watts Folwell, M.A., LL.D., President Emeritus

INSTITUTE OF CHILD WELFARE

John E. Anderson, Ph.D., Professor of Psychology and Director of the Institute of Child Welfare
Edith Boyd, M.D., Assistant Professor in charge of Infant Studies
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 in Child Welfare and Psychologist
Lawrence F. Richdorf, M.D., Ph.D., Assistant Professor of Pediatrics and Research Assistant
M. Adelia Boynton, Ph.B., Teacher in Nursery School
Clara R. Brian, M.A., Instructor and Extension Worker
Marion L. Faegre, B.A., Instructor and Extension Worker
Marion L. Mattson, M.A., Teacher in Nursery School
Mary M. Shirley, Ph.D., Instructor in Psychology and Research Worker
Catherine M. Thompson, Teacher in Nursery School
Ruth E. Atkins, M.A., Research Assistant in Education
Violet Bemmels, Research Assistant
Joseph T. Cohen, D.D.S., Research Assistant in Dentistry
Margaret Dickinson, B.A., Research Assistant
Lucille L. Emerson, B.A., Research Assistant
Florence Justin, M.A., Research Assistant in Home Economics
S. Margaret Light, B.A., Research Assistant in Psychology
Dorothea A. McCarthy, B.A., Research Assistant in Psychology
Hildur M. Nordstrom, Nurse in Nursery School
Carroll E. Palmer, M.A., Research Assistant in Pediatrics
Mildred B. Parten, B.A., Research Assistant in Sociology
Cathryn Probst, B.A., Research Assistant
Magda S. Skalet, B.S., Research Assistant in Sociology
Mary Eunice Snyder, B.A., Teaching Assistant, Nursery School
Myrtle F. Walsh, Teaching Assistant, Nursery School
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., Associate Professor of Farm Management and 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 the Department of Pediatrics

Julia O. Newton, B.A., Associate Professor of Home Economics and State Leader, Home Economics Extension

Eula B. Butzerin, R.N., B.S., Assistant Professor of Preventive Medicine and Public Health

Edna F. Heidbreder, Ph.D., Assistant Professor of Psychology

Jane M. Leichsenring, Ph.D., Assistant Professor of Home Economics

Willard C. Olson, Ph.D., Assistant Professor of Educational Psychology

John G. Rockwell, B.A., Assistant Professor of Educational Psychology

Iva I. Sell, M.A., Instructor in Home Economics

Anne Culligan, B.A., Instructor in Sociology

Chester R. Garvey, B.A., Teaching Assistant in Psychology

GENERAL INFORMATION

The Institute of Child Welfare was organized at the University of Minnesota in July, 1925, for the purpose of making scientific studies of the development of the young child, training future workers in the field, and bringing 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 co-operating with the schools, colleges, and departments of the University which are carrying on work related to its 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 of thirty-six children aged two, three, and four years, which 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 a considerable number of young children are being studied under home conditions. Studies on the physical and mental development of infants from birth to two years of age are being carried on both in private homes and in institutions.

COURSES OF STUDY

It has been the aim of the institute to develop its instructional program to supplement and round out the courses already offered in other departments and colleges 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. 40.* Child Training. A study of the physical and mental development of the child followed by a discussion of the problems of training young children. Observations in the Nursery School, lectures, and reports. (3 cred.; jr., sr.; prereq., Psy. 1-2.) Mrs. Foster.

C.W. 50w-51s.† Nursery School Methods. A consideration of the materials and methods utilized in the training of small children as individuals and in groups. Observations in the Nursery School, lectures, discussions, and reports. (6 cred.; jr., sr.; prereq., 6 cred. in psychology or education and C.W. 40 or C.W. 60.) Mrs. Foster.

C.W. 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. 50-51, and permission of instructor.) Mrs. Foster.

C.W. 60f. The Nursery School and Parental Education Movement. To orient student with reference to the Nursery School and the parental education movement. Consideration given also to the kindergarten and Montessori movement and to the physical and mental hygiene movement. (2 cred.; jr., sr.; prereq., 6 cred. in psychology and 5 cred. in social sciences.) Miss Dixon.

C.W. 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 those who have charge of groups of children, and for workers in parental education. Opportunities for observation in the Nursery School and in clinics. 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. 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 child welfare or psychology or equivalent, and permission of instructor.) Mr. Anderson.

C.W. 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. (4 or 6 cred.; sr., grad.; prereq., 10 credits in psychology or

* Offered in fall and spring quarters as Home Economics Education 40. Consult bulletin of the College of Agriculture, Forestry, and Home Economics.

† Two quarters must be completed before credit is received for any quarter.

educational psychology, including one laboratory course, or the equivalent, and permission of instructor.) Miss Goodenough.

C.W. 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. 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. 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. 170 and permission of instructor.) Miss Dixon.

C.W. 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. 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. 233-234-235. Research in the Development of the Young Child. (Cred. ar.; grad. students only.) Mr. Anderson, Mrs. Foster, Miss Goodenough.

C.W. 250-251-252. Seminar in Nursery School Education. Reviews and interpretations of current literature, discussion of fundamental problems and theory, problems of administration and organization. (3 cred.; grad. students only, permission of instructor; hrs. ar.) 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 of some of these 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.

Anat. 133. Anatomy of Fetus and Child.
Anat. 135. Physical Development of Childhood.
Art. Ed. 36. Cardboard and Paper Construction.
Ed. 44. Children's Literature.
Ed. 141. Phonetic Disorders of Speech.
Ed. 181. Technique of Elementary Instruction.
Ed. Psy. 143, 144, 145. Individual Mental Examination.
Ed. Psy. 149, 150, 151. Psycho-educational Clinic.
Ed. Psy. 157. Ontogenetic Psychology. With emphasis on the activities of the pre-school child.
Ed. Psy. 192, 193. Psychology of Behavior Problems in Children.
H.E. 19. Nutritional Aspects of Health.

† Two quarters must be completed before credit is received for any quarter.

H.E. 70. Food Preparation.
H.E. 71. Elementary Dietetics.
Hist. Ed. 103. History of Modern Elementary Education.
Phys. Ed. 87. Personal and School Hygiene.
Prev. Med. 52. Health Care of the Family.
Prev. Med. 57. Health of Infant and Pre-school Child.
Prev. Med. 58. Maternal and Child Hygiene.
Prev. Med. 61. Mental Hygiene.
Prev. Med. 64. Field Practice in Infant Welfare Nursing.
Psy. 125, 126, 127. Psychology of Individual Differences.
Psy. 144, 145. Abnormal Psychology.
Soc. 14. Rural Sociology.
Soc. 52. Elementary Case Work.
Soc. 60. Child Welfare.
Soc. 119. The Family.
Soc. 133. Social Case Work in Health Problems.
Soc. 134. Legal Protection of the Child.
Soc. 135. Field Practice in Legal Protection of the Child.
Soc. 138, 139. Mental Case Work.
Speech 61. Speech Correction.

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

For the purpose of this curriculum, the student must present the following:

a. 9 cred. in composition.
b. 10 cred. in psychology, including a laboratory course.
c. 10 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. 50, Nurs. Sch. Methods	3
C.W. 60. N. S. & P. Ed. Movement	2	C.W. 50, Nurs. Sch. Methods	3	Electives	9
Ed. Psy. 157, Ontogenetic Psy.	2	C.W. 40, Child Train.	3		
Electives	5	Ed. Psy. 158, Ontogenetic Psy.	2		
		Electives	1		
	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. 53. Nurs. Sch. Tech.	2	C.W. 54, Nurs. Sch. Tech.	2
C.W. 170, Parental Ed.	3	Prev. Med. 58, Maternal and Child Hygiene	2	Ed. 103, Hist. Mod. Elem. Ed.	3
C.W. 52, Nurs. Sch. Tech.	2	Soc. 90, Field Work	2	C.W. 130, Dev. Young Child	3
Soc. 90, Elem. Field Work	2	Electives	9	Electives	7
Electives	6				
	15		15		15

SUMMER SCHOOL COURSES

In the summer quarter many of the institute courses are offered as are also many of the courses relating to the young child in other departments. 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. Qualified graduate students may major or minor in child welfare for an advanced degree.

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 for 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 Club, 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 1927-28, they are being given in Minneapolis, St. Paul, and Duluth.

C.W. 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. 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. 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.
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.

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 which are presented in simple language are mailed to those registered one each week until the entire sixteen are sent out. As this bulletin goes to press over two thousand in every section of Minnesota are enrolled. A registration blank for this course may be obtained by writing to the General Extension Division, University of Minnesota, Minneapolis.

The Bulletin *of the* University *of* Minnesota

Division of Library Instruction
Announcement for the Year
1928 - 1929

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OFFICERS AND FACULTY

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Ina Ten Eyck Firkins, B.L., Reference Librarian, Associate Professor of Library Methods

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Elizabeth B. Scripture, B.A., Librarian, East High School, Minneapolis, Instructor in Library Administration

Clara F. Baldwin, B.A., Director of Libraries, Minnesota State Education Department, Lecturer on Library Administration

Edna L. Goss, B.L.S., Head, Catalog Department, University of Minnesota Library, Lecturer on Cataloging

Mabel Grondahl, B.A., Cataloger, University of Minnesota Library, Lecturer on Use of Books and Libraries

Blanche Moen, B.A., Reference Assistant, University of Minnesota Library, Lecturer on Use of Books and Libraries

Helen M. Smith, B.A., Head, Circulation Department, University of Minnesota Library, Lecturer on Library Administration

Harriet A. Wood, B.A., Assistant Director of Libraries and Supervisor of School Libraries, Minnesota State Education Department, Lecturer on Library Administration

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A full schedule of instructors and courses will be issued later.

More specific information regarding the courses in Library Instruction may be obtained on application to

The Director, Division of Library Instruction,

University of Minnesota,

Minneapolis, Minnesota

GENERAL INFORMATION

The Division of Library Instruction of the University of Minnesota was established by the regents of the University in April, 1928, in response to a very definite demand by school officials, library boards, and librarians and prospective students desiring training for professional librarianship.

The purpose of the division is to unite for instructional and administrative purposes all the facilities of the University for training librarians for service in libraries of varied types. The division will submit to the different schools, colleges, or other units of the University interested in such training, curricula or programs suitable for the different types of work desired. It will maintain an instructional staff for carrying on such courses or curricula as may be approved by these university units.

Credit for such courses will be given by the school or college approving them for inclusion in its curriculum. Students who offer these courses in library training as a partial requirement for a degree must comply in every particular with the requirements of the school or college from which the degree is desired. These specific requirements are included in the regular announcements of the various schools and colleges of the University. These announcements may be obtained on application to the registrar of the University.

The professional courses in library instruction are senior college courses, intended primarily for juniors and seniors. In other words, at least two full years of approved college work are required as prerequisites for regular admission to and of these courses. Persons of maturity, not eligible for regular registration, may be admitted by passing such tests as may be required by university regulations to demonstrate their ability to carry the work they wish to undertake.

Registration.—All students, whether full time or part time, must be regularly registered. Full information concerning registration is given in the general information bulletin, which may be obtained on application to the registrar of the University.

Fees and expenses.—The tuition fees are, for full time students, $40 per quarter for residents of Minnesota and $45 per quarter for non-residents. Unclassed students, auditors, and others carrying less than full work in library instruction (15 credits per quarter) pay a tuition fee of $3 per credit per hour for all courses under the supervision of the Division of Library Instruction, irrespective of their registration in courses in other subjects. The incidental, penalty, and other general fees are given in the general information bulletin, in which information concerning the cost of board and room and other estimated expenses may also be found.

COURSES OF STUDY

Two programs of one year each, leading to the degree of bachelor of science, will be offered in 1928-29. These, for the present, differ chiefly in the prerequisites, tho opportunity for greater diversity will be offered as opportunity permits. Each requires for its completion four full years of work, including a full year of professional training in library methods, in the college in which the student is registered. All regulations of the college from which the degree is desired must be complied with before the degree will be granted.

A special course in Hospital Library Work, involving five years of work, is outlined on pages 9-11.

NON-PROFESSIONAL COURSE FOR FRESHMEN AND SOPHOMORES

Library Methods 1. Use of Books and Libraries. Study of reference books and library methods for personal study and research. Lectures, examination of reference material, and problems in its use. Not a professional course. No credit toward a degree in library training, but general credit is given in the College of Science, Literature, and the Arts. 2 credits.

PROFESSIONAL COURSES

The courses below, aggregating a full year of college work, are open for regular credit only to students who have met all the requirements for admission to the senior college courses in the colleges specified in the programs below. Courses not to exceed eighteen credits may be taken in the junior year, but this is not necessary nor will it shorten the full course required for a degree.

DESCRIPTION OF COURSES

Lib. Meth. 101. Bibliography. Trade and national bibliography; English, American, French, and German booksellers' catalogs. Special emphasis on relation to book ordering and preparation of simple reference lists and check lists. 3 credits.

Lib. Meth. 102. Cataloging (a). Author, title, and subject entries for dictionary card catalogs. Use of Library of Congress and simplified entries. Lectures, problems, and practice work. 3 credits first quarter.

Lib. Meth. 103. Cataloging (b). Continuation of Cataloging (a). Subject headings, series and corporate entries, foreign books, administration of catalog departments, difficult books. Lectures, problems, and practice work. 3 credits second quarter.

Lib. Meth. 104. Classification (a). Classification of books by the Dewey Decimal System for small and public libraries. Relation of classification and subject headings. Cutter author numbers, shelf list, and ac-

cession records. Lectures, problems, and practice. 3 credits for one quarter.

Lib. Meth. 105. Classification (b). Brief discussion of the Library of Congress and other classifications. Classed catalogs. Adaptation of classification to special purposes and classification of difficult books. 3 credits for second quarter.

Lib. Meth. 106. Current Library Problems (a-b). Development of library service with special emphasis on the United States. Discussion of current library problems and conditions. 3 credits, first and second quarters.

Lib. Meth. 107. Library Administration (a). Lectures, discussions, and reports on administrative methods and problems in school libraries. 3 credits.

Lib. Meth. 108. Library Administration (b). Lectures, discussions, and problems in administrative methods and problems in public libraries. Loan work, equipment, finance, staff problems, etc. 3 credits.

Lib. Meth. 109. Library Work with Children (c). Lectures, discussions, and reports on the administration of children's reading rooms and the selection of children's books. 3 credits.

Lib. Meth. 110. Library Binding and Printing and Publicity. Bookbinding and book repair for libraries. Criticism of representative printed material, proofreading, and editing, and use of publicity material and methods. 3 credits.

Lib. Meth. 111. Practice Work. Practice, under careful supervision, in the libraries of Minneapolis and St. Paul. The practice will be adapted to individual students and records kept as an evidence of fitness or lack of fitness for the special type of work selected by each student. 3 credits, arranged to suit the schedules of the students and co-operating libraries, usually in the second and third quarters.

Lib. Meth. 112. Reference (a). Study of general reference works with relation to methods of search and adaptation of material to needs of users. Lectures, discussions, problems. 3 credits.

Lib. Meth. 113. Reference (b). Study of specialized reference material, public documents, and periodicals. Preparation of reference lists, reports on specific assigned problems. 3 credits.

Lib. Meth. 114. (a) Selection of Books for Adolescents. Principles of selection, criticism of representative books, and study of representative book lists. Relation of book selection to high school and public library service. 3 credits for two quarters.

Lib. Meth. 115. (b) Selection of Books for Adults. Principles of selection, criticism of representative books. Discussion of representative book lists and preparation of original lists. 3 credits each for two quarters.

A detailed program giving the instructors and hours for each course will be issued later. Unless otherwise announced, classes in Library Instruction will meet in Lib. 5 (Room 5, the Library). The laboratory classroom, recitation rooms, and offices of the division are located in the south end of the basement of the University Library building.

PROGRAM OF COURSES

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).

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.

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.

The following tentative schedule of courses is subject to some modification to accommodate variations in college schedules. At least 15 credits per quarter must be selected by full time students:

Fall	Credits	Winter	Credits	Spring	Credits
101f Bibliography	3	103w Cataloging	3	106 Library Printing and Binding	3
102f Cataloging	3	105w Classification	3	107 Library Administration	3
104f Classification	3	106w Current Library-Problems	3		
		109w Library Administration	3		
106f Current Library Problems	3				
		112w Reference	3	108 Library Administration	3
115f Selection of Books	2-3	114w Selection of Books	2-3	112f Reference	3
111f Practice	3	115w Selection of Books	3	Selection of Books	2-3
		Practice	3	Practice	3

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

The successful completion of three years of work in the general course of the College of Science, Literature, and the Arts in addition to not less than 45 credits for courses listed on pages 5-6 will entitle the student to the degree of bachelor of science. The specific requirements for the three years of preliminary work may be found in the special bulletins of the College of Science, Literature, and the Arts.

Courses in library methods totaling not more than eighteen credits, may be taken in the junior year, tho this will not usually be advisable.

COLLEGE OF EDUCATION

SPECIALIZED CURRICULUM FOR SCHOOL LIBRARIAN

The successful completion of the following four-year curriculum will entitle the student to the degree of bachelor of science and to the university teacher's certificate for library training. Students will satisfy the requirements for a teaching major or for two teaching minors. It will be wisest to choose majors and minors in the fields of English and history. Students who complete Courses 102f, 103f, 112w, 114w, 107s, 108s will satisfy the requirements for a minor in library training.

Freshman Year

Fall	Credits	Winter	Credits	Spring	Credits
English	5	English	5	English	5
Modern World	5	Modern World	5	Modern World	5
Language	5	Language	5	Language	5
	15		15		15

Sophomore Year

Fall	Credits	Winter	Credits	Spring	Credits
Science	5	Science	5	Elective	5
Language	5	Elective	7	Elective	5
Psychology	3	Psychology	3	Elective	5
Elective	2				
	15		15		15

Junior Year

Fall	Credits	Winter	Credits	Spring	Credits
102 Cataloging	3	112 Reference	3	107 Library Administration	3
103 Classification	3	114 Selection of Books	3	108 Library Administration	3
55 Ed. Psy.	3	Ed. Ad. 65 The High School	3	T. 15 Tech. of H. S. Instruction	3
Continuation of required elective academic courses	6	Continuation of required elective academic courses	6	Continuation of required elective academic courses	6
	15		15		15

Senior Year

Fall	Credits	Winter	Credits	Spring	Credits
Special Methods and Practice Teaching	3	Special Methods and Practice Teaching	3	Special Methods and Practice Teaching	3

Completion of academic requirements—fall, winter, spring.
Library courses—27-45 credits—fall, winter, spring.

COURSE IN HOSPITAL LIBRARY SERVICE

The program and general statements below have been prepared by officers of the Medical School and the School of Nursing and, therefore, represent expert opinion on the subject.

A demand exists for library service in hospitals and allied institutions. It is a growing demand voiced everywhere and especially in the hospitals of the large cities. A brief experience of this service has taught hospital administrators, physicians, and nurses the remedial value of reading. It serves as a form of occupational therapy which promotes the patient's happiness and tends, therefore, to a more rapid cure of his disabilities, if they are of a curable nature, and to the exercise of greater patience and contentment if they are not.

The librarian can find no field of more rewarding service than this, nor one which calls for more educated insight and technical adaptation. It follows that such a course as the University offers in Hospital Library Service must be the capsheaf of the ordinary university courses by which librarians are prepared for their profession. This bulletin outlines a sequence of three years of collegiate study, one year of library training, and a fifth year in theory and practice of hospital library service, which should insure fitness for this work.

The Committee of Advisers will be glad to guide students through this entire period. It will also approve the admission and direct the further work of those who present credentials of collegiate and professional library education already taken and desire to complete their preparation in the fifth year devoted to this specialized branch. Both groups are invited, the one to register for the entire course; the other, with previous satisfactory preparation, to register for the final year.

In a word, the purpose of this special year is to give the necessary social, scientific and economic background for the successful application of library method to the service of the sick and convalescent in hospital residence, and incidentally, of those who are in professional attendance upon them.

The field work will be given, under careful supervision, in hospitals of Minneapolis and St. Paul, the former of which has organized hospital library service under the direction of the public library of that city.

REQUIREMENTS FOR ADMISSION

The number of applicants who can be admitted to the preparatory work of the proposed five-year course is practically unlimited, but the number who can be chosen for the fifth or special year, with advanced standing, must be strictly limited. Evidence of the personal and professional fitness of applicants for the fifth year course will, therefore, be required.

The general rules for admission to the College of Science, Literature, and the Arts will apply.

REGISTRATION

Students will register in the College of Science, Literature, and the Arts. They will be expected to indicate the sequence of studies in the particular

subject which they desire to pursue. A committee of advisers will endeavor to adapt courses to the need and prior preparation of each student. The chairman of this committee is the director of the Division of Library Instruction.

COURSES OF STUDY

The following outline of prerequisites desired in the four years of collegiate and professional study will serve as a general guide. The committee will gladly direct the prospective student in the choice of electives to be added to the required courses.

COURSES FOR STUDENTS PROVIDING A MINIMUM OF THREE YEARS' APPROVED COLLEGIATE STUDY IN AN ACCREDITED INSTITUTION, ONE YEAR OF APPROVED PROFESSIONAL LIBRARY TRAINING, AND ONE YEAR OF SPECIAL TRAINING IN HOSPITAL LIBRARY SERVICE

Courses of Study in the First Two Years

Department	No.	Course	Quarters	Credits
English	A-B-C	Freshman English	3	15
English	18-19	Rhetoric	2	6
French	1-2 or 3-4	Beginning French	2	10
German	1, 2, 3 or 4, 7, 8	Beginning German	3	15
Sociology	1	Introduction to Sociology	1	5
Sociology	51	Occurrence of the Socially Inadequate	1	3
Sociology	52	Elementary Case Work	1	3
History	1-2	Modern Work History	2	10
Zoology	5, 6, 7 or 1-2	General Zoology	3	12
Physical Culture	4	Preliminary Hygiene	1	0
Gymnasium	1	Gymnasium	3	0
Electives				10

Electives to the value of 11 credits, making a total of 90 credits, must be added to these prerequisites. Courses in psychology, or additional courses in English, foreign languages, and history, are advised.

Courses of Study in the Third Year

Department	No.	Course	Quarters	Credits
Psychology	1-2	General Psychology	2	6
Psychology	3	Psychology Applied to Daily Life	1	3
Psychology	7	Introductory Laboratory Psychology	2	4
Sociology	6	Modern Social Reform Movements	1	3
Sociology	45	Social Statistics	1	5
English		(At least 9 additional credits of student's election)	3	9
Psychology	4	Human Physiology	1	5
Electives				10

For 10 credits in electives required to complete the total of 45 units in the third year, courses in educational psychology, educational sociology, literature, or history are advised.

Equivalent credits in other foreign languages will be considered as substitutes for credits in either French or German.

LIBRARY METHODS

Courses of Study in the Fourth Year

Inasmuch as there is no general basis of terminology or of course evaluation among library schools, credits in this group of subjects will be adjusted on the basis of the standing of the school in which they have been taken, the previous preparation of the applicant, the quality of the work done at the school and the scope of the course individually pursued. A total of at least forty-five credits in library training courses is required. The general library training courses offered at the University of Minnesota are outlined on pages 5-6.

HOSPITAL LIBRARY SERVICE

Courses of Study in the Fifth Year

Department	No.	Course	Quarters	Credits
Preventive Medicine	53	Preventive Medicine	1	3
Preventive Medicine	61	Mental Hygiene	1	1
School of Nursing	11	Ethics of Nursing	1	1
Medical Social Service	151	Principles and Practice of Medical Social Service in Clinic, Hospital, and Home	1	3
Medical Social Service	157	Relationships of Hospital to Social Work	1	1
Medical Social Service	158	Occupational Therapy	1	3
Medical Social Service	159	Hospitals and Hospital Economics	1	1
Medicine	68	Therapeutic Value of Reading	1	1
Medicine	75	Nervous and Mental Conditions	1	1
Library Meth.	116	Hospital Library Administration	1	1
Library Meth.	117	Literature for Use of Hospital Groups (six hours weekly of required reading)	1	9
Library Meth.	118	Field Work in Hospital Libraries	3	9

Electives to the value of 11 credits to complete the total of 45 credits. Choice of these electives to be governed by choice of the student's projected field of service.

CERTIFICATES IN THE HOSPITAL LIBRARY SERVICE COURSE

Students who become candidates for the university's degree or certificate in these courses will conceivably be of either one of three groups:

A. Students who satisfactorily pursue the entire five-year course of study outlined above, at this University will be candidates for the degree of bachelor of science.

B. Students from approved institutions who carry credits covering one or more years of acceptable collegiate and professional study in this field, upon satisfactory completion of their work, including the fifth year in residence, may become candidates for the degree of bachelor of science.

C. Students already possessed of the baccalaureate degree, who have pursued a sequence of studies acceptable for this course, may, upon the satisfactory conclusion of the fifth or special year, receive from the University a certificate of proficiency in hospital library service.

The Bulletin *of the* University *of* Minnesota

Department of Music
Announcement for the Years
1926-1928

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FACULTY

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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

Announcement of Courses in Preventive Medicine and Public Health 1928-1930

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UNIVERSITY CALENDAR
1928-29

Fall Quarter

1928			
September	20	Thursday	Payment of fees closes, except for new students
September	21-24		Entrance examinations (for removal of entrance deficiencies)
			Registration of all new students entering the freshman class
September	24-28		Examinations for removal of conditions
			Physical examinations
			Registration period.[1] Colleges of Science, Literature, and the Arts, and Education
September	24-29		Freshman Week
September	27-28		Registration days[1] for all colleges not included above
September	28	Friday	Payment of fees for new students closes
October	1	Monday	Fall quarter classes begin, 8:30[2] a.m.
October	18	Thursday	Senate meeting, 4:30 p.m.
October	20	Saturday	Homecoming Day
November	6	Tuesday	Election Day; a holiday
November	12	Monday	A holiday; (November 11, Sunday, Armistice Day)
November	29	Thursday	Thanksgiving Day; a holiday
December	6	Thursday	State Day Convocation
December	19-22		Final examination period
December	20	Thursday	Commencement Convocation
			Senate meeting, 4:30 p.m.
December	22	Saturday	Fall quarter ends, Christmas vacation begins, 5:20 p.m.
December	26	Wednesday	Payment of fees closes for all students in residence fall quarter[3]

Winter Quarter

1929			
January	2-4		Entrance examinations
January	4-5		Registration days for new students in the College of Science, Literature, and the Arts

[1] Registration subsequent to the date specified will necessitate the approval of the college concerned. See also penalty fees for late registration, general information bulletin, page 44.

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 8:15 at University Farm.

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

January	5	Saturday	Registration day for new students in all other colleges, 8:30 a.m.-3:00 p.m.
January	7	Monday	Christmas vacation ends, winter quarter classes begin, 8:30[1] a.m.
February	12	Tuesday	Lincoln's Birthday; a holiday
February	21	Thursday	Charter Day Convocation
			Senate Meeting, 4:30 p.m.
February	22	Friday	Washington's Birthday; a holiday
March	20-23		Final examination period
March	21	Thursday	Commencement Convocation
			Payment of fees closes for all students in residence winter quarter[2]
March	23	Saturday	Winter quarter ends, spring vacation begins, 5:20 p.m.

Spring Quarter

March	25-27		Entrance examinations
March	29	Friday	Good Friday; a holiday
March	30	Saturday	Registration day for new students in all colleges, 8:30 a.m.-3:00 p.m.
April	1	Monday	Spring vacation ends, spring quarter classes begin, 8:30[1] a.m.
May	16	Thursday	Cap and Gown Day Convocation
			Senate Meeting, 4:30 p.m.
May	30	Thursday	Memorial Day; a holiday
June	12-15		Final examination period
June	15	Saturday	Spring quarter closes, 5:20 p.m.
June	16	Sunday	Baccalaureate service
June	17	Monday	Fifty-seventh annual commencement

Summer Quarter

June	18-19		Registration, first term
June	20	Thursday	Classes begin, 8:00 a.m.
July	4	Thursday	Independence Day; a holiday
July	27	Saturday	Registration and payment of fees for second term closes. First term closes
July	29	Monday	Second term classes begin
August	31	Saturday	Second term closes

[1] First hour classes begin at 8:15 at University Farm.

[2] Registration subsequent to the date specified will necessitate the approval of the college concerned. See also penalty fees for late registration, general information bulletin, page 44.

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.

FACULTY

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

Ruth E. Boynton, M.S., M.D., Assistant Professor of Preventive Medicine and Public Health, and Medical Adviser to Women, Students' Health Service

Eula B. Butzerin, B.S., R.N., Assistant Professor of Preventive Medicine and Public Health, and Director of the Course in Public Health Nursing

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., Assistant Professor of Preventive Medicine and Public Health and Engineer, Division of Sanitation, State Board of Health

J. Horton Daniels, B.A., M.D., Instructor in Preventive Medicine and Public Health

Ellett M. deBerry, B.A., M.D., Assistant Professor of Preventive Medicine and Public Health, and Mental Hygienist Students' Health Service

Hally J. Fisher, R.N., Instructor in Preventive Medicine and Public Health

Joseph C. Hathaway, B.S., M.D., Instructor in Preventive Medicine and Public Health.

Ruth Houlton, B.A., R.N., Instructor in Public Health Nursing, and Superintendent, Visiting Nurse Association, Minneapolis

Harry DeWitt Lees, B.M. (Tor.), Assistant Professor of 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

J. Arthur Myers, Ph.D., M.D., Associate Professor of Preventive Medicine and Public Health, and Director of Lymanhurst School for Tuberculous Children

William A. O'Brien, M.D., Assistant Professor of Preventive Medicine and Public Health, and of Pathology

Helen Chesley Peck, R.N., Instructor in Public Health Nursing, and Executive Secretary, Infant Welfare Society, Minneapolis

Jean Taylor, B.S., R.N., Instructor in Public Health Nursing, and Supervisor of Instruction, Visiting Nurse Association, Minneapolis

E. Marion Wade, M.A., Assistant Professor of Preventive Medicine and Public Health, and Director of Laboratory, 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

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., Assistant Professor of 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

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

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Marion L. Vannier, R.N., Director of School of Nursing and Associate Professor of Nursing

Alma Wretling, R.N., Supervisor of Nurses in Rural Hennepin County

ADVISORY COMMITTEE ON SCHOOL HEALTH WORK

Harold S. Diehl, M.A., M.D., Chairman

ANNOUNCEMENT OF PUBLIC HEALTH COURSES

The knowledge of the way in which health may be conserved and disease avoided is no longer of interest to the medical profession alone. Teachers, parents, and citizens are realizing that health is an individual, as well as a community, problem and that each and every one must do his part. Consequently, the public is becoming interested in acquiring health information and in actively participating in health work. These new developments make trained teachers and leaders necessary and general education 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 established the 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.

Many other departments of the University also give courses which contribute to 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 COURSE IN PUBLIC HEALTH

A course leading to a bachelor of science degree in public health may be pursued in the College of Science, Literature, and the Arts. The program of this course is 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.

COURSE IN SCHOOL HEALTH WORK

An undergraduate course in school health work, leading to a bachelor of science degree, is offered in the College of Education. A statement of this course is presented in this bulletin but students should refer to the bulletin of the College of Education 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 in public health nursing.—Through the various schools and departments of the University almost unlimited resources are available in class instruction.

A new and beautiful library building has recently 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. An enlarged program in rural nursing is also 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.

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 requirements and must have completed their major hospital services.

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 accredited night classes in the city high schools or in the Minnesota College, Minneapolis, or through the University Extension Division.

   Experience since graduation is desirable.

   All applicants should have a complete health examination during the first quarter of residence.

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.

IV. 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.

Certificates.—The certificate in public health nursing is awarded to the student who has satisfactorily completed a minimum of 45 credits in certain prescribed subjects (see p. 12), carrying a "C" average.

Scholarships and loans.—A limited number of scholarship loans are available through the American Red Cross. Further information may be obtained from Mrs. Elsbeth Vaughan, assistant national director, American Red Cross, Public Health Nursing Service, Mid-Western Branch, 1709 Washington Ave., St. Louis, Missouri.

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)	6.00
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. Catherine McBeath, 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 $500; the average, $700; and the maximum as $900.

Uniforms.—While students are in the field they are requested to wear a uniform consisting of a plain blue or gray wash dress with white collar and cuffs, and a black Windsor tie. For outdoor wear a plain dark long coat and dark hat is worn.

THE DEGREE OF BACHELOR OF SCIENCE WITH MAJOR IN PUBLIC HEALTH NURSING

Graduate nurses may receive a bachelor of science degree by selecting one or the other of the following plans:

1. Register in the College of Science, Literature, and the Arts, in accordance with the five-year curriculum as outlined in the School of Nursing bulletin (pages 10-11). Description of junior college requirements on page 13 of this bulletin.

2. Register in the College of Education in accordance with curriculum outlined for School Health Work (p. 11).

Equivalents and substitutions may be made on an individual basis with the approval of the special committee in either case.

Registration requirements for gymnasium must be met.

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]

GRADUATE WORK IN SCHOOL HEALTH SUPERVISION

Graduate work, leading to specialization along the lines of supervision in physical education, school nursing, or health education, may be followed by properly qualified students, preferably after some actual experience in the field of school health work. Permission to pursue graduate work in

[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, University of Minnesota.

this field must be obtained from the advisory committee on school health work. Students who register in the Graduate School and fulfill its various requirements will receive appropriate graduate degrees.

UNDERGRADUATE 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 PUBLIC HEALTH LABORATORY OR SANITARY WORK LEADING TO THE DEGREE OF BACHELOR OF SCIENCE

This curriculum is intended to prepare students 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.

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
Language (Junior college requirements, see S. L. and A. bulletin)[1]		0 to 20
History 1-2 or 2-3	The Modern World	10
Zoology 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 Government	5
General Inorganic Chemistry 1-2-3 or 4-5	General Inorganic Chemistry	12 or 8
Bacteriology 51	General Bacteriology	5
Anatomy 4	Human Anatomy	4
Physiology 4 or 58-59	Human Physiology	4 or 8
Physics 3	Elements of Mechanics and Sounds	3
Physics 23	Heat	3
Physics 43	Electricity	3

Third and Fourth Years

Inorganic Chemistry 11	Qualitative Chemical Analysis	4
Chemistry 7	Quantitative Analysis	4
Chemistry 1-2	Elementary Organic Chemistry	8
Bacteriology 101	Special Bacteriology	4
Bacteriology 116	Immunity	3
Physiology 57	Physiological Chemistry	4
Civil Engineering 162	Water Supply and Sewerage	3
Zoology 44	Animal Parasites	3
Zoology 45	Insects and Disease	3
Preventive Medicine and Public Health 53, 73, 102, 103, 104, 107, 200		

Electives to complete a total of 180 credits for the four years.

[1] A student entering without a foreign language may require additional time to complete the course.

FOUR-YEAR CURRICULUM IN SCHOOL HEALTH WORK

This course is designed to prepare students to take charge of health programs in school systems which do not provide specialists in the various phases of school health work. Since the responsibility of persons in these positions will cover all phases of school health work such as physical inspections, control of contagious diseases, correction of physical defects, and the teaching of health and physical education, the aim has been to provide a broad background in the whole field of health education, rather than a high degree of specialization in any one aspect of the problem.

First and Second Years

Department	Title	Credits
English A-B-C	Freshman English	15
History 1-2	Modern World	10
Inorganic Chemistry 1-2-3 or 4-5	General Inorganic Chemistry	12 or 8
Preventive Medicine and Public Health 3	Personal Hygiene and Elementary Sanitation	2
Sociology 1	Introduction to Sociology	5
Psychology 1-2	General Psychology	6
Zoology 1-2 or 5-6-7	General Zoology	10 or 12
Anatomy 4	Human Anatomy	4
Physiology 4	Human Physiology	4
Speech 22	Fundamentals of Speech	3
Bacteriology 51	General Bacteriology	5
Home Economics 70	Nutrition Survey	2
Preventive Medicine and Public Health 2	First Aid	1

Approved electives to total 90 credits and the usual freshman-sophomore work in physical education are required in addition to the above prescribed courses.

Third and Fourth Years

Department	Title	Credits
Physical Education 80	Kinesiology and Physiology of Exercise	3
Physical Education 85	Principles or Philosophy of Physical Education	2
Physical Education[1]	Technique of Teaching Motor Activities, Play, Dancing, Games, Gymnastics, etc.	3
Physical Education 88-89-90	Theory and Techniques of Orthopedic and Remedial Gymnastics	3
Physical Education 92	Practice Teaching in Physical Education	2
Physical Education 97	Organization and Supervision of Physical Education	3
Educ. T. (Ar.)	Health Education Methods and Materials	2
Educ. T. (Ar.)	Health Education Practice Teaching	3
Preventive Medicine and Public Health 53	Elements of Preventive Medicine	3
Preventive Medicine and Public Health 59	Social Hygiene	1
Preventive Medicine and Public Health 61	Mental Hygiene	1
Preventive Medicine and Public Health 69	School Nursing—Principles, Techniques, and Practices	4
Preventive Medicine and Public Health 80	Health Supervision of School Child	3
Preventive Medicine and Public Health 106	Public Health Administration (in Relation to the School)	2
Educational Psychology 55	Educational Psychology	3
Educational Administration 65	The High School	3
Educational Administration 75	The Elementary School	2

[1] This course is a specially adapted course in the Department of Physical Education for Women for this curriculum and will be developed as there is a demand for it.

Department	Title	Credits
Educational Administration 119 or 181	Elementary Curriculum or Technique of Elementary Instruction	2
Educational Administration 124	Educational Administration	3
Educational Administration 160	Principles of Supervision	2
Home Economics 171	Child Nutrition	3
Sociology 51	Occurrence of the Socially Inadequate	3
Sociology 52	Elementary Case Work	3
Sociology 90-91	Elementary Field Work	4
Child Welfare Institute 130	Development of the Young Child	3
Child Welfare Institute 170	Parental Education	3
Botany 101	Elementary Biometry	3
	Approved electives to total 90 credits	

CURRICULUM IN 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 Case Work	3
Sociology 90	Elementary Field Work	2
Sociology 60 or Home Economics 40	Child Welfare / Child Training	3
Preventive Medicine and Public Health 53	Elements of Preventive Medicine	3
Preventive Medicine and Public Health 58	Maternal and Child Hygiene	2
Preventive Medicine and Public Health 59	Social Hygiene	1
Preventive Medicine and Public Health 60	Tuberculosis and Its Control	2
Preventive Medicine and Public Health 61	Mental Hygiene	1
Preventive Medicine and Public Health 62-63	Principles of Public Health Nursing and Special Fields	6
Medical Social Service 65	Medical Social Service	2
Field Work—11 weeks		12

Practice work is available through affiliation with the following local organizations: Minneapolis Visiting Nurse Association, Infant Welfare Society, public schools of Minneapolis and St. Paul, county services. See page 7 for tuberculosis requirement.

Before a certificate is granted the student must complete a minimum of 45 credits from the above specified subjects or accepted electives, and also must earn one honor point for each credit.

In addition to the foregoing curriculum in Public Health Nursing students who are candidates for the bachelor of science degree in the College of Science, Literature, and the Arts, as stated on page 8, must have their hospital credits evaluated by the nursing committee, and must complete any necessary hospital services required in accordance with the decision of the committee before credit is granted. They must also complete the following subjects of junior college work.

First and Second Years

English A-B-C or Composition 4-5-6, or exemption from requirement
Botany 1-2 or language requirement
Inorganic Chemistry (10 credits)
Bacteriology 51
Zoology 1-2
Anatomy 2
Physiology 4
History 1-2, 3-4, or 7-8
Composition 11-12 or 18-19, or Speech 41-42
Educational Psychology 55
History of Nursing
Theory of Dietetics
Lettering.

Students should refer to the bulletin of the College of Science, Literature, and the Arts, for general information regarding registration, requirements for admission and graduation, college regulations, etc.[1]

[1] All public health nurses should submit credentials to Eula B. Butzerin, director of Course in Public Health Nursing, before registration.

DESCRIPTION OF COURSES

2w. First Aid. (See bulletin of Physical Education.)

3f,w,s. Personal Hygiene and Elementary Sanitation. (See Science, Literature, and the Arts bulletin.)

4s. Increasing the Span of Human Life. (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 51 (or equivalent). 3 credits. Dr. Diehl, Dr. Lees.

57f. Health of Infant and Pre-school Child. (See Science, Literature, and the Arts bulletin.)

58w,su. Maternal and Child Hygiene (for public health nurses). 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. Prerequisite: 50 or 52 or 53. 2 credits. Dr. Boynton 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. Prerequisite: 50 or 52 or 53. 1 credit.

60w. Tuberculosis and Its Control. 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. Prerequisite: 50 or 52 or 53. 2 credits. Dr. Myers.

61w. Mental Hygiene. History of movement; social importance. Factors underlying emotional maladjustments and mental diseases. Relations to social work and social agencies. The importance of psychiatric nursing. Prerequisites: 50 or 52 or 53; and Psychology 1-2. 1 credit. Dr. deBerry.

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. Prerequisite: 53 or equivalent; 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. Prerequisites: 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, and open air. 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. Miss Butzerin, Miss Mayland.

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 Houlton, Miss Taylor.

69f. School Nursing. Its objectives, program, and techniques. Discussion of duties of school nurse in the conduct of a health program in both rural and urban schools. Opportunities for practice work will be provided. Open to public health nurses and students with teaching experience. Prerequisite: 53 or equivalent. 4 credits. Miss Butzerin.

70f,su. Home Nursing and Child Care. Theory and practice in teaching lay groups the principles and methods of home sanitation, care of the sick, and prevention of illness. Prerequisites: 62, 63 or accepted equivalent. 3 credits. Miss Butzerin, Miss Fisher.

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. Health Supervision of School Child. (See Education bulletin.)

100f. Preventive Medicine and General Hygiene. (See Medical bulletin.)

101w,s,su. Public Health Administrative and Field Work. (See Medical bulletin.)

102w. 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; Anal. Chem.

1-2 or 7, and Organic Chem. 1-2 or 53; Physics 24, 34, 44. Credits and hours arranged. Mr. Whittaker, Mr. Childs.

103s. Public Health Bacteriology. Modern methods of a public health laboratory in making diagnoses; in the preparation of vaccines, and in research. Registration by permission. Prerequisites: Bacteriology 101, 116. 3 credits or arranged. Miss Wade.

104f,w,s,su. Epidemiology. Open only to graduate 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.

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. Diehl.

107s. Sanitary Surveys. 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.

200. Research. Opportunities will be offered by the University and by the various co-ordinated organizations for qualified students to pursue research work. Dr. Diehl and staff.

SOME OF THE COURSES CONTRIBUTING TO PUBLIC HEALTH EDUCATION BUT OFFERED BY OTHER DEPARMENTS OF THE UNIVERSITY

No.	Title	Department	Instructor
44	Animal Parasites	Zoology	Mr. Riley
45	Insects and Disease	Zoology	Mr. Riley
107	Protozoology	Zoology	Mr. Sigerfoos
144-145-146	Animal Parasites and Parasitism	Zoology	Mr. Riley
51	General Bacteriology	Bacteriology	Dr. Green
101	Special Bacteriology	Bacteriology	Dr. Larson
114	Higher Bacteria	Bacteriology	Dr. Henrici
116	Immunity	Bacteriology	Dr. Larson
150-151	Advanced Bacteriology	Bacteriology	Dr. Larson
101	Elementary Biometry	Botany	Mr. Harris
145	Advanced Biometry	Botany	Mr. Harris
170	Development of Young Child	Child Welfare	Mr. Anderson
190-191	Mental Examination of Pre-school Children	Child Welfare	Miss Goodenough
135	Physical Development of Childhood	Anatomy	Mr. Scammon
160-161-162	Seminar in Growth of Children	Anatomy	Mr. Scammon
114-115	Applied Physiology	Physiology	Dr. Greisheimer
201	Seminar in Physiology	Physiology	Dr. Lyon
91	Clinics in Dermatology and Syphilis	Medicine	Dr. Michelson
53	Contagious Diseases	Pediatrics	Dr. Huenekens
183	Genetics and Eugenics	Zoology	Arranged
7	State Government	Political Science	Mr. Lambie
11	Municipal Government	Political Science	Mr. Anderson
161	Hydrology	Sanitary Engineering	Mr. Bass
162-163	Water Supply and Sewerage	Sanitary Engineering	Mr. Bass
261-262	Water and Sewage Purification	Sanitary Engineering	Mr. Bass
114-145	Abnormal Psychology	Psychology	Mr. Anderson
100	Social Psychology	Sociology	Mr. Chapin

The Bulletin *of the* University *of* Minnesota

College of Engineering and Architecture

Part I

Announcement of Courses for the Years 1927-1929

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[1] Absent on leave, 1927-28.

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Milo E. Todd, B..A., E.E., Assistant Professor of Electric Power Engineering
George F. Corcoran, B.S., Instructor in Electrical Engineering
Ralph E. Willey, Instructor in Electrical Engineering
James J. Haley, Assistant in Power Plant Operation
Robert F. Edgar, B.S.(E.E.), Teaching Fellow in Electrical Engineering
Carl B. Feldman, B.S.(E.E.), Teaching Fellow in Electrical Engineering
Marcus E. Fiene, B.S.(E.E.), Teaching Fellow in Electrical Engineering
Henry L. Tholstrup, B.S.(E.E.), Teaching Fellow in Electrical Engineering

ENGLISH

Joseph M. Thomas, Ph.D., Professor of English, and Chairman of the Department
Frank M. Rarig, M.A., Professor of Public Speaking
H. Donald Ambler, M.A., Instructor in English
Francis S. Appel, M.A., Instructor in English
Fred S. Beers, B.A., Instructor in English
John J. Creamer, B.A., LL.B., Instructor in English
Harlow C. Richardson, B.A., Instructor in English

FORESTRY

Henry Schmitz, M.S., Ph.D., Professor of Forestry and Chief of the Division
Edward G. Cheyney, B.A., Professor of Forestry

GEOLOGY AND MINERALOGY

William H. Emmons, Ph.D., Professor of Geology and Mineralogy and Head of the Department
George M. Schwartz, Ph.D., Assistant Professor of Geology and Mineralogy

HORTICULTURE

William H. Alderman, B.S.A., Professor of Horticulture and Chief of Division

Clarence E. Carey, B.S.(Agr.), Assistant Professor of Landscaping
Basil I. Burrell, B.S., Instructor in Vegetable Growing

MATHEMATICS AND MECHANICS

William E. Brooke, B.C.E., M.A., Professor of Mathematics and Mechanics and Head of the Department
Hans H. Dalaker, Ph.D., Professor of Mathematics and Mechanics
William F. Holman, Ph.D., Professor of Mathematics and Mechanics
Jacob O. Jones, M.C.E., Professor of Hydraulics
Carl A. Herrick, M.E., Associate Professor of Mathematics and Mechanics
[1]George C. Priester, B.E., M.S., Associate Professor of Mathematics and Mechanics
Charles Boehnlein, B.S., M.E., Assistant Professor of Mathematics and Mechanics
Henry E. Hartig, E.E., Ph.D., Assistant Professor of Mathematics and Mechanics
Raymond R. Herrmann, E.E., Assistant Professor of Mathematics and Mechanics
William M. McClintock, M.A., Assistant Professor of Mathematics and Mechanics
Roderick W. Siler, B.S., Assistant Professor of Mathematics and Mechanics
Hugh B. Wilcox, M.S.(E.E.), Assistant Professor of 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
Loren W. Neubauer, B.S.(C.E.), Instructor in Mathematics and Mechanics
Everett D. Wells, B.S., S.B., A.M., Instructor in Mathematics and Mechanics

MECHANICAL ENGINEERING

S. Carl Shipley, B.S., M.E., Professor of Machine Construction and Superintendent of Shops and Acting Head of the Department
Frank B. Rowley, B.S., M.E., Professor of Mechanical Engineering and Director of the Experimental Engineering Laboratories
Charles F. Shoop, B.S., B.S.(M.E.), Professor of Steam Engineering
John V. Martenis, M.E., Associate Professor of Machine Design
Burton J. Robertson, E.E., Associate Professor of Gas Engines and Automotives
John Flodin, M.A., M.E., Assistant Professor of Machine Design
Ronald M. Hazen, B.S.(M.E.), Assistant Professor of Automotive Engineering
William H. Richards, Assistant Professor of Woodworking
Thomas P. Hughes, Instructor in Forging
Jarl E. Larson, B.S. (Mar.E. and Naval Arch.), Instructor in Steam Engineering and Gas Engines
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

[1] Absent on leave, 1927-28.

John E. Nicholas, M.E., M.S.(M.E.), Instructor in Steam Engineering
Dayton A. Rogers, Instructor in Machine Shop Practice
Frank E. Weld, Instructor in Aviation
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 and Metallurgy
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., Ph.D., Assistant Professor of Metallography
Ludwig J. Weber, Ch.E., Ph.D., 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
Kent Nelson, Lieutenant Colonel, Medical Corps, U.S.A., Assistant Professor of Military Science and Tactics
Ray C. Hill, Major, Infantry, U.S.A., Assistant Professor of Military Science and Tactics
Frederic H. Bockoven, Major, Dental Corps, U.S.A., Assistant Professor of Military Science and Tactics
Porter P. Wiggins, Captain, Infantry, 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
Don F. Pratt, 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
Arthur R. Walk, Ph.D., 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
Julian H. Gist, Captain, Infantry, U.S.A., Assistant Professor of Military Science and Tactics
Frederick S. Matthews, Captain, Infantry, U.S.A., Assistant Professor of Military Science and Tactics
John F. Cassidy, First Lieutenant, Coast Artillery Corps, U.S.A., Assistant Professor of Military Science and Tactics
Harry E. Strider, Master Sergeant, U.S.A., Instructor in Military Science and Tactics

Alfred Brandt, 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

John Coop, Sergeant, U.S.A., Instructor in Military Science and Tactics

Ernest R. Mylk, 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.B., 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

Helen Hazelton, 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

Else H. Bockstruck, B.S., Instructor in Physical Education for Women

Irene Clayton, B.S., Instructor in Physical Education for Women

Mary S. Conger, Instructor in Physical Education for Women

Grace E. Denny, B.S., Instructor in Physical Education for Women

Pauline Lane, 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

Anthony Zeleny, Ph.D., Professor of Physics

Louallen F. Miller, Ph.D., Associate Professor of Physics

Joseph Valasek, B.S., Ph.D., Assistant Professor of Physics

J. William Buchta, Ph.D., Instructor in Physics

PREVENTIVE MEDICINE AND PUBLIC HEALTH

Harold S. Diehl, M.A., M.D., Associate Professor of Preventive Medicine and Public Health and Director of Health Service

Jay A. Myers, Ph.D., M.D., Associate 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
Donald G. Paterson, M.A., Professor of Psychology

RHETORIC (COLLEGE OF AGRICULTURE)

Robert C. Lansing, M.A., Assistant Professor of Rhetoric
William J. Miller, M.A., Instructor in Rhetoric

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., Assistant Professor of Soils

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. In 1925, the name of the Department of Architecture was changed to the School of Architecture. 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 Administration 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	5.00
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
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 college algebra or trigonometry in high school with satisfactory record 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 bursar, 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 permitted 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 several research fellowships which are open to engineering graduates. Two of these are in structural engineering and one in highway 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 or curriculum 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	Architecture
Electrical Engineering	Architectural Engineering
Mechanical Engineering	Interior Decoration
Agricultural Engineering	Engineering Pre-Business

Engineering Administration

CIVIL, ELECTRICAL, MECHANICAL, AND AGRICULTURAL ENGINEERING AND PRE-BUSINESS

FRESHMAN YEAR

The freshman year is the same for these four engineering courses and Engineering Pre-Business. The freshman year for courses in Architecture and Architectural Engineering is shown on pages 28 and 29.

Mathematics

Entering freshman 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).

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 prerequisites, M. & M. 11 and 12 (College Algebra and Trigonometry), until the spring quarter.

Chemistry

Students who have not had high school *chemistry* will take Inorganic Chemistry 14f-15w, five credits per quarter, instead of Inorganic 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	..	..
Inorg. Chem. 4	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	..	..
Inorg. Chem. 5	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	..	..
Inorg. Chem. 16	Qualitative Analysis	5	..	3	6
Engl. 6	Rhetoric and 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.

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	..	7
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	..	7
Mil. Sci. 5	Second Year Basic Course	0	..	..	3
	*Elective				

* For list of elective courses, see pages 36 to 41.

† Women take Phys. Ed. for Women, Course 4, in place of P.H. 12.

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
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	2	..	1	3
C.E. 14	Surveying	3	..	..	8
C.E. 31	Stresses in Structures	3	..	1	6
C.E. 51	Highways and Pavements	3	..	1	7
	*One or more electives.				
	Winter Quarter				
M. & M. 129	Hydraulics	4	4	..	..
M. & M. 143	Hydraulics Laboratory	1	..	..	1
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	Elementary Structural Design	3	..	1	6
C.E. 53	Civil Engineering Practice	3	1	2	0
	*One or more electives.				

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	6
C.E. 161	Hydrology	3	..	1	3
C.E. 146	Concrete Laboratory	3	..	1	6
or					
C.E. 164	Water Power	3	..	3	4
	*Electives to complete program.				

* For list of elective courses, see pages 36 to 41.

Course No.	Title	Credits	Rec.	Lect.	Lab.
	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 and Sewerage	3	..	1	6
E.E. 42	Electric Power	4	3	..	3
or					
M.E. 140	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	..	3	4
E.E. 42	Electric Power	4	3	..	3
or					
M.E. 140	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	6
C.E. 161	Hydrology	3	1	1	3
C.E. 162	Water Supply and Sewerage	3	..	1	6
M.E. 140	Heat Engines	4	3	..	4
	*Electives to complete program.				
	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 Sewerage	3	1	..	6
C.E. 164	Water Power	3	..	3	4
E.E. 42	Electric Power	4	3	..	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.

*** For list of elective courses, see pages 36 to 41.**

† Courses C.E. 131, 132, and 134 have been offered in the Summer Session by special arrangement only.

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				

JUNIOR YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
M. & M. 129	Hydraulics	4	4	..	..
M. & M. 143	Hydraulics Laboratory	1	..	..	1
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. 23	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	2	..	1	3
E.E. 115	Direct Current Machinery	3	3	..	..
E.E. 116	Direct Current Machinery Laboratory	2	..	..	4
M.E. 27	Machine Design	3	..	1	6
	*One or more electives.				

* For list of elective courses, see pages 36 to 41.

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. 136	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. 137	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. 155	Gas Engines and Producers†	3	2	..	3
	*One or more electives.				

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. Further to 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.

* For list of elective courses, see pages 36 to 41.

† 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.

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	3	..	..	8
Mil. Sci. 4	Second Year Basic Course	0	..	..	3
Tech. Chem. 1†	Power Plant Chemistry	3	..	..	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	3	..	..	8
Mil. Sci. 5	Second Year Basic Course	0	..	..	3
Phys. 35†	Optics	2	1	2	..
	Spring Quarter				
M. & M. 26	Technical Mechanics (Statics)	5	5	..	..
Phys. 43	Electricity	3	1	3	..
Phys. 44	Electricity Laboratory	1	..	..	2
M.E. 19	Mechanical Technology	1	..	2	..
M.E. 21	Machine Design	2	..	..	6
M.E. 50†	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. 22	Mechanism	4	4	..	..
M.E. 24	Kinematics	2	..	1	4
M.E. 30	Steam Engines	3	3	..	..
M.E. 32	Elementary Mechanical Laboratory	2	..	..	6
	*One or more electives.				
	Winter Quarter				
M. & M. 128	Strength of Materials	5	5	..	..
M. & M. 141	Materials Laboratory	2	..	1	3
M.E. 25	Machine Design	3	..	2	6
M.E. 31	Steam Boilers	2	2	..	..
M.E. 33	Steam Laboratory	2	..	..	6
	*One or more electives.				

* For list of elective courses, see pages 36 to 41.

† 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 sections are limited to 20 students each.

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Spring Quarter				
M. & M. 129	Hydraulics	4	4	..	..
M. & M. 143	Hydraulics Laboratory	1	..	..	1
M.E. 26	Machine Design	2	2	..	..
M.E. 34	Elementary Steam and Power Laboratory	2	..	..	6
M.E. 63	Heating and Ventilation	3	3	..	..
M.E. 141	Elementary Thermodynamics	3	3	..	..
	*One or more electives.				

SENIOR YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
M.E. 148	Advanced Steam Laboratory	2	..	..	6
M.E. 150	Gas Engines and Producers	3	3	..	..
M.E. 190	Seminar§	1	1	..	..
	Engineering Design‡	2	..	..	6
E.E. 46	Electric Power	4	3	..	3
	*One or more electives.				
	Winter Quarter				
M.E. 159	Power and Gas Engine Laboratory	2	..	..	6
M.E. 191	Seminar§	1	..	1	1
	Engineering Design‡	2	..	..	6
E.E. 47	Electric Power	4	3	..	3
	*One or more electives				
	Spring Quarter				
M.E. 192	Seminar§	1	..	1	1
M.E. 194	Advanced Engineering Laboratory	2	..	..	6
	Engineering Design‡	2	..	..	6
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.)

* For list of elective courses, see pages 36 to 41.

§ Three quarters required. May be taken in junior year.

‡ The following courses are accepted for this requirement: M.E. 121f-122w-123s. Advanced Engineering Design; M.E. 135f, Steam Engine Design; M.E. 156f,w, Gas Engine Design; M.E. 157w,s-158s, Advanced Gas Engine Design; M.E. 254s, Gas Tractor Design; M.E. 145s, Elements of Power Plant Design; M.E. 242f, 243w, Power Plant Design; C.E. 37s, Structural Engineering.

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.

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

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
M. & M. 24	Differential Calculus	5	5	..	..
Ag.E. 13	Tractor and Auto Work I	3	..	2	..
Ag.E. 19	Elementary Surveying	3	..	2	4
Hort. 6*	Fruit Growing	3	..	2	4
Soils 4	Soils	3	..	2	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
Ag.E. 31	Principles of Drainage	3	1	2	..
Agron. 1	Farm Crops	3	..	2	4
Soils 8	Physical Properties of Soils	3	..	1	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
Ag.E. 40	Mechanical Training I	3	..	2	4
Hort. 32	Vegetable Growing	3	..	2	4
Mil. Sci. 6	Second Year Basic Course	0	..	..	3

* 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.

JUNIOR YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
M. & M. 85	Strength of Materials	4	3	..	2
C.E. 51	Highways and Pavements	3	..	1	7
Econ. 1	Introduction to Economics	5	4	1	..
Geol. 5	Engineering Geology	3	..	3	..
M.E. 28	Machine Design	3	..	1	6
	Winter Quarter				
M. & M. 86	Hydraulics with Laboratory	3	2	..	2
Ag.Econ. 2	Principles of Economics	3	..	3	..
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	..
	Spring Quarter				
Ag.E. 12	Farm Machinery	3	..	2	4
Ag.E. 134	Agricultural Hydraulics	3	..	2	4
A.H. 15	Fundamentals of Livestock Production	3	..	2	4
C.E. 37	Structural Engineering	3	..	..	8
D.H. 1	Elements of Dairying	5	..	3	4

SENIOR YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
Ag.E. 37	Rural Sanitation	3	..	2	4
Ag.E. 122	Farm Power Machinery	4	..	2	4
Agron. 102	Farm Management II: Organization	3	..	3	..
C.E. 144	Reinforced Concrete	3	..	2	5
	*Electives to complete program.				
	Winter Quarter				
Ag.E. 121	Steam Boilers and Engines	3	..	2	4
Agron.103	Farm Management II: Operation	3	..	3	..
G.E. 101	Contracts and Specifications	3	..	3	..
	*Electives to complete program.				
	Spring Quarter				
Ag.E. 126	Selection of Farm Equipment	3	..	3	..
Ag.E. 150	Seminar	2	2	..	..
Bus.Adm. 67	Market Administration	3	1	2	..
G.E. 193	Engineering Practice	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.

* For list of elective courses, see pages 36 to 41.

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
Ag.E. 111f	Structural Materials	3
Ag.E. 136w	Experimental Physical Analysis	5
Ag.E. 112s	Farm Bui'ding Problems	3
For. 27w	Farm Woodlots and Windbreaks	3
Hort. 77w	Principles of Landscape Design	3
Rhet. 22f,w,s	Public Speaking	3

Farm Mechanics

Ag.E. 15f	Ignition and Carburetion	3
Ag.E. 14s	Elementary Power Machinery	3
Ag.E. 28w	Land Clearing	3
Ag.E. 101f	Drainage Engineering and Works	4
Ag.E. 123s	Farm Power	4
Ag.E. 125w	Farm Machinery Design	4
Ag.E. 135f	Ignition Systems	4
Ag.E. 136w	Experimental Physical Analysis	5
Rhet. 22f,w,s	Public Speaking	3

Reclamation

Ag.E. 28w	Land Clearing	3
Ag.E. 101f	Drainage Engineering and Works	4
Ag.E. 102s	Advanced Drainage Problems	3
Ag.E. 103s	Irrigation Engineering and Works	4
Ag.E. 104w	Drainage Administration and Law	3
Ag.E. 136w	Experimental Physical Analysis	5
C.E. 161f	Hydrology	3
Hort. 77w	Principles of Landscape Design	3
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 may arrange to extend their studies over a period of five years by taking the B.A. course with a major in Architecture, in the College of Science, Literature, and the Arts, including most of the required work of the first three years of the course in Architecture, and completing the work required for the degree B.S. in Architecture in the College of Engineering and Architecture in one additional year. Such a five-year undergraduate course is recommended by the American Institute of Architects and those who are able

thus to extend their studies are strongly advised to do so. Full collegiate training in Architecture includes a sixth year in the Graduate School leading to the degree M.S. in Architecture.

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).

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 in Architecture who have not had high school *chemistry* will take Chemistry 1f-2w-3s, four credits per quarter, in the junior year.

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	Freehand 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	Freehand 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

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Spring Quarter				
M. & M. 13	Analytical Geometry	5	5	..	..
Engl. 6	Rhetoric and Composition	3	3	..	..
Arch. 23	Freehand 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.).

In addition to the prescribed courses, sufficient electives must be taken to complete a total of at least 204 credits, or, if high school chemistry be not presented for entrance, 207 credits for graduation. Also, 1,008 design points must be earned (see note, page 48).

For freshman year, see pages 28 and 29.

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	Freehand 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	Freehand 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	Freehand 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	Freehand Drawing	2	..	..	6
Arch. 37	Architectural Design, Grade II	7	..	..	21
C.E. 38	Stresses in Structures	3	..	..	6
	*Elective or Chemistry.				

* Students who entered without high school chemistry will take Inorganic Chemistry 1, 2, and 3, four credits per quarter.

† Women take Phys. Ed. for Women, Course 4, in place of P.H. 12.

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Winter Quarter				
Arch. 18	Architectural History	2	..	2	..
Arch. 28	Freehand Drawing	2	..	..	6
Arch. 38	Architectural Design, Grade II	7	..	..	21
C.E. 39	Structural Design	3	..	..	6
	*Elective or Chemistry.				
	Spring Quarter				
Arch. 19	Architectural History	2	..	2	..
Arch. 29	Freehand Drawing	2	..	..	6
Arch. 39	Architectural Design, Grade II	7	..	..	21
C.E. 41	Reinforced Concrete	3	..	..	6
	*Elective or Chemistry.				

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	9	..	..	27
Arch. 143	Building Construction	2	..	2	..
Arch. 153	Business Relations	2	..	2	..
Arch. 163	History of Painting and Sculpture	2	..	2	..
M.E. 164	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. Also, 192 design points must be earned (see note, page 48).

The freshman year of this course is identical with the freshman year of the course in Architecture, pages 28 and 29.

* Students who entered without high school chemistry will take Inorganic Chemistry 1, 2, and 3, four credits per quarter.

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
Inorg.Chem. 4†	Inorganic 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
Inorg.Chem. 5†	Inorganic Chemistry	4	1	3	3
Mil. Sci. 5	Second Year Basic Course	0	..	..	3
	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
Inorg.Chem. 16	Qualitative 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	..	2	6
	*Elective.				
	Winter Quarter				
M. & M. 128	Strength of Materials	5	5	..	..
M. & M. 141	Materials Laboratory	2	..	1	3
C.E. 32	Stresses in Structures	3	..	1	6
Arch. 15	Architectural History	2	..	2	..
Arch. 48	Building Construction	4	..	2	6
	*Elective.				
	Spring Quarter				
M. & M. 129	Hydraulics	4	4	..	..
M. & M. 143	Hydraulics Laboratory	1	..	..	1
C.E. 33	Elementary Structural Design	3	..	1	6
Arch. 16	Architectural History	2	..	2	..
Arch. 49	Building Construction	4	..	2	6
	*Elective.				

* For list of elective courses, see pages 36 to 41.

† Students who enter without high school chemistry must register for Inorganic Chemistry 14, 15, five credits per quarter, instead of Inorganic Chemistry 4, 5.

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. 163	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.				
	Spring Quarter				
Arch. 19	Architectural History	2	..	2	..
Arch. 153	Business Relations	2	..	2	..
C.E. 18	Surveying	3	..	..	8
C.E. 135	Reinforced Concrete Design	4	..	..	6
M.E. 140	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 4 or 6 (with prerequisite)	4 to 10
French (see Junior College Requirements, page 7, 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 list of elective courses, see pages 36 to 41.

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	4 or 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	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	Freehand 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	Freehand 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	Freehand 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	Freehand 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	Freehand 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	Freehand 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 Administration 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	3	..	..	8
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. 2	General Psychology	3	1	2	..
Mil. Sci. 5	Second Year Basic Course	0	..	..	3

Course No.	Title	Credits	Rec.	Lect.	Lab.
	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. 19	Mechanical Technology	1	..	2	..
M.E. 50	Automotives	2	3	..	..
Mil. Sci. 6	Second Year Basic Course	0	..	..	3

JUNIOR YEAR

(In the School of Business Administration)

Course No.	Title	Credits
	Fall Quarter	
Bus.Adm. 67	Market Administration	3
Econ. 3	Mechanism of Exchange	5
Econ. 51	Business Law	3
	Electives	5 to 7
	Winter Quarter	
Bus.Adm. 73	Railway Traffic and Rates	3
Bus.Adm. 89	Production Management	3
Bus.Adm. 100	Report Writing	1
Econ. 52	Business Law	3
Econ. 141	Monetary and Banking Policy	3
	Electives	2 to 5
	Spring Quarter	
Bus.Adm. 155	Corporation Finance	3
Econ. 14	Elements of Statistics	5
Econ. 53	Business Law	3
	Electives	3 to 8

SENIOR YEAR

(In the School of Business Administration)

Course No.	Title	Credits
	Fall Quarter	
Bus.Adm. 101	Advanced General Economics	3
Bus.Adm. 131	Cost Accounting	3
Econ. 161	Labor Problems	3
	Electives	5 to 7
	Winter Quarter	
Bus.Adm. 102	Advanced General Economics	3
Bus.Adm. 132	Cost Accounting	3
Bus.Adm. 167	Personnel Administration	3
	Electives	5 to 7
	Spring Quarter	
Bus.Adm. 133	Cost Accounting	3
Bus.Adm. 168	Advanced Personnel Administration	3
Econ. 149	Business Cycles	3
	Electives	7

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 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	
Bus.Adm. 89	Production Management	3
	Spring Quarter	
Bus.Adm. 155	Corporation Finance	3

SENIOR YEAR

Course No.	Title	Credits
	Fall Quarter	
Bus.Adm. 67	Market Administration	3
Econ. 161	Labor Problems	3
	Winter Quarter	
Bus.Adm. 73	Traffic and Rates	3
Bus.Adm. 167	Personnel Management	3
	Spring Quarter	
Econ. 28	Business Law	3
Econ. 130	Cost Accounting	3
Econ. 154	Public Utilities	3

LIST OF ELECTIVE COURSES

For detailed schedules of classes see the programs of 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	Elementary Power Machinery	3	Ag.E. 13

Course No.	Title	Credits	Prerequisites
Arch. 21f,w,su-22w,s,su-23w,s, su	Freehand Drawing (per quarter)	2	None
Ast. 15f,w,s	Descriptive Astronomy for Engineers	3	M. & M. 12
Draw. 34f,w,s	Lettering	1	Dr. 1
Draw. 37f,w,s	Lettering for Engineers	2	Dr. 2
Draw. 50w,s	Diagrams and Charts	2	None
Draw. 51w,s	Graphs and Charts	3	Dr. 1, M. & M. 12
Econ. 1f,s-2w,f	Introduction to Economics	10	None
Econ. 29f,s	Principles of Accounting	3	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
Geol. 1f,w,s-2w,s	General Geology	10	H.S. or col. chem.
Geol. 8f,w,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
Rhet. 4f,w-5w,s-6s	Composition for Technical Students (S. L. A.)	9	None
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
Ag.E. 14s	Elementary Power Machinery	3	Ag.E. 13
Ag.E. 28w	Land Clearing	3	None
Ast. 11f,w,s	Descriptive Astronomy	5	3rd qtr. fr., soph., jr., sr.; none
Ast. 30s	Field Astronomy for Engineers	3	1 qtr. surveying
Anal. Chem. 9w	Quantitative Analysis	3	Inorg. Chem. 16
Tech. Chem. 1f,w,s	Power Plant Chemistry	3	Inorg. Chem. 16
Tech. Chem. 2w,s	Boiler Water	3	Tech. Chem. 1
Tech. Chem. 3s	Petroleum Products	2	Tech. Chem. 1
Chem. Eng. 31f	Chemistry of Engineering Materials.	3	Tech. Chem. 1
Chem. Eng. 76f-77w	Applied Electrochemistry	4	Soph., jr., sr.
C.E. 18s	Surveying	3	M. & M. 13, Dr. 2
Draw. 35f,w,s	Printing and Lettering	2	Any lettering course
Draw. 45f,w,s-46f,w,s	Alphabets (per quarter)	2	Soph., jr., sr.; none
Econ. 3w,s	Mechanism of Exchange	5	3rd qtr. fr., soph., jr., sr.
Econ. 6f,w,s-7f,w,s	Principles of Economics	10	None
Econ. 8f-9w-10s	General Economics	6-9	None
Econ. 14s	Elements of Statistics	5	Econ. 6-7
Econ. 25f,w-26w,s	Principles of Accounting	8	None

Course No.	Title	Credits	Prerequisites
Engl. 1f-2w-3s	English Survey (S. L. A.)	9	9 cred. in rhet.
Engl. 7w-8s	Explorations in Literature	3	Engl. 4-5-6
Engl. 31s	Technical Writing	3	Engl. 4-5-6
Engl. 35w,s	Public Speaking	3	Engl. 4-5-6
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
Geol. 29f	General Physiography	5	None
Hist. 7f-8w	American History	10	None
Hist. 11f-12w-13s	Medieval History (per quarter)	5	None
Italian 1f-2w	Beginning Italian	10	None
Jour. 13f-14w-15s	Reporting	9	Engl. 6
M.E. 19s	Mechanical Technology	1	M. & M. 13
M.E. 50f,w,s	Automotives	2	M.E. 11,12-13
M.E. 80f-81w-82s	Aviation (per quarter)	2	Soph., jr., sr.
M.E. 85f,w,s	Ships and Shipping	1	None
M.E. 111f,w,s	Tool Construction	3	M.E. 15
Met. 109f,w	Metallurgy	3	Chem. 16
Phil. 2f,w,s	Logic	5	None
Phys. Ed. 7f-8w-9s	Advanced Leaders (per quarter)	1	Phys. Ed. 1-2-3
P.H. 50f,w,su	Public and Personal Health	3	An. Biol. 1, 2; Psy. 1, 2
P.H. 53f,s,su	Elements of Preventive Medicine	3	Psy. 1-2; Bact. 51; or by permission
P.H. 55s	Increasing the Span of Human Life	3	10 cred. in Science or Social Science
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	Pol. Sci. 1
Pol. Sci. 11f,w,s	Municipal Government	5	Pol. Sci. 1
Psy. 1f-2w	General Psychology	6	None
Soc. 1f,w,s	Introduction to Sociology	5	None

OPEN TO JUNIORS AND SENIORS ONLY

(See Engineering Administration, page 36.)

Course No.	Title	Credits	Prerequisites
Ag.E. 15f	Ignition and Carburetion	3	Ag.E. 13
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. 111f-112w-113s	Celestial Mechanics	9	M. & M. 25
Ast. 140w	Method of Least Squares	3	M. & M. 25
Bus. Adm. 67f,w,s	Market Administration	3	Econ. 8-9
Bus. Adm. 89w	Production Management	3	Econ. 8-9
Bus. Adm. 130s	Cost Accounting (General Survey)	3	Econ. 29

Course No.	Title	Credits	Rec. Lect. Lab.
Bus. Adm. 131f-132w-133s	Cost Accounting	9	Econ. 29
Bus. Adm. 155s	Corporation Finance	3	Econ. 8-9
Bus. Adm. 167w	Personnel Administration	3	Econ. 8-9
Bus. Adm. 168s	Advanced Personnel Administration.	3	Econ. 167
C.E. 37s	Structural Engineering	3	M. & M. 26 or 84
C.E. 53s	Civil Engineering Practice	3	Jr. or sr.
C.E. 144f	Reinforced Concrete	3	M. & M. 84, 85 or 127, 128
C.E. 161f	Hydrology	3	None (open to seniors only)
C.E. 164f,w	Water Power	3	M. & M. 129
Chem. Eng. 41s	Gas Manufacture and Distribution	3	Two years of engineering
Draw. 57f-58w-59s	Graphical Methods (per quarter)	2	Soph. Draw., M. & M. 26
Draw. 71f,w,s	Graphics for Electrical Engineers	3	Dr. 27, E.E. 111
Draw. 87f	Introduction to the Graphic Arts	2	Jr., sr., only
Draw. 88w	Printing Types and Lettering	2	Draw. 87
Draw. 89s	The Picture and the Printed Word	2	Draw. 88
Draw. 111f,w,s-112f,w,s-113f,w,s	Advanced Descriptive Geometry (per quarter)	2	Dr. 3, M. & M. 25
Draw. 114f,w,s	Perspective	3	Arch. 63
Draw. 215f-216w-217s	Geometry (per quarter)	3	M. & M. 25
Draw. 218f,w,s-219w-220s	Nomography (per quarter)	3	Dr. 3, M. & M. 128
Econ. 28f,s	Business Law	3	Econ. 8-9 or 6 cr. in econ. or sr. without econ. cred.
Econ. 51f-52w-53s	Business Law	9	Econ. 8-9 or 10 cr. in econ. or pol. sci. or 5 in each
Econ. 73w	Railway Traffic and Rates	3	Econ. 8-9
Econ. 113w-114s	Theory of Statistics	6	Econ. 14
Econ. 154s	Public Utilities	3	Econ. 8-9-10
Econ. 161s,f,w	Labor Problems	3	Econ. 8-9
Econ. 172f,s	Economics of Transportation	3	Econ. 8-9
E.E. 40f	Electric Wiring and Equipment	2	Phys. 43
E.E. 49w	Electric Motors	2	E.E. 40
E.E. 61f-63w-65s	Electric Communication	2	Reg. E.E. 111-113-115
E.E. 81w	Electrical Engineering Measurements.	3	E.E. 111
E.E. 93s	Seminar	1	Jr. E.E.
E.E. 127f-128w	Transient Electrical Phenomena (per quarter)	2	Reg. in E.E. 121
E.E. 129s	Transient and High Frequency Phenomena	2	E.E. 128
E.E. 141f	Central Stations	2	Reg. in E.E. 121
E.E. 142w	Electrical Transmission	2	Reg. in E.E. 123
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. 145s	Railway Electrification	2	E.E. 144
E.E. 146s	Storage Battery Engineering	2	E.E. 45 or 48 or 113

Course No.	Title	Credits	Rec. Lect. Lab.
E.E. 151f	Electric Lighting	2	Phys. 43
E.E. 152f	Photometric Laboratory	1	Reg. in E.E. 151
E.E. 153w-154s	Illumination Problems (per quarter)	2	E.E. 151
E.E. 161f-162w-163s	Radio Communication (per quarter)	3	Reg. in E.E. 121
E.E. 164f	Telegraph and Telephone Apparatus	2 or 3	E.E. 63
E.E. 165w-166s	Telegraph and Telephone Circuits (per quarter)	2 or 3	Reg. in E.E. 123
E.E. 167f-168w-169s	Radio Station Operation (per quarter)	1 or 2	Reg. in E.E. 161
E.E. 171w-172s	Undergraduate Thesis (per quarter)	3 to 6	E.E. 121
E.E. 181s	Communication Frequency Measurements	2	E.E. 126
E.E. 183f-184w-185s	Special Electrical Laboratory	2 to 12	E.E. 116
E.E. 186w,s	High Tension Testing	2	E.E. 123, 124 or Reg. 123, 124 and by permission
E.E. 187f-188w-189s	Special Communication Laboratory	1 to 12	Jr., sr., permission
E.E. 191f-192w-193s	Seminar (per quarter)	1	E.E. 111
E.E. 232f-234w-236s	Electrical Design (per quarter)	2	Reg. in E.E. 132, 134, 136
E.E. 237s	Power Transmission Line Design	3	E.E. 134, 142
E.E. 261f-263w-265s	Advanced Radio Communication (per quarter)	2	With E.E. 262-264-266
E.E. 262f-264w-266s	Advanced Radio Laboratory (per quarter)	1 or more	By permission
E.E. 284w-285s-286f	Precise Electrical Engineering Measurements (per quarter)	2	E.E. 122
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	2	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. 127
M. & M. 151f	Differential Equations	3	M. & M. 25
M. & M. 152w-153s	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. 180w-181s	Advanced Strength of Materials (per quarter)	3	M. & M. 128
M. & M. 184f-185w-186s	Advanced Testing Materials Laboratory (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

Course No.	Title	Credits	Prerequisites
M.E. 63s	Heating and Ventilation	3	M. & M. 127, 128, 129, or reg. in 129
M.E. 110f,w,s	Tool Design	3	M.E. 15, 21
M.E. 135f	Steam Engine Design	2	M.E. 30
M.E. 142w	Steam Turbines	3	M.E. 141
M.E. 143w	Applied Thermodynamics	3	M.E. 141
M.E. 144f	Power Plant Machinery	3	M.E. 31
M.E. 145s	Design of Power Plant Units	2	M.E. 143
M.E. 146s	Fuels and Combustion	3	M.E. 31
M.E. 151w	Automobile and Motor Truck Engines	3	M.E. 150
M.E. 152s	Automobile Engine Testing	2	M.E. 151
M.E. 153s	Automobile Fleet Maintenance	3	Seniors with M.E. 50
M.E. 156f,w	Gas Engine Design	2	M.E. 150
M.E. 157w,s-158s	Advanced Gas Engine Design (per quarter)	2	M.E. 156
M.E. 165f,w,s	Advanced Heating and Ventilation	3	M.E. 63
M.E. 166s	Compressed Air and Refrigerator Machinery	3	M.E. 141
M.E. 170w	Industrial Plants	3	Sr. with M.E. 15 or 16
M.E. 171f	Production Methods	3	Sr. with M.E. 15 or 16
M.E. 173s	Industrial Management	3	M.E. 171
M.E. 181f,w,s	Aeronautical Engineering	3	M.E. 150
M.E. 182f,w,s	Aeroplane Design	2	M.E. 156, M. & M. 193
M.E. 185f,w,s-186f,w,s	Theoretical Naval Architecture (per quarter)	2	None
M.E. 187f,w,s	Ship Drawing	2	M.E. 185, 186
M.E. 189s	Water Turbines	3	M. & M. 129
M.E. 194s	Advanced Engineering Laboratory	2	M.E. 148-149
M.E. 267w	Mechanical Equipment of Buildings	3	Phys. 43, M.E. 163
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	
Phys. 146w	Electrical Measurements of Precision	3	Phys. 144
Psy. 60f	Psychology in Personnel Work	3	Psy. 1-2 or 1-6 Econ. 8-9

DESCRIPTIONS OF COURSES

AGRICULTURAL ECONOMICS

1f,w,s. Principles of Economics. 5 cred.; no prereq.; ar.
2w,s. Agricultural Economics. 3 cred.; prereq., 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.

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., 7 and 24. Mr. Stewart.

37f,s. 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., 7. Mr. White.

111f. Structural Materials. Use, strength, practicability, and durability of materials used in farm building construction and equipment. 3 cred.; prereq., 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., 111. Mr. White.

FARM MACHINERY

12s. 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. Torrance.

13f,w,s. Tractor and Auto Work I. Theory, operation, care, and repair of gasoline engines. 3 cred.; no prereq. Mr. Torrance.

14s. Elementary Power Machinery. A lecture and laboratory course dealing with the handling of the tractor and power driven machinery and their application to farming operations. 3 cred.; prereq., 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., 13. Mr. Torrance.

40f,s. Mechanical Training I. Instruction and laboratory practice in mechanical trades, embracing rope work; belt lacing and pulleys; cement work; soldering; pipe fitting; electric wiring; harness repair, etc. 3 cred.; no prereq. Mr. Dent.

54w. 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 hydroelectric plants. 5 cred.; prereq., 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., 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., 14, 25, Agron. 11. Mr. Schwantes, 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., 122. Mr. Schwantes, 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., 122 and M.E. 28. Mr. Schwantes.

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., 122, Agron. 11. Mr. Schwantes.

135f. Ignition Systems. Lecture and laboratory course in the study of ignition and generating systems used on gas engines and tractors. 4 cred.; prereq., 13, 54. Mr. Stewart.

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., 19. Mr. Roe.

28w. Land Clearing. Land clearing methods, explosives, and machinery. Farm development in cut over timber district. 3 cred.; no prereq. Mr. Thompson, 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.

42w. 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., 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., 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., 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., 101. Mr. Roe.

134s. 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., 25, M.&M. 25. Mr. Stewart.

GENERAL

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., 24. Mr. Romness.

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.

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., 102 or 112 or 125 or reg. in 136. Mr. Roe, Mr. Stewart, Mr. Thompson, Mr. Schwantes, Mr. White.

AGRONOMY AND FARM MANAGEMENT

1f,w,s. 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. Sprague.

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.Econ. 2, Soils 4. Mr. Garey.

103w. Farm Management II. Operation. Continuation of 102. Special attention is given to farm operation. 3 cred.; prereq., 102. Mr. Garey.

ANIMAL HUSBANDRY

15s. Fundamentals of Livestock Production. The basic principles involved in the breeding, feeding, and management of livestock. 3 cred.; jr., sr.; no prereq. (For professional agricultural engineering students only.) Mr. Peters.

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. Kirchner.

62w. Shades and Shadows. The geometrical determination of shades and shadows on architectural forms. 2 cred.; prereq., 61. Mr. Kirchner.

63s. Perspective. The principles and methods of perspective as applied to architectural drawing. 2 cred.; prereq., 61. Mr. Kirchner.

FINE ARTS

21f,w,su-22w,s,su-23s,su. Freehand Drawing. Freehand perspective; drawing in pencil, charcoal, and wash from geometric solids and architectural details. 2 cred. per qtr.; no prereq. Mr. Young.

24f,w,s-25f,w,s-26f,w,s. Freehand Drawing. Drawing in charcoal and water color from still life, figure details, and the antique. 2 cred. per qtr.; prereq., 23. Mr. Young.

27f,w,s-28f,w,s-29f,w,s. Freehand Drawing. Drawing and painting from architectural detail, from the antique, and from life. 2 cred. per qtr.; prereq., 26. Mr. Burton.

70f,w,s. Pictorial Composition. A study of the arrangement of the pictorial art of all ages. Original compositions in all mediums. 1 cred.; prereq., 26 or equiv.

74f-75w-76s. Freehand Drawing. Similar to Courses 24, 25, and 26. For students in Interior Decoration. 3 cred. per qtr.; prereq., 23. Mr. Young.

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 qtr.; prereq., 23. Mr. Burton.

87f,w,s-88f,w,s-89f,w,s. Advanced Modeling. Continuation of Arch. 84-85-86. 2 cred. per qtr.; prereq., 86. Mr. Burton.

93f,w,s-94f,w,s-95f,w,s. Hand Print Processes. Making and printing wood engravings, etchings, dry-points, and lithographs. 1 cred. per qtr.; 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. per qtr.; prereq., 29. Mr. Young.

121f,w,s-122f,w,s-123f,w,s. Freehand Drawing. Advanced life drawing, painting, or modeling and decoration. 2 cred. per qtr.; 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 qtr.; no prereq. Mr. Heath.

*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 qtr.; prereq., 33, 61, 62, 63. Mr. Robertson.

*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 qtr.; 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 qtr. for 131 and 132, 9 cred. for 133; 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 qtr.; 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 qtr.; 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 qtr.; 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 qtr.; 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. Wise.

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.; prereq, Pub. Spk. 41, 42, 43 or registration in Pub. Spk. 41, 42, 43. Mr. Burton.

82w. Advanced Stage Design. Original models and costumes for actual productions. 2 cred.; prereq., 81. Mr. Burton.

* Work in all design courses is carried on simultaneously and students pass from one grade 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 courses is three years; some students require more time and some less. Advancement is based upon design "points" earned. For graduation, in addition to a passing grade in each quarter's work, the student must earn 192 points in Grade I, 336 points in Grade II, and 480 points in Grade III.

*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 qtr.; 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. Wise.

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 qtr.; prereq., 16, 26. Mr. Wise.

184s. Furniture and Decoration. Continuation of 183. 1 cred.; prereq., 183. Mr. Wise.

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., econ. 28. 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 qtr.; prereq., 9 cred. in design or by permission. Mr. Hilpert.

* Work in all design courses is carried on simultaneously and students pass from one grade 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 courses is three years; some students require more time and some less. Advancement is based upon design "points" earned. For graduation, in addition to a passing grade in each quarter's work, the student must earn 192 points in Grade I, 336 points in Grade II, and 480 points in Grade III.

ASTRONOMY

15f,w,s. Descriptive Astronomy for Engineers. Fundamental facts of general and practical astronomy, illustrated by lantern slides, observatory equipment, and telescopic observation. 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 qtr. Surv., Astr. 11 or 15. Mr. Beal.

INORGANIC CHEMISTRY

1f-2w-3s. General Inorganic Chemistry. (Jr. archs.) Study of the general laws of chemistry and of the metals and non-metals and their compounds. 4 cred. per qtr.; 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 qtr.; prereq., h.s. chem. Mr. Kirk.

9w-10s. General Inorganic Chemistry. 5 cred. per qtr.; prereq., h.s. chem. Mr. Kirk.

12f. Qualitative Chemical Analysis. 5 cred. per qtr.; prereq., 5 or 15. Mr. Maynard.

14f-15w. General Inorganic Chemistry. (Engineers and miners.) Includes a study of the general laws of chemistry and of the non-metals, the metals, and their compounds. 5 cred. per qtr.; no prereq. Mr. Heisig.

16s. Qualitative Analysis. (Engineers and miners.) 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

9w. 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

1f,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., Inorg. Chem. 16. Mr. Brewer.

2w,s. Boiler Water. Testing and treatment of boiler waters. 3 cred.; prereq., 1. Mr. Harding.

3w,s. Petroleum Products. Testing of Petroleum Products. 2 cred.; prereq., 1. Mr. Harding.

CHEMICAL ENGINEERING

31f. Chemistry of Engineering Materials. 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., Inorg. Chem. 16. Mr. Mann.

41s. Gas Manufacture and Distribution. 3 cred.; prereq., 2 years of engineering. Mr. Montillon.

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. 3 cred. a qtr.; open to jr., sr. Mr. Mann.

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. 12, Draw. 2. Mr. Boon.

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, Mr. Zelner, Mr. Boon.

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 qtr.; prereq., 122. Mr. Cutler.

224f. Railway Terminals and Yards. Continuation of Course 123. 3 cred.; prereq., 122. Mr. Cutler.

STRUCTURAL ENGINEERING

31f. Stresses 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. Nichol.

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. Nichol.

39w. Structural Design. (For architects.) General principles of structural design. Girders, columns, and roof trusses. 3 cred.; prereq., 38. Mr. Nichol.

41s. Reinforced Concrete. (For architects.) Brief course in theory and designing methods with special reference to building. 3 cred.; prereq., M.&M. 93. Mr. Nichol.

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.

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.

141(a)f. Reinforced Concrete. Similar to 141 with problems of special interest to students in architectural engineering. 3 cred.; prereq., M.&M. 128.

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.

142(a)w. Reinforced Concrete Design. Similar to 142 with problems of special interest to students in architectural engineering. 3 cred.; prereq., 141 (a).

143w,s. Reinforced Concrete Analysis. Advanced problems in design including reinforced concrete arch. 3 cred.; prereq., 142.

144f. Reinforced Concrete. 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.

146f,w,s. Concrete Laboratory. Laboratory technique and experimental investigation of special problems in cement, concrete, and reinforced concrete. 3 cred.; prereq., M.&M. 141. Mr. Nichol.

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.

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 qtr.; 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 qtr.; prereq., 133. Mr. Nichol.

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 qtr.; prereq., 142.

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

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.; open to sr. only. Mr. Bass.

164f,w. Water Power. Types of low, medium, and high-head developments. Details of developments. Dams. Turbine settings and characteristics. 3 cred.; prereq., M.&M. 129. Mr. Hill.

263s. Hydraulic Engineering Problems. Special hydraulic problems in laboratory, drafting room, and field. 3 to 5 cred.; prereq., 164.

MUNICIPAL AND SANITARY ENGINEERING

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., M.&M. 129. Mr. Bass.

163w,s. Water Supply and Sewerage. Continuation of 162. 3 cred.; prereq., C.E. 162. 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, Mr. Martenis.

261f-262w. Water and Sewage Purification. Continuation of Course 163. Design of water purification and sewage disposal works. 3 to 5 cred. per qtr.; prereq., 162. Mr. Bass.

GENERAL

53s. Civil Engineering Practice. Greater problems of engineering. Interrelations of various branches of engineering in practice. Legal, financial, and business functions of the engineer. Relations of the engineer to government and public affairs. 3 cred.; open to juniors and seniors. 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 qtr.; by permission. Mr. Bass, Mr. Cutler, Mr. Lang, Mr. Parcel.

DAIRY HUSBANDRY

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 buttermaking. 5 cred.; no prereq. Mr. Combs.

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, conven-

tions, 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. 11 and 12. Mr. Eggers.

4f,su-5w,su-6s,su. Engineering Drawing and Descriptive Geometry. (Chem. and chem. engr.) 2 cred. per qtr.; prereq., solid geometry. Mr. Williams.

7w,su-8s,su. Engineering Drawing and Descriptive Geometry. (Chem. and chem. engr.) 3 cred. per qtr.; prereq., solid geometry. Mr. Schuck.

9f,w,s. Drafting. (Chem. engr.) 2 to 6 cred.; prereq., 6 or 8. Mr. French.

M.&M.10f,w,su. Solid Geometry. Lines and planes in space, dihedral and polyhedral angles, polyhedrons, surfaces, cylinders, cones, spheres. Numerical exercises in area, volumes, weights. 4 hrs. per wk.; no cred.; no prereq. Mr. Archibald.

11f. Engineering Drawing (Mines). 4 cred.; no prereq. Mr. Myers.

12w. Engineering Drawing (Mines). 3 cred.; prereq., 11. Mr. Potter.

13s. Engineering Drawing (Mines). 3 cred.; prereq., 12. Mr. Myers.

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. Levens.

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. Shultz.

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. Shultz.

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.

34f,w,s. Lettering. Study and analysis of single stroke lettering with particular emphasis on the application to engineering drawing. 1 cred.; prereq., 1. Mr. Archibald.

35w,s. Printing and Lettering. Analysis of modern type faces. A study of the design and technique of printing and advertising, including a brief survey of the more common methods of reproduction. Exercises: layouts, simple compositions and advertisements. 2 cred.; prereq., the equivalent of 37 or 45. Mr. Levens.

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.

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 qtr.; no prereq. Mr. Kirchner.

44f,w,s. Lettering. Practical course in plain lettering. Not an engineering elective. 1 cred.; no prereq. Mr. Levens.

45f,w,s-46f,w,s. Alphabets. Construction and analysis of various types of letters and their arrangement. Exercises, and reference work. Open to soph., jr., and sr. 2 cred. per qtr.; 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.

51w,s. Graphs and Charts. 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., Drawing 1, M.&M. 12. Mr. Schuck.

57f-58w-59s. Graphical Methods. Theory and construction of graphic charts and diagrams. This course can be entered at any quarter. 2 cred. per qtr.; prereq., soph. drawing, M.&M. 26. Mr. Kirchner.

69f,w,s,su. Exercises in Lettering. (Nurses.) See School of Nursing bulletin. 1 cred. per qtr. Mr. Myers.

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.

81f,w,s. Advanced Drawing. 3 cred. per qtr.; prereq., 43 or equivalent.

86f,w,s. Anatomical Drawing. 3 cred. per qtr.; prereq., 43 or equivalent.

87f. Introduction to the Graphic Arts. The field, development, and application in art and industry. Elementary principles of design. Discussion of materials, style, and technique. Exercises including the construction of simple graphs. 2 cred.; open to jr., sr. Mr. Kirchner.

88w. Printing Types and Lettering. The printing art, its history and development. Analysis of the standard type faces. Making of type, composition, imposition. Study of specimens of fine printing. Exercises: simple layouts, including lettering associated with type. 2 cred.; prereq., 87. Mr. Kirchner.

89s. The Picture and the Printed Word. Design and composition including the use of illustrations in black and white, line, and color. Discussion of the various processes of printing, lithography, and engraving. Exercises in planning for text and display work. 2 cred.; prereq., 88. Mr. Kirchner.

111f,w,s-112f,w,s-113f,w,s. Advanced Descriptive Geometry. Methods of representation; parallel and central projection. Curves and surfaces, geometrography, axonometry, and photogrammetry. 3 cred. per qtr.; prereq., 3, calculus. Mr. Kirchner.

114f,w,s. Perspective. Principles and practice of perspective, including shadows, reflections, distortions, corrections, systems, methods, the practical problem, and inverse construction. 3 cred.; prereq., Arch. 63. Mr. Kirchner.

215f-216w-217s. Geometry. Pure and applied. Transformations, perspective, kinematics, stereotomy, graphic statics, graphic calculus, nomography. 3 cred. per qtr.; prereq., calculus. Mr. Kirchner.

218f,w,s-219w-220s. Nomography. Technique and theory of computing charts. Equations of three and more variables. Determination of constants of empirical equations. 3 cred. per qtr.; prereq., 3, M.&M. 128. Mr. Kirchner.

ECONOMICS

1f,s. Introduction to Economics. Principles of economics relating especially to productive organization, considered from standpoint of society as a whole and of individual enterprises. Application of principles and necessary description of industry and commerce. Emphasis upon localization of enterprises. 5 cred.; no prereq. Mr. Black.

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 qtr.; no prereq. Mr. O'Hara.

25w-26s. Principles of Accounting. 4 cred. per qtr.; no prereq. 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.; open to soph., jr., sr. with 6 cred. in econ. or sr. without econ. cred. Mr. Palmer.

29f,s. 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 qtr.; prereq., 9 cred. in econ. or pol. sci. Mr. Young.

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., 8, 9 and 10. Mr. Garver.

172f,w,s. Economics of Transportation. 3 cred.; prereq., 8-9.

BUSINESS ADMINISTRATION

67f,w,s. Market Administration. 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.

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.

89w. Production Management. Administration of business enterprises; coordination of men and departments; delegation of authority; planning, production control; scientific management. 3 cred.; prereq., 8-9. Mr. O'Hara.

130f,s. Cost Accounting. (General survey.) 3 cred.; prereq., 29. Mr. Ostlund.

*131f-132w-133s. Cost Accounting. 3 cred. per qtr.; prereq., 29. Mr. Ostlund.

155s. Corporation Finance. 3 cred.; prereq., 8-9. Mr. Stehman.

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.

* The entire course must be completed before credit is given for any quarter.

ELECTRICAL ENGINEERING†

DIRECT CURRENT

11f-13w-15s. Elements of Electrical Engineering. Introduction to the development, principles, materials, safety, and general applications of electrical engineering. 3 cred. per qtr.; prereq., reg. in phys., and not more than 1 qtr. 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 qtr.; 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 qtr.; 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 qtr.; 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 qtr.; prereq., 116 and reg. in 121, 123, or 125. Mr. Ryan.

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., 128. 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 qtr.; prereq., for 132, 115; for 134 and 136, 121. Mr. Kuhlman.

232f-234w-236s. Electrical Design. Special problems. 2 cred. per qtr.; prereq., reg. in 132, 134, or 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.

† In courses continuing through three quarters, the work of each quarter is prerequisite for following quarters.

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. ——.

42w,s. Electric Power. Similar to Course 41. Sr. C.E. 4 cred.; prereq., Phys. 43, 44. Mr. ——.

43s-44f-45w. Electric Power. Elementary study of the generation, distribution, measurement, and utilization of electric power. Jr. and sr. chem. 3 cred. per qtr.; prereq., Phys. 43, 44. Mr. Johnson.

46f-47w-48s. Electric Power. Similar to Course 43-44-45. Sr. M.E. 4 cred. per qtr.; 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. ——.

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. Consideration 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. Ryan and Mr. Haley.

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. 2 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.

153w-154s. Illumination Problems. Illumination design and specifications applied to problems in street, residence, industrial, commercial, and other kinds of lighting. 2 cred. per qtr.; prereq., 151. Mr. Johnson.

TELEPHONE AND TELEGRAPH ENGINEERING

*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 qtr.; prereq., reg. in 111-113-115. Mr. Swenson.

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 qtr.; prereq., reg. in 123. Mr. Swenson.

267f-268w-269s. Telephone Transmission. Advanced transmission theory at communication frequencies. Class and laboratory. Registration by permission. 2 or 3 cred. Mr. Swenson.

287f-288w-289s. Advanced Communication Laboratory and Seminar. Special problems in communication. Study and discussion of current articles on communication. Registration by permission. 2 or 3 cred. Mr. Swenson.

RADIO ENGINEERING

*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.

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 qtr.; 1 to 6 cred. total; prereq., reg. in 161. 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.

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 qtr.; reg. by permission. Mr. Jansky.

262f-264w-266s. Advanced Radio Laboratory. Special problems in radio laboratory and station, usually taken in connection with Course 261-263-265. For students specializing in electrical communication. 1 or more cred. per qtr.; reg. by permission. Mr. Jansky.

RESEARCH

171w-172s. Undergraduate Thesis. Investigation of some approved problem in electrical engineering. 3 to 6 cred. per qtr.; prereq., 121.

275f-276w-277s. Electrical Engineering Research. Investigation of special problems in laboratory or library. 2 to 6 cred. per qtr.; open to graduate students.

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 qtr.; 2 to 12 cred. total; prereq., 116. Mr. Springer and others.

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 qtr.; 1 to 12 cred. total; open to 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 qtr.; prereq., 122. Mr. Todd.

GENERAL

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.; no prereq., jr. E.E. Mr. ——.

191f-192w-193s. Seminar. Weekly discussion of current electrical periodicals. 1 cred. per qtr.; prereq., 111. Mr. Jansky.

291f-292w-293s. Graduate Seminar. Discussing problems and results of research work. 1 cred. per qtr.; prereq., 126.

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 qtr.; 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 qtr.; 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 qtr.; prereq., 4, 5, 6, or equiv. Mr. Richardson.

31s. 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. Ambler.

35w,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

27w. Farm Woodlots 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. Cheyney.

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 quantity surveying. Study of costs of concrete, brick, timber, and steel construction. Analysis of material and labor 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.

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.

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. Martenis.

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

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.

32s. Vegetable Growing. The fundamental principles of vegetable growing. Scope of the industry and its place in agriculture. Varieties, seed production, regional adaptation, soils, fertilizers, equipment, storage, systems of production, and marketing. 3 cred.; no prereq. Mr. Burrell.

77w. Principles of Landscape Design. (For senior professional agricultural engineers only.) A study of the principles underlying the arrangement of land and landscape for human use and amusement. 3 cred.; no prereq. Mr. Cary.

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,s,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,su. under Department of Drawing and Descriptive Geometry.

11f,w,s. College Algebra. Theory of quadratic equations, interpretation of complex results, graphical representation, indeterminate equations, ratio, proportion, variation, progressions, series, undetermined coefficients, binomial theorem, logarithms, theory of equations, Horner's method. 5 cred.; prereq., 12. 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., 9 or equiv. 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.; pereq., 11 and 12. Mr. Siler.

24f,w,s. Differential Calculus. Limit, derivative, 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. Hartig.

25f,w,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.; pereq., 24. Mr. Dalaker.

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. Dalaker.

152w-153s. Advanced Calculus and Applications. 3 cred. per qtr.; prereq., 151. Mr. Dalaker.

157f-158w-159s. Determinants and Solid Analytical Geometry. An advanced course. 3 cred. per qtr.; prereq., 151. Mr. Dalaker.

254f-255w-256s. Modern Analysis. Based on Whittaker and Watson's text. 3 cred. per qtr.; prereq., 153. Mr. Dalaker.

261f-262w-263s. Functions of a Complex Variable. Elliptic functions and integrals with applications. 3 cred. per qtr.; prereq., 153. Mr. Dalaker.

264f-265w-266s. Advanced Topics in Functions of Complex Variable. 3 cred. per qtr.; prereq., 263. Mr. Dalaker.

MECHANICS

26f,w,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 qtr.; 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.

267f-268w-269s. Advanced Dynamics. Text, Routh's *Rigid Dynamics,* Vol. I. 3 cred. per qtr.; prereq., 153. Mr. Brooke.

274f-275w-276s. Advanced Dynamics of a Particle. 3 cred. per qtr.; prereq., 127. Mr. Brooke.

277f-278w-279s. Advanced Statics. Text, Routh's *Analytical Statics.* 3 cred. per qtr.; 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.

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. 2 cred.; prereq., 128 or reg. in 128. Mr. Priester.

144w. Materials Testing Laboratory. (Course in Mining and Metallurgical Engineering.) Four laboratory hours with Mech. 101. Mr. Priester.

180w-181s. Advanced Strength of Materials. Special problems in applied elasticity. 3 cred. per qtr.; prereq., 128. Mr. Priester.

184f-185w-186s. Advanced Testing Materials Laboratory. Special problems relating to the physical properties of engineering materials. 2 cred. per qtr.; prereq., 141. Mr. Priester.

294f-295w-296s. Mathematical Theory of Elasticity. 3 cred. per qtr.; 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 qtr.; prereq., 129, 143. Mr. Jones.

291f-292w-293s. Hydrodynamics. Text, Ramsey's *Hydrodynamics*. 3 cred. per qtr.; prereq., 129, 153. Mr. Brooke.

MECHANICAL ENGINEERING

MACHINE CONSTRUCTION

11f,w,s. Pattern Practice. Study and application of methods and principles used in constructing and using patterns and core-boxes in the production of castings. Shop drawings and materials used. Manipulation and care of woodworking tools and machinery. Inspection trips and reports. 2 cred.; no prereq. Mr. Richards.

12f,w,s. Foundry Practice. Theory and practice in mixing, molding, and casting of ferrous and non-ferrous metals. Preparation of materials used in making cores and molds. Bench, floor, and machine molding. Inspection trips and reports. 2 cred.; no prereq. Mr. Moffett.

13f,w,s. Forge Practice. Lectures and discussions on modern forge and drop forge practices, industrial welding methods, steels and their treatment. Practice in welding, hardening, tempering, and die forging. Plants inspection 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. 3 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. 3 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,s. Machine Shop Practice. (Chemists and chemical engineers.) 2 cred.; no prereq. Mr. Rogers.

18f,w,s. General Woodworking. 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.

19s(21). 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. Richards.

110f,w,s. Tool Design. The design of tools, jigs, dies, and fixtures for manufacturing interchangeable parts. Nine hours drafting. 3 cred.; prereq., 15, 21. 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.

MACHINE DESIGN

21s(31). 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. Martenis.

22f(32). 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., 21. Mr. Martenis.

23w(33). 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.

24f(34). Kinematics. Gearing, tooth profiles, gear systems, cams and their construction. Point paths and velocity ratios. 2 cred.; prereq., 21. Mr. Martenis.

25w(35). Machine Design. Strength of gear teeth, flywheels, steam piping, engine details, machine frames. Study and design of valves. D-slide, piston and double ported; reversing gears, governors. Lectures and drafting. 3 cred.; prereq., 22. Mr. Martenis.

26s(36). Machine Design. Calculation and design of pulleys, flywheels, rope drives, steam piping, engine details, machine frame. Study and design of valves; D-slide, piston and double ported, reversing gears, governors. Recitations. 2 cred.; prereq., 24. Mr. Flodin.

27s(37). 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., 23. Mr. Martenis.

28f(38). Machine Design. Arranged for students in Chemical and Agricultural Engineering. 3 cred.; prereq., M.&M. 84. Mr. Flodin.

121f-122w-123s(131,132,133). 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 qtr.; prereq., 26. Mr. Flodin.

STEAM ENGINEERING

30f(42). 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 32. 3 cred.; prereq., Phys. 23, 24. Mr. Shoop.

31w(43). 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 33. 2 cred.; prereq., Phys. 23, 24. Mr. Nicholas.

32f(81). Elementary Mechanical Laboratory. Calibration of pressure gages, anemometers, indicator springs. Use of steam calorimeters, planimeters, indicators. Calculations from indicator cards. Tests of mechanical appliances, lubricating oils. To parallel 30. 2 cred.; prereq., M.&M. 26. Mr. Nicholas.

33w(82). Steam Laboratory. Calibration of tachometers, pyrometers, steam flow meters. Valve setting. Flow of steam through orifices. Test of steam trap, surface condenser, simple steam engine. Inspection trip. 2 cred.; prereq., 32. Mr. Nicholas.

34s(83). Elementary Steam and Power Laboratory. Friction test of oils. Test of hot air engine, centrifugal fan, injector, steam pump, steam boiler. Calibration of transmission dynamometer. Power study of industrial machines. Approximate analysis of fuels. Use of Mahler, Comb, and Junkers calorimeters. 2 cred.; prereq., 33. Mr. Nicholas.

35f(84). Elementary General Laboratory. (Mines.) Calibration of pressure gages, anemometers. Use of steam calorimeters, planimeters. Steam indicator practice, card calculation, valve setting. Tests of oils, simple steam engine and steam pump. 4 hours; prereq. with Mech. 112.

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. 2 cred.; prereq. 30.

136f(144). 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. Larson.

137w(145). 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., 136. Mr. Larson.

138w(147). Heat Engines. (Chem. engr.) Study of steam properties, steam calorimetry, types and details of steam engines and turbines. Elementary thermodynamics. Calibration and use of engine and boiler-room instruments. Valve setting. Test of steam radiator, surface condenser, simple steam engine, steam pump. 4 cred.; prereq., M.&M. 84.

139s(148). Heat Engines. (Chem. engr.) Study of construction and operation of boilers, stage evaporators, feed heaters. Combustion, stokers,

and smoke prevention. Selection and testing of power plant units such as fans, compressors, boilers, evaporators, steam and gas engines. 3 cred.; prereq., 138.

140f,w,s(149). Heat Engines. (C.E. & arch.) Steam generation and properties. Fuels and combustion. Construction and operation of boilers and auxiliaries. Elementary thermodynamics. Use and calibration of engine-room instruments. 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.

141s(151). 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., 31. Mr. Shoop.

142w(152). 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., 141. Mr. Shoop.

143w(163). 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., 141. Mr. Shoop.

144f(162). Power Plant Machinery. Advanced study and application of engines, stokers, boilers, fans, purifiers, heaters, coal- and ash-handling equipment, etc. 3 cred.; prereq., 31. Mr. Shoop.

145s(164). Design of Power Plant Units. Treatment of condensers, air pumps, boilers, cooling towers, stage evaporators, heaters, steam piping, lubricating systems, etc. 2 cred.; prereq., 143. Mr. Flodin.

146s(165). 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., 31. Mr. Shoop.

147w(181). Advanced General Laboratory. (Mines.) (a) Tests of air compressor, steam turbine, compound steam engine, centrifugal fan, gas engine. (b) The use of hydraulic measuring devices, weirs, differential gages, etc., in tests of centrifugal pumps, hydraulic turbines and rams. 4 hours; prereq., M.E. 35.

148f,w(182). Advanced Steam Laboratory. Tests of steam turbines, uniflow and compound steam engines, condensers, evaporators, 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., 141. Mr. Shoop.

241f(251). 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, and bleeding. 2 cred.; prereq., 143. Mr. Shoop.

242f-243w(265, 266). Power Plant Design. Problems, designs, and estimates for power plants and central stations. Selection of motive powers, relative advantages of steam, producers, and gas plants. Choice of engines and boilers; pumps, piping, and accessories. 2 cred. per qtr.; prereq., 145. Mr. Shoop.

244s(267). 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., 145. Mr. Shoop.

GAS ENGINES AND AUTOMOTIVES

50f,w,s(40). 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. Robertson, Mr. Hazen.

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., 30, 31. Mr. Robertson, Mr. Hazen.

151w(141). Automobile and Motor Truck Engines. Continuation of 150 with special reference to automobile and motor truck engines. Theoretical consideration of fuels, combustion, detonation, lubrication, etc. 3 cred.; prereq., 150. Mr. Robertson.

152s(142). Automobile Engine Testing. Use of modern research instruments and methods for testing. Experiments showing effect of fuel mixture, distribution, spark timing, etc., upon general engine performance. Standard engine and chassis road tests. 2 cred.; prereq., 151. Mr. Hazen.

153s(143). Automobile Fleet Maintenance. Study of available types of motor coaches and trucks, their design features from a maintenance viewpoint, a survey of service depot requirements with a study of fleet service methods and maintenance practice. Lectures and recitations. 3 cred.; open to seniors only; prereq., 50. Mr. Hazen.

155s(146). Gas Engines and Producers. (E.E.) Laws of gases; gas cycles, auto, semi-Diesel, and Diesel engines. Carburetion, cooling, lubrication, and governing. Gas producers and by-product gases. 3 cred.; prereq., 137. Mr. Robertson, Mr. Hazen.

156f,w(136). 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. 2 cred.; prereq., reg. in 150. Mr. Robertson, Mr. Hazen.

157w,s(137). Advanced Gas Engine Design. Continuation of Course 156. 2 cred.; prereq., 156. Mr. Hazen.

158s(138). Advanced Gas Engine Design. Continuation of Course 157. 2 cred.; prereq., 157. Mr. Hazen.

159f,w(183). Power and Gas Engine Laboratory. Tests of gas and gasoline engines, and gas producers. Power and lighting plants. 2 cred.; prereq., 150 or reg. in 150. Mr. Robertson, Mr. Hazen.

251f-252w-253s(231, 232, 233). 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. 2 cred. per qtr.; grad. Mr. Robertson.

254s(237). 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. 2 cred.; prereq., 156. Mr. Robertson.

255f-256w-257s(241, 242, 243). Automobile Testing and Research. Dynamometer and road tests including over-all efficiency of cars at various speeds, fuel consumption, effect of road surface on traction, efficiencies, and general performances. Special research problems. 2 cred. per qtr.; grad. Mr. Robertson.

258s(245). Motor Truck and Bus 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., 152. Mr. Robertson.

HEATING, VENTILATION, AND REFRIGERATION

63s(53). 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. 3 cred.; prereq., M.&M. 127, 128, and registered in 129. Mr. Rowley.

163f(153). Heating and Ventilation. (Architectural engineers.) Principles of heating and ventilation including the design and layout of furnace, steam, hot water, vapor, vacuum, and fan systems of heating. The requirements and design of ventilating systems. General principles of central station heating. Recitations, lectures, and designs. 4 cred.; prereq., M.&M. 127, 128, 129. Mr. Rowley.

164s(154). 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.

165f,w,s(155). Advanced Heating and Ventilating. Advanced course for seniors and graduates. To cover special problems as selected. 3 cred.; prereq., 63. Mr. Rowley.

166s(156). 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., 141. Mr. Rowley.

265f,w,s(255). Advanced Heating and Ventilating. Special course for graduate students. To be taken in connection with research work in the laboratory. Course 290. Credits to be arranged. Prereq., 63; open to grad. only. Mr. Rowley.

267w(257). 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., 163, Phys. 43.

INDUSTRIAL ENGINEERING

170w(120). 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. Shipley.

171f(121). Production Methods. Principles and practice involved in economical production. Standardization. Requirements for uniformity and interchangeability. Jigs, fixtures, and special equipment; gases and inspection systems. Divisions of labor. Conveying, handling, and stores control. Fatigue elimination. 3 cred.; prereq., sr. with 15 or 16. Mr. Shipley.

173s(223). 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., 171. Mr. Shipley.

274f(224). 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. 173. Mr. Shipley.

275w(225). 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., 274. Mr. Shipley.

276s(226). 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, as-

signed reading, factory inspections, and reports. 3 cred.; prereq., 171. Mr. Shipley.

277f-278w-279s(227,228). Industrial Engineering Problem. Special investigations of practical problems and suggested methods of procedure. Lectures, assigned reading, shop visits, and reports. 3 cred. per qtr.; prereq., 173, 274, 275, or reg. in 274, 275, grad. Mr. Shipley.

AERONAUTICAL ENGINEERING

80f-81w-82s(193,194,195). Aviation. Airplanes, their structure and rigging. Aviation engines, instruments. Aerial navigation. Air craft communications. Handling of sea planes and land planes. (This course is accepted as preliminary qualification for student aviators in the U. S. Naval Reserve.) 2 cred. per qtr.; open to soph., jr., and sr. Mr. Hazen, Mr. Weld.

181f,w,s(196). 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, multicylinder, light weight engines; balancing reciprocating parts; uniform torque; theoretical diagrams. 3 cred.; prereq., 150. Mr. Hazen.

182f,w,s(197). Aeroplane Design. Calculations and drawings for a given aeroplane; stability, strength, propulsion, and motive power required. 2 cred.; prereq., 156, M.&M. 173. Mr. Hazen.

NAVAL ARCHITECTURE

85f,w,s(39). 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.

185f,w,s(170). Theoretical Naval Architecture. Ship measurement; stability and trim; resistance, coefficients, speed, and powering. 2 cred.; jr., sr., preferably preceded by 85. Mr. Flodin.

186f,w,s(171). 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.; open to jr., sr. Mr. Flodin.

187f,w,s(172). Ship Drawing. Preliminary design of commercial ships, including consideration of mechanical equipment, with special emphasis on river and lake transportation. 2 cred.; prereq., 185, 186. Mr. Flodin.

HYDRAULIC MACHINERY

189s(166). Hydraulic Turbines. The theory of operation, design, construction, and regulation of water turbines. Turbine testing; characteristics, selection of type. Cost of turbines and water power. 3 cred.; sr.; prereq., M.&M. 129.

RAILWAY MECHANICAL ENGINEERING

281f(271). 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.

282f-283w-281s(272,273,274). 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 qtr.; prereq., 271. Mr. Martenis.

SEMINAR AND RESEARCH

190f-191w-192s. Seminar. Reading of assigned articles in current technical press. Classroom presentation of principal features of assigned articles. 1 cred. per qtr.; jr., sr. Mr. Shipley.

194s(184). Advanced Laboratory. Opportunity will be offered for carrying on investigations and tests of power units, refrigerators, compressors, fans, or other problems as arranged. 2 cred.; prereq., 148, 159. Mr. Rowley.

290f-291w-292s(287,288,289). Mechanical Engineering Research. Courses may be elected which involve investigations in connection with lubrication, fuels, furnaces, boilers, steam engines, turbines, gas engines, heating and ventilation, industrial and other engineering problems. Reports, special problems, and related tests. Cred. as ar. per qtr.; prereq., 194 or reg. in 194.

METALLURGY

109f. Metallurgy. Short course in metallurgy of base metals, special consideration being given to mechanical features. 3 cred.; prereq., Chem. 16. Mr. Christianson, Mr. Pease.

109w. Metallurgy. Short course in metallurgy of base metals, special consideration being given to electrical features. 3 cred.; prereq., Chem. 16. Mr. Christianson, Mr. Pease.

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.; open to 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.

163f-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, hygiene and first aid, 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 instruction in school of the platoon and company; command and leadership; scouting and patrolling; and automatic rifle; musketry; and interior guard duty. 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. Field engineering and combat principles; military sketching and map reading; machine gun; and command and leadership. 3 cred. per qtr.; 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 qtr.; 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 qtr.; prereq., 4-5-6, and reg. in E.E. 61-63-65.

54f-55w-56s. Second Year Advanced Course R.O.T.C.

Infantry. 37 mm. gun; 3" trench mortar; administration; military history and national defense act; combat principles; military law; rules of land warfare; command and leadership. 3 cred. per qtr.; 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 (M.E. 50w, prereq., M.E. 11, 12, 13), completion of student's military education in preparation for his duties as a second lieutenant. 3 cred. per qtr.; 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 qtr.; 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 qtr.; 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; advanced swimming, indoor baseball. Winter: winter sports, wrestling, squash racquets. Spring: soccer, golf, handball. Lecture one hour, practice three hours. 2 cred. per qtr.; 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

* 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.

Course 1f-2w-3s carries no credit when taken in place of military science and tactics by foreign students and others in the College of Engineering and Architecture.

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 examination or consultations are required annually of all students.

Women students in the College of Engineering and Architecture and the School of Chemistry take physical education instead of military science and tactics in the freshman and sophomore years and without numerical credit.

For the four-year professional course in Physical Education, see the bulletin of the College of Education.

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. Sophomore Gymnastics. Fundamental gymnastics based on the work of Niels Bukh. The exercises include work for flexibility, strength, and co-ordination. No cred.; prereq., 1-2-3. Miss Conger.

9s. Sophomore Archery. Suitable in strength for girls in Individual Gymnastics. No cred.; prereq., 1-2-3.

10f-11w-12s. Sophomore Orthopedic and Individual 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 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. 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,w-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.

30s. Sophomore Life Saving and Water Sports. Red Cross life saving leading to membership in the Life Saving division of the American Red Cross. No cred.; soph., jr., sr.; prereq., 1-2-3, and adv. swimming test. Miss Conger.

31w. Sophomore Elementary Skating. Practice of elementary strokes on the rink with support in the beginning for those who need it. No cred.; soph., prereq., 1-2-3. Miss Lane.

32w. Sophomore Intermediate Skating. Practice and technique of the fundamental strokes of simple figure skating; ice games on the rink. No cred.; soph.; prereq., 1-2-3. Miss Lane.

33f-34w-35s. Elective Sports. Hockey and volley ball in autumn; basketball in winter; baseball, track, and horseshoe in spring. No cred.; fr., jr., sr.; prereq., permission of the director.

36f,w,s. General Swimming. For both beginners and advanced swimmers and divers. No registration necessary.

41f,42w. Health Projects. Two periods of exercise in course chosen by student, one period of conference and follow up of health projects. 2 cred.; jr., sr.; prereq., 6 qtrs. phys. ed.

43f-44w-45s. 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.* 3 cred.; jr., sr.; prereq., 6 qtrs. of phys. ed. Miss Kissock.

66f-67w-68s. Interpretive Dancing. Similar to 13-14-15. Three hours. 3 cred.; jr., sr.; prereq., 6 qtrs. of phys. ed. Miss Baker.

69f-70w-71s. Advanced Interpretive Dancing. Two hours of dancing. Written work and prescribed reading.* 3 cred.; jr., sr.; prereq., 13-14-15 or 66-67-68. Miss Baker.

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.

* If taken for no credit, no reading or written work will be required.

35w,s. Optics. Experimental demonstrations of optical phenomena and a brief study of the fundamental optical principles. Designed for those who cannot 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.

PSYCHOLOGY

1f-2w.† General Psychology. 3 cred. per qtr.; no prereq. Mr. Elliott.

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,s,su. Elements of Preventive Medicine. 3 cred.; prereq., Psy. 1-2, Bact. 51 or equiv., or by permission. Dr. Diehl.

55s. Increasing the Span of Human Life. History of control of disease conditions causing increase of length of human life since 1855. Diseases now causing high mortality. Discussion of foods, rest, recreation, work and other important factors increasing efficiency and length of life. 3 cred.; prereq., 10 cred. in science or social science. Dr. Myers.

73w. Occupational Hygiene and Disease. 2 cred.; prereq., 53. Dr. Myers.

RHETORIC (COLLEGE OF AGRICULTURE)

22f,w,s. Public Speaking. A practical course in fundamentals of speech making. Rules of order and practice in conducting assemblies included. 3 cred.; prereq., Engl. 6. Mr. Miller.

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.

8w. Physical Properties of Soils. The determination of physical constants of soils, including chemical composition, moisture equivalent, and hygroscopic coefficient. 3 cred.; prereq., 4. Mr. McMiller.

† Both quarters of the course must be completed before credit is received for any quarter.

The Bulletin *of the* University *of* Minnesota

College of Engineering and Architecture

Part II

Announcement of Program for the Year 1928-1929

Vol. XXXI No. 50 August 14 1928

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Minneapolis, Minnesota

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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 1928 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 21, Saturday, September 22, or Monday, September 24, to begin the process of registration. Those coming later than 5:00 p.m. Monday, September 24, will be subject to the usual penalty for late registration. See Penalty Fees, page 44 of the bulletin of general information.

During the week September 25 to 29, 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 21, in order to avoid the inconvenience and delay incident to the congestion on the last day.

Any applicants who have not taken the psychological and English tests must report on Friday, September 21, and take these tests before they will be enrolled for Freshman Week.

1928

JULY

Su	Mo	Tu	W	Th	Fr	Sa
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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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1929

JANUARY

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MAY

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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

1928-29

Fall Quarter

1928			
September	20	Thursday	Payment of fees closes, except for new students
September	21-24		Entrance examinations (for removal of entrance deficiencies)
			Registration of all new students entering the freshman class
September	24-28		Examinations for removal of conditions
			Physical examinations
September	24-29		Freshman Week
September	27-28		Registration days for the College of Engineering and Architecture and the School of Chemistry[1]
September	28	Friday	Payment of fees for new students closes
October	1	Monday	Fall quarter classes begin, 8:30[2] a.m.
October	18	Thursday	Senate meeting, 4:30 p.m.
October	20	Saturday	Homecoming Day
November	6	Tuesday	Election Day; a holiday
November	12	Monday	A holiday; (November 11, Sunday, Armistice Day)
November	29	Thursday	Thanksgiving Day; a holiday
December	6	Thursday	State Day Convocation
December	19-22		Final examination period
December	20	Thursday	Commencement Convocation
			Senate meeting, 4:30 p.m.
December	22	Saturday	Fall quarter ends; Christmas vacation begins, 5:20 p.m.
December	26	Wednesday	Payment of fees closes for all students in residence fall quarter[3]

Winter Quarter

1929			
January	2-4		Entrance examinations
January	5	Saturday	Registration day for students in the College of Engineering and Architecture and School of Chemistry,[1] 8:30 a.m.-3:00 p.m.
January	7	Monday	Christmas vacation ends, winter quarter classes begin, 8:30[2] a.m.

[1] Registration subsequent to the date specified will necessitate the approval of the college concerned. See also penalty fees for late registration, bulletin of general information, page 44.

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 8:15 at University Farm.

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

February	12	Tuesday	Lincoln's Birthday; a holiday
February	21	Thursday	Charter Day Convocation
			Senate meeting, 4:30 p.m.
February	22	Friday	Washington's Birthday; a holiday
March	20-23		Final examination period
March	21	Thursday	Commencement Convocation
March	23	Saturday	Payment of fees closes for all students in residence winter quarter[1]
			Winter quarter ends, spring vacation begins, 5:20 p.m.

Spring Quarter

March	25-27		Entrance examinations
March	29	Friday	Good Friday; a holiday
March	30	Saturday	Registration day for students in the College of Engineering and Architecture and School of Chemistry,[2] 8:30 a.m.-3:00 p.m.
April	1	Monday	Spring vacation ends, spring quarter classes begin,[3] 8:30 a.m.
May	16	Thursday	Cap and Gown Day Convocation
			Senate meeting, 4:30 p.m.
May	30	Thursday	Memorial Day; a holiday
June	12-15		Final examination period
June	15	Saturday	Spring quarter closes, 5:20 p.m.
June	16	Sunday	Baccalaureate service
June	17	Monday	Fifty-seventh annual commencement

Summer Quarter

June	18-19		Registration, first term
June	20	Thursday	Classes begin, 8:00 a. m.
July	4	Thursday	Independence Day; a holiday
July	27	Saturday	Registration and payment of fees for second term closes. First term closes
July	29	Monday	Second term classes begin
August	31	Saturday	Second term closes

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

[2] Registration subsequent to the date specified will necessitate the approval of the college concerned. See also penalty fees for late registration, bulletin of general information, page 44.

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.

[3] First hour classes begin at 8:15 at University Farm.

COLLEGE OF ENGINEERING AND ARCHITECTURE

ADMINISTRATION

O. M. Leland, Dean of the College of Engineering and Architecture and the School of Chemistry ..... 133E and 127C
Howard D. Myers, Chairman of Advanced Standing Committee 212E
Carl A. Herrick, Chairman of Registration and Schedule Committees 105E
Robert W. French, Chairman of Students' Work Committee 133E

DEPARTMENTAL OFFICES

Architecture 315E
Civil Engineering 123E
Drawing and Descriptive Geometry. 208E
Electrical Engineering 137EE
English 108E
Mathematics and Mechanics 114E
Mechanical Engineering 103ME

OFFICES OF OUTSIDE DEPARTMENTS

Agricultural Economics ..... OD(F)
Agricultural Engineering .... 201En(F)
Agronomy ..... 119Ad(F)
Animal Husbandry ..... 8St(F)
Art Education 414F
Astronomy 123F
Botany 209Bot
Chemistry 127C
Dairy Husbandry ..... 202HH(F)
Economics 113B
Forestry ..... 205Hr(F)
Geology and Mineralogy 108P
Horticulture ..... 111Hr(F)
Metallurgy 103M
Military Science and Tactics ... 103A
Physical Education for Men ... 108A
Physical Education for Women. 101WGm
Physics 148Ph
Preventive Medicine and Public Health 101bMH
Psychology 112Psy
Rhetoric (Agriculture) ..... 309En(F)
Soils ..... 152Ch(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

Departmental names.—Aeronautical Engineering, Aero.E.; Analytical Chemistry, Anal. Chem.; Architecture, Arch.; Architectural Engineering, Arch.E.; Art Education, Art Ed.; Astronomy, Ast.; Botany, Bot.; Business Administration, Bus. Adm.; Chem-

ical Engineering, Chem.E.; Chemistry, Chem.; Civil Engineering, C.E.; Drawing and Descriptive Geometry, Dr. or Draw.; Economics, Econ.; Electrical Engineering, E.E.; English, Engl.; General Engineering, G.E.; Geology and Mineralogy, Geol.; Inorganic Chemistry, Inorg. Chem.; Interior Decoration, Int.Dec.; Landscape Architecture, L.A.; Mathematics and Mechanics, M.&M.; Mechanical Engineering, M.E.; Metallurgy or 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.; Speech, Sp.; Technological Chemistry, Tech. Chem.; Agricultural Economics, Ag.Econ.; Agricultural Engineering, Ag.E.; Agricultural Rhetoric, Rhet.; Agronomy, Agron.; Animal Husbandry, A.H.; Dairy Husbandry, D.H.; Forestry, For.; Horticulture, Hort.

Buildings.—Main Engineering, E.; Experimental Engineering, Ex.; Electrical Engineering, E.E.; Mechanical Engineering, M.E.; Armory, A.; Botany, Bot.; Business Administration, B.; Chemistry, C.; Folwell Hall, F.; Millard Hall, M.H.; Mines, M.; Old Library, O.L.; Old Physics, O.Ph.; 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).; Haecker Hall, H.H(F).; Horticulture, University Farm, Hr(F).; Old Dairy Building, O.D(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. 11	5	M. & M. 12	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

* See pages 13 and 15 for new curricula in aeronautical engineering and landscape architecture.

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	2	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. 132	3
C.E. 134	3	C.E. 131	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. 140	4	or	
				M.E. 140	4

Together with 11 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. 43	3
Phys. 4	1	Phys. 24	1	Phys. 44	1
M.E. 16	2	Draw. 26	2	Draw. 27	2
E.E. 11	3	E.E. 13	3	E.E. 15	3
Mil. Sci. 4	0	Mil. Sci. 5	0	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	2
E.E. 111	3	E.E. 114	2	E.E. 115	3
E.E. 112	2	M.E. 23	3	E.E. 116	2
Phys. 144	3	Phys. 33	3	M.E. 27	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. 136	3	M.E. 137	3	M.E. 155	3

Together with 36 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. 15	3
M.E. 19	1	M.E. 14	3	M.E. 24	2
Mil. Sci. 4	0	Mil. Sci. 5	0	Mil. Sci. 6	0
Tech. Chem. 1	3	M.E. 50	3	Phys. 33	3
or		or		or	
M.E. 50	3	Phys. 33	3	Tech. Chem. 1	3
or		or		or	
Phys. 33	3	Tech. Chem. 1	3	M.E. 50	3

JUNIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
M. & M. 127	5	M. & M. 128	5	M. & M. 129	4
M.E. 21	2	M. & M. 141	2	M. & M. 143	1
M.E. 22	3	M.E. 25	3	M.E. 26	3
M.E. 30	3	M.E. 31	3	M.E. 34	2
M.E. 32	2	M.E. 33	2	M.E 63	3
				M.E. 141	3

SENIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
M.E. 148	2	M.E. 159	2	M.E. 192	1
or		or		M.E. 194	2
M.E. 159	2	M.E. 148	2	E.E. 48	4
M.E. 150	3	M.E. 191	1	G.E. 193	2
M.E. 190	1	E.E. 47	4	One of the following courses:	
E.E. 46	4			M.E. 123	2
One of the following courses:		One of the following courses:		M.E. 145	2
M.E. 121	2	M.E. 122	2	M.E. 157	2
M.E. 135	2	M.E. 156	2	M.E. 158	2
M.E. 156	2	M.E. 157	2	M.E. 254	2
M.E. 242	2	M.E. 243	2	C.E. 37	3

Together with 21 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. 29	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. 42	3
Geol. 5	3	Ag.Econ. 2	3	Ag.E. 134	3
M.E. 28	3	Ag.E. 7	3	Ag.E. 12	3
C.E. 51	3	Ag.E. 42	3	A.H. 15	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	Bus. Adm. 67	3
Ag.E. 37	3	Ag.E. 121	2	G.E. 193	2
Ag.E. 122	4	Agron. 103	3	Ag E. 126	3
Agron. 102	3			Ag.E. 150	2

Together with 22 elective credits.

ARCHITECTURE AND ARCHITECTURAL ENGINEERING

REGULAR FRESHMAN YEAR

Fall	Credits	Winter	Credits	Spring	Credits
M. & M. 11	5	M. & M. 12	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

SENIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
Arch. 131	10	Arch. 132	10	Arch. 133	9
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. 164	2

Together with 9 elective credits or chem.

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. 1	4	Inorg. Chem. 2	4	Inorg. Chem. 3	4
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	2	M. & M. 143	1
Arch. 14	2	C.E. 32a	3	C.E. 33a	3
Arch. 47	4	Arch. 15	2	Arch. 16	2
		Arch. 48	4	Arch. 49	4

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. 163	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. 140	4
		E.E. 49	2		

Together with 18 elective credits.

INTERIOR DECORATION

Courses Required in the First Two Years	Credits
English A-B-C	15
Mathematics 4 or 6 (with prerequisite)	5 or 10
French (See Junior College Requirements, page 8, S.L.A. bulletin, Part II)	0 to 20
History 11-12-13	10
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	5
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	4 or 5	French	5	French	5
Elective	5	Elective or physics	5	Elective or physics	5

SOPHOMORE YEAR

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.

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			Arch. 184	3

Together with 15 elective credits in junior and senior years.

ENGINEERING PRE-BUSINESS

SOPHOMORE YEAR

Fall	Credits	Winter	Credits	Spring	Credits
M. & M. 91	4	Phys. 23	3	M. & M. 8	5
Phys. 3	3	Phys. 24	1	Phys. 43	3
Phys. 4	1	Econ. 3	5	Phys. 44	1
Econ. 8	3	Econ. 9	3	Econ. 14	5
M.E. 17	2	Econ. 20†	3	Econ. 25	3
M.E. 19	1	Psy. 2	3	Mil. Sci. 6	0
Psy. 1	3	Mil. Sci. 5	0		
Mil. Sci. 4	0				

JUNIOR YEAR*

(In School of Business Administration)

Fall	Credits	Winter	Credits	Spring	Credits
Bus. Adm. 67	3	Bus. Adm. 71	3	Bus. Adm. 139	3
Econ. 26	3	Bus. Adm. 89	3	Bus. Adm. 155	3
Econ. 51	3	Bus. Adm. 100	1	Econ. 53	3
M. & M. 85	4	Econ. 141	3		
		Econ. 52	3		

SENIOR YEAR

Fall	Credits	Winter	Credits	Spring	Credits
Bus. Adm. 101	3	Bus. Adm. 102	3	Bus. Adm. 109	3
Bus. Adm. 130	3	Bus. Adm. 112	3	Bus. Adm. 168	3
Bus. Adm. 180(G)	3	Bus. Adm. 167	3	Econ. 149	3
Econ. 161	3	Bus. Adm. 181(G)	3	Econ. 154	3
Econ. 191	3				

* In addition to the required courses in the junior and senior years, the student must earn approximately 10 elective credits per year.

† Students who have had a high school course or experience in bookkeeping may be exempt from this course and admitted to Econ. 25 by passing a placement test.

I. NEW CURRICULA

The following curricula have been added to the courses offered in the College of Engineering and Architecture:

AERONAUTICAL ENGINEERING

Four-year course leading to the degree of bachelor of aeronautical engineering, B.Aero.E.

The freshman year is the same as for civil, electrical, mechanical, and agricultural engineering.

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 course in aeronautical engineering is intended to provide instruction and training for students who wish to enter this field of engineering as a profession. With the rapid development of aviation in recent years, aeronautical engineering is assuming a prominent and important position among the engineering professions. The production of airplanes in the United States is increasing at a rapid rate. More attention is being given to lighter-than-air craft as well. Aeronautical engineers are required in all stages of the process, from the research work preliminary to improvements in design to the actual construction, testing, operation, and maintenance.

The aeronautical engineering course is similar to mechanical engineering. The fundamental studies are the same. As a result, the graduates in aeronautical engineering should be prepared to enter various branches of the mechanical engineering field if, for any reason, they should prefer to do so.

The first year of the course is the same as that of civil, electrical, mechanical, and agricultural engineering. Students who have completed the freshman year in these courses, therefore, may enter the sophomore year in aeronautical engineering in the fall of 1928.

As in other technical courses, so in aeronautical engineering, mathematics plays an important part. No student should enter this course who feels poorly prepared in mathematics. Preferably, he should have had three years of algebra and geometry in high school.

It should be understood that this is a professional engineering course and not a training course for airplane pilots. It deals with the preparation of students for research, design, construction, operation, management, and maintenance of aircraft from the standpoint of the engineer or manager. However, the sophomore course in aviation serves as the ground school course of training for the Air Reserve Corps of the U. S. Navy, at the completion of which properly qualified students may be accepted for actual flight training during the summer vacation, leading to a commission in the Naval Reserve.

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
Aero.E. 1	Aviation	3	3	..	..
M.E. 19	Mechanical Technology	1	..	2	..
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	1	..	..	2
Draw. 29	Drafting	2	..	..	6
Aero.E. 2	Auto and Airplane Engines	3	3	..	..
M.E. 14	Machine Shop Practice	3	..	..	8
Mil. Sci. 5	Second Year Basic Course	0	..	..	3
	Spring Quarter				
M.&M. 26	Technical Mechanics (Statics)	5	5	..	..
Phys. 43	Electricity	3	1	3	..
Phys. 44	Electricity Laboratory	1	..	..	2
M.E. 15	Machine Shop Practice	3	..	..	8
Aero.E. 3	Aviation	3	3	..	..
C.E. 17	Surveying	3	..	1	7
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	..	..
Phys. 33	Optics	3	1	3	..
Phys. 34	Optics Laboratory	1	..	..	2
Aero.E. 100	Aerodynamics	3	3	..	..
M.E. 30	Steam Engineering	3	3	..	..
M.E. 32	Elementary Mechanical Laboratory	2	..	..	6
	Winter Quarter				
M.&M. 128	Strength of Materials	5	5	..	..
M.&M. 141	Materials Testing Laboratory	2	..	1	3
Aero.E. 101	Aerodynamics	3	3	..	..
M.E. 23	Mechanism and Kinematics	3	3	..	..
M.E. 31	Thermodynamics	3	3	..	..
M.E. 33	Steam Laboratory	2	..	..	6
	Spring Quarter				
M.&M. 129	Hydraulics	4	4	..	..
M.&M. 143	Hydraulics Laboratory	1	..	..	1
Aero.E. 102	Airplane Design	3	3	..	..
M.E. 27	Machine Design	3	..	1	6
M.E. 141	Thermodynamics	3	3	..	..
C.E. 37	Structural Engineering	3	..	1	7

SENIOR YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab
	Fall Quarter				
E.E. 46	Electric Power	4	3	..	2
Met. 156	Metallography	3	..	2	3
Aero.E. 120	Airplane Design	3	2	..	3
M.E. 150	Internal Combustion Engines	3	3	..	..
Aero.E. 140	Airplane Laboratory	2	..	..	6
Aero.E. 190	Seminar	1	1	..	..
	Winter Quarter				
E.E. 47	Electric Power	4	3	..	2
Aero E. 121	Airplane Design	3	1	..	6
M.E. 151	Internal Combustion Engines	3	3	..	..
M.E. 156	Aero Engine Design	2	..	..	6
Aero.E. 141	Aeronautical Laboratory	2	..	..	6
Aero.E. 191	Seminar	1	1	..	..
	Spring Quarter				
E.E. 48	Electric Power	4	3	..	2
Aero.E. 122	Airplane Design	3	1	..	6
Aero.E. 160	Airships	3	2	..	3
Aero.E. 170	Air Transport	2	2	..	..
M.E. 152	Aero Engine Testing	2	..	..	6
Aero.E. 192	Seminar	1	1	..	..

LANDSCAPE ARCHITECTURE

Four-year course leading to the degree of bachelor of landscape architecture, B.L.A. The freshman year is the same as that in architecture and architectural engineering.

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 course in landscape architecture is intended to provide instruction and training for students who desire to enter this profession. It involves the same fundamental preparation as the course in architecture, and, also, special attention is given to architectural as well as landscape design.

The profession of landscape architecture is a broad one and should not be confused with the work of the landscape gardener. The landscape architect may be concerned in the design and construction involved in parks and park systems, real estate development of a high order, and on a large scale, university campuses, civic centers, municipal and state building plans, town and city planning, etc. His professional relations with architects are so intimate as to require familiarity with the architectural profession. This is given consideration in the close relationship between the course in landscape architecture and the course in architecture.

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
M.&M. 91	Calculus	4	4	..	..
Arch. 14	Architectural History	2	..	2	..
Arch. 24	Freehand Drawing	2	..	..	6
Arch. 34	Architectural Design	4	..	..	12
Bot. 1	General Botany	4	1	2	..
Mil. Sci. 4	Second Year Basic Course	0	..	..	3

Winter Quarter

M.&M. 92	Technical Mechanics	4	4	..	..
Arch. 15	Architectural History	2	..	2	..
Arch. 25	Freehand Drawing	2	..	..	6
Arch. 35	Architectural Design	4	..	..	12
Bot. 7	Taxonomy of Flowering Plants	3	..	..	6
Mil. Sci.	Second Year Basic Course	0	..	..	3

Spring Quarter

M.&M. 93	Strength of Materials	4	4	..	..
Arch. 16	Architectural History	2	..	2	..
Arch. 26	Freehand Drawing	2	..	..	6
Arch. 36	Architectural Design	4	..	..	12
Bot. 21	Elementary Ecology	3	..	1	5
Mil. Sci.	Second Year Basic Course	0	..	..	3

Summer Session between Sophomore and Junior Years

Arch. 20	Outdoor Sketching	1
Geol. 1	General Geology	5
Hort. 70	Plant Materials	3

JUNIOR YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
Arch. 27	Freehand Drawing	2	..	..	6
Arch. 84	Modeling	2	..	..	6
C.E. 11	Surveying	3	1	..	7
Econ. 8	General Economics	3	3	..	..
Hort. 71	Plant Material	3	..	1	4
Phys. 3	Mechanics and Sound	3	1	3	..
Phys. 4	Mechanics Laboratory	1	..	..	2
	Winter Quarter				
Arch. 28	Freehand Drawing	2	..	..	6
Arch. 86	Modeling	2	..	..	6
C.E. 12	Surveying	3	1	..	7
Econ. 9	General Economics	3	3	..	..
Hort. 73	History of Landscape Gardening	3	..	3	..
Phys. 23	Heat	3	1	3	..
Phys. 24	Heat Lab.	1	..	..	2
	Spring Quarter				
Arch. 29	Freehand Drawing	2	..	..	6
Arch. 86	Modeling	2	..	..	6
C.E. 13	Surveying	3	1	..	7
Econ. 28	Business Law	3	..	3	..
Hort. 72	Plant Materials	3	..	1	4
Phys. 43	Electricity	3	1	3	..
Phys. 44	Electricity Laboratory	1	..	..	2

SENIOR YEAR

Course No.	Title	Credits	Rec.	Lect.	Lab.
	Fall Quarter				
C.E. 14	Surveying	3	..	..	8
C.E. 51	Highways and Pavements	3	2	..	3
C.E. 144	Reinforced Concrete	3	2	..	2
Hort. 74	Landscape Design	5	..	2	6
For. 1 or Soils 4	General Forestry / Soils	3	..	3	
		3	..	2	2
	Winter Quarter				
C.E. 81	Estimating	3	3	..	..
Hort. 75	Landscape Design	5	..	2	6
Phys. 33	Optics	3	1	3	..
Phys. 34	Optics Laboratory	1	..	..	2
Sp. 35	Public Speaking	3	3	..	..
	Spring Quarter				
Ag.E. 31	Principles of Drainage	3	1	2	..
C.E. 272	City Planning	3	..	3	..
Engl. 31	Technical Writing	3	3	..	..
Hort. 76	Landscape Construction and Maintenance	5	..	2	6

RECOMMENDED ELECTIVES

Arch. 44f, 45w, 46s	Building Construction ... per quarter	2	
Hort. 56s	Plant Propagation	3	
Soils 4f	Soils	3	

II. DESCRIPTIONS OF COURSES IN NEW CURRICULA NOT PUBLISHED IN PART I OF THE BULLETIN OF THE COLLEGE OF ENGINEERING AND ARCHITECTURE FOR 1928-29

AERONAUTICAL ENGINEERING

1f. Aviation. Airplanes, their structure and rigging. Instruments. 3 cred.; prereq., M.&M. 12. Mr. Weld.

2w. Auto and Airplane Engines. (Same as M.E. 50.) Principles and types. Electrical systems. Lubrication and cooling. Carburetors. Accessories. 3 cred.; prereq., for aeronautical engineers 1. Mr. Robertson.

3s. Aviation. Aerial navigation. Communications. Handling of sea planes and land planes. 3 cred.; prereq., 1 and 2. Mr. Weld.

100f-101w-102s. Aerodynamics. Properties of the atmosphere. Resistance of simple bodies. Lift and drag of wings. Theory of propellers. Control surfaces and stability. Prediction of airplane performance. Dynamics loads. Maneuverability and controllability. Structural requirements. 3 cred. per qtr.; prereq., M.&M. 26. Mr. Boehnlein.

120f-121w-122s. Airplane Design. Performance curves. Stresses in wings, fuselage, and chassis. Control surfaces. Propellers. 3 cred. per qtr.; prereq., 102, M.&M. 128, C.E. 37.

140f. Aeronautical Laboratory. Study of airplane parts and their construction. Fittings. Rigging. 2 cred.; prereq., 102.

141w. Aerodynamics Laboratory. Measurement of air flow. Calibration of Pitot tubes and anemometers. Distribution of air pressure on surfaces. Wind tunnel tests of model wings and propellers. 2 cred.; prereq., 102. Mr. Boehnlein.

160s. Airships. Theory and design. Rigid and non-rigid types. Stresses. Performance. 3 cred.; prereq., 102, M.&M. 128, C.E. 37.

170s. Air Transport. Economic problems. Airports and airways. Lighting for night flying. 2 cred.; prereq., 102, C.E. 17.

190f-191w-192s. Seminar. Readings, reports, conferences, and discussions. 1 cred. per qtr.; prereq., 102.

ASTRONOMY

Ast. 51f,w,s. General Astronomy. A survey of the general principles and fundamental facts of astronomy, illustrated by laboratory apparatus, lantern slides, simple problems, naked eye and telescopic observations. 3 cred.; prereq., 15 cred. chosen from any of the following departments: Botany, Chemistry, Geology, Mathematics, Physics, Zoology. Mr. Beal.

BOTANY

1f,w,s. General Botany. Structural, physiology, life histories, and evolution of plants. Lectures and quizzes. 4 cred.; no prereq. Mr. Huff.

7f,w. Taxonomy of Flowering Plants. A general study of the classification and relationship of flowering plants. 3 cred.; prereq., 1. Mr. Rosendahl.

21f,s. Elementary Ecology. An introductory course in the study of plants in relation to their environment. 3 cred.; prereq., 1. Mr. Cooper.

GEOLOGY

1su. General Geology. An introductory study of earth materials and geologic processes. Lectures with a limited amount of laboratory work and field excursions. 5 cred.; all; no prereq. Mr. Stauffer.

HORTICULTURE

70su. Plant Materials. Garden flowers, identification, classification, and landscape uses. Lectures and field trips. 3 cred.; prereq., Bot. 10 cred.

71f. Plant Materials. Deciduous and evergreen trees, shrubs and vines, identification; fall and winter characters and use in landscape gardening. Lectures, field trips, and problems. 3 cred.; prereq., Bot. 10 cred.

72s. Plant Materials. Deciduous and evergreen trees, shrubs and vines, herbaceous perennials, biennials, annuals, and bulbs, identification; spring and summer characteristics; use in landscape gardening. Lectures, field trips, and problems.. 3 cred.; prereq., 71.

73w. History of Landscape Gardening. Literature and development of landscape gardening from ancient to modern times and influences that have affected the different periods. Lectures, assigned readings, field trips, and reports. 3 cred.; no prereq.

74f. Landscape Design. The composition of the various elements used in landscape gardening, methods of presentation. Lectures and problems. 5 cred.; prereq., Arch 23.

75w. Landscape Design. Continuation of Course 74. 5 cred.

76s. Landscape Construction and Maintenance. Construction and maintenance of turf for lawns, golf courses, and other play areas; garden architecture, grading, planting and care, cost of construction. Lectures, field trips, and reports. 5 cred.; prereq., 74.

77w. Principles of Landscape Design. (Agr. engrs.) 3 cred.; no prereq.

III. CHANGES IN CURRICULA

AGRICULTURAL ENGINEERING

Ag.E. 12, Farm Machinery. Name changed to Field Machinery.

Ag.E. 13, Tractor and Auto Work I. Name changed to Gas Engines.

Ag.E. 122, Farm Power Machinery. Name changed to Power Machinery.

Econ. 1, Introduction to Economics. Replaced by Ag. Econ. 1. Principles of Economics 1 with same credits.

C.E. 37, Structural Engineering. Replaced by C.E. 42, Structural Engineering, with same credits.

ARCHITECTURAL ENGINEERING

Inorg. Chem. 4f-5w-16s, Inorganic Chemistry; 4, 4 and 5 credits and Inorg. Chem. 14f-15w-16s, Inorganic Chemistry; 5 credits per quarter are replaced by Inorg Chem. 1f-2w-3s, Inorganic Chemistry; 4 credits per quarter.

C.E. 32, Stresses in Structures. Replaced by C.E. 32(a) with same title.

C.E. 33, Elementary Structural Design. Replaced by C.E. 33(a) with same title.

CIVIL ENGINEERING

C.E. 51, Highways and Pavements. Prereq. changed to 12 or Ag.E. 19.

C.E. 131f, Bridge Analysis. Changed to C.E. 131w, prerequisite C.E. 134.

C.E. 132w, Bridge Design. Changed to C.E. 132s, prerequisite C.E. 131.

C.E. 134s, Intermediate Structures. Changed to C.E. 134f, prerequisite C.E. 32 and M.&M. 128.

ELECTRICAL ENGINEERING

Draw. 26f-27w, Drafting. Changed to Draw. 26w-27s.

M.E. 16s, Machine Shop. Changed to M.E. 16f.

Phys. 35w,s, Optics, 2 credits, is replaced by Phys. 33f,w,s, 3 credits, and moved to the winter quarter junior year.

ENGINEERING PRE-BUSINESS

Curriculum for sophomore year replaced by the following:

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 and Sound Laboratory	1	..	..	2
Econ. 8	General Economics	3	3	..	..
M.E. 17	Machine Shop	2	..	..	6
M.E. 19	Mechanical Technology	1	..	2	..
Psy. 1	General Psychology	3	2	1	..
Mil. Sci. 4	Second Year Basic Course	0	..	..	3

Winter Quarter

Course No.	Title	Credits	Rec.	Lect.	Lab.
Phys. 23	Heat	3	1	3	..
Phys. 24	Heat Laboratory	1	..	..	2
Econ. 3	Mechanism of Exchange	5	3	2	..
Econ. 9	General Economics	3	3	..	..
Econ. 20	Accounting	3	3	..	..
Psy. 2	General Psychology	3	2	1	..
Mil. Sci. 5	Second Year Basic Course	0	..	..	3

Spring Quarter

M. & M. 84	Technical Mechanics	5	5	..	..
Phys. 43	Electricity	3	1	3	..
Phys. 44	Electricity Laboratory	1	..	..	2
Econ. 14	Statistics	5	5	..	..
Econ. 25	Accounting	3	3	..	..
Mil. Sci. 6	Second Year Basic Course	0	..	..	3

INDUSTRIAL ADMINISTRATION

(School of Business Administration)

This course follows the two-year pre-business course given in the College of Engineering and Architecture. The program is designed primarily for students who wish to engage in purchasing, sales, employment, production control, or cost accounting work in manufacturing establishments.

JUNIOR YEAR

	Credits
Strength of Materials (M. & M. 85f)	4
Principles of Accounting (Econ. 26)	3
Business Law (Econ. 51-52-53)	9
Corporation Finance (Bus. Adm. 155)	3
Monetary and Banking Policy (Econ. 141)	3
Market Administration (Bus. Adm. 67)	3
Transportation and Traffic (Bus. Adm. 71)	3
Production Management (Bus. Adm. 89)	3
Advanced General Accounting (Bus. Adm. 139)	3
Report Writing (Bus. Adm. 100)	1
Electives (See list below)	7 to 13

SENIOR YEAR

Cost Accounting (Bus. Adm. 130)	3
Advanced General Economics (Bus. Adm. 101-102)	6
Business Policy (Bus. Adm. 109)	3
Business Cycles (Bus. Adm. 149)	3
Labor Problems (Econ. 161)	3
Personnel Administration (Bus. Adm. 167)	3
Public Finance (Econ. 191)	3
Public Utilities (Econ. 154)	3
Production Topics Course (Bus. Adm. 180-181)	6
Business Statistics (Bus. Adm. 112)	3
Electives (See list below)	9 to 15

ELECTIVES

Students may divide the time available for electives between groups A and B.

A. General and Business

	Hours
Economic History	3 to 6
Finance Management	3
Theory of Statistics	3
Geography of Commercial Production	5

B. Engineering

	Hours
Automotives	3
Gas Manufacture and Distribution	3
Municipal Engineering	3
Contracts and Specifications	3
Estimating	3
Technical Writing	3

MECHANICAL ENGINEERING

M.E. 14f-15w, Machine Shop. Changed to 14w-15s.

M.E. 19s, Mechanical Technology. Changed to 19f.

M.E. 22, Mechanism credits. Reduced from 4 to 3.

M.E. 26, Machine Design credits. Increased from 2 to 3.

M.E. 31, Steam Boiler, Combustion, Fuels. Name changed to Thermodynamics and credits increased from 2 to 3.

M.E. 50, Automotives. Name changed to Auto and Airplane Engines, and credits increased from 2 to 3.

M.E. 141, Elementary Thermodynamics. Name changed to Thermodynamics.

Phys. 35w,s, Optics, 2 credits, is replaced by Phys. 33f,w,s Optics, 3 credits, and is required in any one quarter of the sophomore year.

IV. CHANGES IN ELECTIVE COURSES

Ag.E. 15f, Ignition and Carburetion. Prerequisite changed to 13, 25.

Ag.E. 101f,s, Drainage Engineering and Works. Changed to 101f.

Ag.E. 103f,s, Irrigation Engineering and Works. Changed to 103s.

Ag.E. 123s, Farm Power. Credits increased from 3 to 4.

Ag.E. 136s, Experimental Physical Analysis. Prerequisite changed to Ag.E. 133.

Chem. Eng. 76f-77w, Applied Electrochemistry. Prerequisite changed to soph., jr., and sr.

Bus. Adm. 71f,w,s, Traffic Management. 3 credits; prerequisite, 8-9 is added.

Bus. Adm. 89w, Production Management. Changed to 89f,w,s.

Bus. Adm. 112f,w,s, Business Statistics. 3 credits; prerequisite, 14, is added.

Bus. Adm. 130s, Cost Accounting (General Survey). Changed to 130f,s.

Bus. Adm. 139f,w,s, Advanced General Accounting. 3 credits; prerequisites, 25-26 is added.

Bus. Adm. 155s, Corporation Finance. Changed to 155w,s.

Econ. 3w,s, Mechanism of Exchange. Changed to 3f,w,s with no prerequisite.

Econ. 14s, Elements of Statistics. Prerequisite changed to 8-9.

Econ. 20w, Elements of Accounting. 3 credits; no prerequisites added.

Econ. 154s, Public Utilities. Changed to 154w,s.

Econ. 172f,s, Economics of Transportation. Changed to 172f.

Eng. 35w,s, Public Speaking. Changed to Sp. 35w,s.

M.&M. 171f-172w-173s, Aerodynamics. Renumbered Aero.E., 100f-101w-102s.

M.&M. 191f, Hydraulic Motors and Pumps. Changed to 191w.

M.&M. 192w, Hydraulic Motors Laboratory. Changed to 192s.

M.&M. 193s, Hydraulic Measurements. Changed to 193f.

M.E. 19s, Mechanical Technology. Changed to 19f.

M.E. 50f,w,s, Automotives. Name changed to Auto and Aeroplane Engines, credits increased from 2 to 3.

M.E. 80f-81w-82s, Aviation. Changed to Aero.E. 1, Aviation; Aero.E. 2, Auto and Aeroplane Engines; Aero.E. 3, Aviation, and credits changed from 2 to 3 per quarter.

P.H. 3f,w,s, Personal Hygiene and Elementary Sanitation. 2 credits; no prerequisites added.

P.H. 55s, Increasing the Span of Human Life. Number changed to 4s.

P.H. 50f,w,s, Public and Personal Health. Changed to 50f,w,s and prerequisites changed to jr., sr.

Psy. 60f, Psychology in Personnel Work. Number corrected to 160f.

V. CHANGES IN DESCRIPTIONS OF COURSES

AGRICULTURAL ENGINEERING

12s. Field Machinery. Construction, operation, adjustment, and use of soil preparation, seeding and harvesting machinery. 3 cred.; no prereq. Mr. Schwantes.

13f. Gas Engines. Theory, operation, care, and repair of gasoline engines. 3 cred.; no prereq. Mr. Torrance.

14s. Elementary Farm Power. Lecture and laboratory course dealing with the construction, operation, care, adjustment, testing, and use of the tractor and other sources of farm power. 3 cred.; prereq., 13.

19f. Elementary Surveying. Use of tape, level, transit, and traverse board in agricultural field problems, e.g., mensuration surveys; traverses, differential in profile leveling; plotting and mapping. Care and adjustment of instruments. 3 cred.; prereq., Draw. 3, M.&M. 12. Mr. Roe.

20s. Advanced Surveying. Topographic surveys by stadia and other methods, running simple curves, cross sectioning, plotting the survey, profile building, grade determination, and figuring of quantities in earthwork. 3 cred.; prereq., 19. Mr. Roe.

31f,w,s. Principles of Drainage. Elementary principles and practice of drainage in relation to plant growth, crop and land values, and farm operation and development. 3 cred.; no prereq. Mr. Neal.

122f. Power Machinery. A study of those machines requiring mechanical power for their operation such as feed grinders, corn shredders, ensilage cutters, threshers, etc. 4 cred.; prereq., 12, 13, 25. Mr. Schwantes.

CIVIL ENGINEERING

17s. Surveying. A short course in surveying arranged for students in aeronautical engineering. Method of running a closed traverse using transit and tape. Principles of stadia surveying for the purpose of making topographic surveys. Use of the

level for establishing bench marks, and running profiles. Methods of reducing and computing notes, and plotting of maps. 3 cred.; prereq., Draw. 2, M.&M. 12. Mr. Zelner.

32(a)w. Steel Building Analysis. (For architectural engineers.) Stresses for various load conditions. Building code requirements. Wind bracing. 3 cred.; prereq., 31. Mr. Wise.

33(a)s. Steel Building Design. (For architectural engineers.) Frame work of simple steel buildings and structures. Connections, riveting details, and design of members. 3 cred.; prereq., 32, M.&M. 128. Mr. Wise.

42s. Structural Engineering. (For agricultural engineers.) Analysis of stresses in simple structures. Timber framing and connections. Timber and composite trusses. Steel framing design and connections. Steel tresses. 3 cred.; prereq., M.&M. 85. Mr. Wise.

144f. Reinforced Concrete. (For students other than civil engineers.) Design of reinforced concrete beams, girders, and columns. Design of footings and foundations. Design of retaining walls. Form work. Mixed and placing concrete. Testing and inspection of concrete work. 3 cred.; prereq., M.&M. 84 or 85, or M.&M. 127 and 128. Mr. Wise, Mr. Hughes.

PROGRAM

AERONAUTICAL ENGINEERING

No.	Title	Hour	Day	Bldg.	Instructor
1f	Aviation	I	MWF	110Ex	Mr. Weld
	(3 cred.; prereq., M.&M. 12)				
2w	Auto and Airplane Engines.....	II	TFS	110Ex	Mr. Robertson
	(3 cred.; prereq. for aero.e., 1)				
3s	Aviation	I	TThS	252ME	Mr. Weld
	(3 cred.; prereq., 1 and 2)				
100f	Aerodynamics	I	MWF	215Ex	Mr. Boehnlein
	(3 cred.; prereq., M.&M. 26)				
101w-102s	Aerodynamics	I	MWF	215Ex	Mr. Boehnlein
	(3 cred.; prereq., 100)				
120f	Airplane Design				
	(3 cred.; prereq., 102, M.&M. 128, C.E. 37)				
	Lect.	II	ThS	202ME	
	Lab.	II-IV	T	151ME	
121w	Airplane Design				
	(3 cred.; prereq., 120)				
	Lect.	I	T	251ME	
	Lab.	VII-IX	MW	151ME	
122s	Airplane Design				
	(3 cred.; prereq., 121)				
	Lect.	I	T	251ME	
	Lab.	VII-IX	MF	151ME	
140f	Aeronautical Laboratory	VII-IX	MTh	Ex	
	(2 cred.; prereq., 102)				
141w	Aerodynamics Laboratory	VI-VIII	TTh	Ex	Mr. Boehnlein
	(2 cred.; prereq., 102)				
160s	Airships	II	ThS	251ME	
	(3 cred.; prereq., 102, M.&M. 128, C.E. 37)	II-IV	T	151ME	
170s	Air Transport	III	MW	209Ex	
	(2 cred.; prereq., 102, C.E. 17)				
190f-191w-192s	Seminar	I	Th	254ME	
	(1 cred. per qtr.; prereq., 102)				

AGRICULTURAL ECONOMICS

No.	Title	Hour	Day	Bldg.	Instructor
1f,w	Principles of Economics I.....	IV	MTWF	204Da(F)	Ar
	(5 cred.; soph., jr., sr.; no prereq.)	III	Th		
2w,s	Principles of Economics II.....	I	TThS	24Ad(F)	Ar
	(3 cred.; soph., jr., sr.; prereq., 1)			204Da(F)	(spring)

AGRICULTURAL ENGINEERING

No.	Title	Hour	Day	Bldg.	Instructor
5f	Farm Building Construction				
	(3 cred.; no prereq.)				
	Lect.	VII	WF	41En(F)	Mr. White
	Lab.	VII-IX	M	48En(F)	

No.	Title	Hour	Day	Bldg.	Instructor
7w	Farm Structures I.....				
	(3 cred.; jr., sr.; prereq., Draw. 3 or equiv.)				
	Lect.	IV	TS	305En(F)	Mr. White
	Lab.	VII-IX	M	305En(F)	
12s	Field Machinery				
	(3 cred.; no prereq.)				
	Lect.	I	MW	216En(F)	Mr. Schwantes
	Lab.	I-II	F	49En(F)	
13f	Gas Engines	VI-VIII	TTh	216,37En(F)	Mr. Torrance
	(3 cred.; no prereq.)				
14s	Elementary Farm Power.....	VI-VIII	TTh	216,37En(F)	Mr. Torrance
	(3 cred.; prereq., 13)				
15f	Ignition and Carburetion.....	III	MW	216En(F)	Mr. Torrance
	(3 cred.; prereq., 13, 25)	III-IV	F		
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., 19)				
	Lect.	VI	M	215En(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
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., 24)				
	Lect.	II	TThS	101En(F)	Mr. Romness
	Lab.	VII-IX	W or F	103En(F)	Mr. Romness
28w	Land Clearing	I	TThS	103En(F)	Mr. Gustafson
	(3 cred.; no prereq.)				
31f,w,s	Principles of Drainage.....	III	TThS	215En(F)	Mr. Neal
	(3 cred.; no prereq.)				
36w	Rural Heating and Ventilation.....	I	TThS		
	(4 cred.; prereq., 7, 24)	VI-VIII	T or Th	101En(F)	Mr. Stewart
37f	Rural Sanitation	I	TThS	101En(F)	Mr. Stewart
	(3 cred.; no prereq.)				
40f	Mechanical Training I.....	I-II	MWF	20,106En(F)	Mr. Dent
	(3 cred.; no prereq.)				
40s	Mechanical Training I.....	V-VI	TWF	20,106En(F)	Mr. Dent
	(Same as 40f)				
42w	Principles of Irrigation	IV	MWF	215En(F)	Mr. Roe
	(3 cred.; no prereq.)				
67s	Farm Structures II.....	I-II	TThS	305En(F)	Mr. White
	(3 cred.; prereq., 7)				
101f	Drainage Engineering and Works..	I	MF		
	(4 cred.; prereq., 25, 31, 134)	II-IV	MF	215En(F)	Mr. Roe

No.	Title	Hour	Day	Bldg.	Instructor
102s	Advanced Drainage Problems.....	Ar	Ar	215En(F)	Mr. Neal
	(3 cred.; prereq., 101)				
103s	Irrigation Engineering and Works..	I	MW		
	(4 cred.; prereq., 25, 42, 134)	II-IV	MW	215En(F)	Mr. Roe
104w	Drainage Administration and Law.	Any hour except			
	(3 cred.; prereq., 101)	III	Ar	215En(F)	Mr. Neal
111f	Structural Materials	III	Th		
	(3 cred.; prereq., 67)	III-IV	TS	305En(F)	Mr. White
112s	Farm Building Problems.....	VI-VIII	TTh	305En(F)	Mr. White
	(3 cred.; prereq., 111)				
121w	Steam Boilers and Engines.....	II	TTh	216En(F)	Mr. Boss
	(3 cred.; prereq., 25, 40)	VI-VII	F		
122f	Power Machinery	II	ThS	106En(F)	Mr. Schwantes
	(4 cred.; prereq., 12, 13, 25)	VI-IX	T	49En(F)	
123s	Farm Power	IV	TS	216En(F)	Mr. Schwantes
	(4 cred.; prereq., 14, 25)	VI-IX	T	37En(F)	Mr. Torrance
125w	Farm Machinery Design	VI-VIII	MW	106En(F)	Mr. Schwantes
	(3 cred.; prereq., 122, M.E. 28)				
126s	Selection of Farm Equipment.....	III	MW	106En(F)	Mr. Schwantes
	(3 cred.; prereq., 14, 122)	III-IV	F	49En(F)	
133w	Applied Electricity				
	(5 cred.; prereq., 25 or equiv.)				
	Lect.	III	MWF		
	Lab.	VI-VIII	TTh	101En(F)	Mr. Stewart
134s	Agricultural Hydraulics				
	(4 cred.; prereq., 25, M.&M. 25)				
	Lect.	II	TTh		
	Lab.	VI-VII	MF	101En(F)	Mr. Stewart
135f	Ignition Systems	IV	MW or TTh		
	(4 cred.; prereq., 13, 54)	VI-VII	MWF	103En(F)	Mr. Stewart
136w	Experimental Physical Analysis....	III or IV	MWor TTh		
	(5 cred.; prereq., 133)	VI-VIII	MWF	103En(F)	Mr. Stewart
150s	Seminar	Ar	Ar	Ar	Ar
	(2 cred.; sr.; prereq., 102, 112 or 125, 136)				

AGRONOMY, FARM MANAGEMENT, AND PLANT GENETICS

No.	Title	Hour	Day	Bldg.	Instructor
1f,w,s	Farm Crops	III-IV	MWF	2Ad(F)	Mr. Steinmetz
	(3 cred.; no prereq.)				
102f	Farm Management—Organization ..	II	MW	118Ad(F)	Mr. Garey
	(3 cred.; sr.; prereq., 1, Ag.Econ. 2, Soils 4)				
	Lab. Sec. 1	VI-VII	T	118Ad(F)	
	2	II-III	F	Ar	
102w	Farm Management—Organization ..	I	MW	118Ad(F)	Mr. Garey
	(See 102f)				
	Lab.	VII-VIII	Th	118Ad(F)	
103w	Farm Management—Operation	II	MW	118Ad(F)	Mr. Garey
	(3 cred.; sr.; prereq., 102)				
	Lab.	VI-VII	T	118Ad(F)	

ANIMAL HUSBANDRY

No.	Title	Hour	Day	Bldg.	Instructor
15s	Fundamentals of Livestock Production ..... (3 cred.; jr., sr.; no prereq.) (For professional agricultural engineering students only)	I	TThS	3St(F)	Mr. Peters

ARCHITECTURE

No.	Title	Hour	Day	Bldg.	Instructor
14f-15w-16s	Architectural History ..... (2 cred. per qtr.; prereq., 33)	III	WF	305E	Mr. Mann
17f-18w-19s	Architectural History ..... (2 cred. per qtr.; prereq., 16)	III	TTh	320E	Mr. Mann
20su	Sketching	Ar	Ar	Ar	Ar
21f	Freehand Drawing ..... (2 cred. per qtr.; no prereq.)				
	Sec. 1	VI-VIII	TTh	417E	Mr. Doseff
	2	II-IV	MF	417E	Mr. Young
	3	VI-VIII	MW	417E	Mr. Doseff
	4	II-IV	TS	405E	Mr. Doseff
21w	Freehand Drawing ..... (See 21f)	II-III VI-VIII	T Th	417E	Mr. Doseff
22w	Freehand Drawing ..... (2 cred.; prereq., 21)				
	Sec. 1	VI-VIII	TF	417E	Mr. Doseff
	2	II-IV	WF	417E	Mr. Doseff
	3	VI-VIII	MW	417E	Mr. Young
22s	Freehand Drawing ..... (See 22w)	II-III VII-VIII	TTh F	417E	Mr. Doseff
23s	Freehand Drawing ..... (2 cred.; prereq., 22)				
	Sec. 1	VII-IX I-III	Th S	417E	Mr. Doseff
	2	II-IV	MF	417E	Mr. Young
	3	VI-VIII	MW	417E	Mr. Doseff
24f,w,s-25f,w,s-26f,w,s	Freehand Drawing ..... (2 cred. per qtr.; prereq., 23)	II-IV	TS	417E	Mr. Young, Mr. Doseff
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	Elements of Architecture..... (5 cred. per qtr.; no prereq.)				
	Lect.	IV	TS	305E	Mr. Heath, Mr. R. T. Jones
	Lab. Sec. 1	II-IV	MWF	309E	Mr. Heath
	2	VI-VIII	MWF	309E	Mr. Heath
	3	VI-VIII	TTh		
		I III	S	309E	Mr. Havens
31w-32s	Elements of Architecture..... (5 cred. per qtr.; no prereq.)				
	Lect.	IV	TS	320E	Mr. Heath, Mr. R. T. Jones
	Lab.	I-III	MWF	225E	Mr. Havens

No.	Title		Hour	Day	Bldg.	Instructor
32w	Elements of Architecture..... (5 cred.; prereq., 31)					
	Lect.		IV	TS	305E	Mr. Heath, Mr. R. T. Jones
	Lab.	Sec. 1	II-IV	MWF	309E	Mr. Havens
		2	VII-IX	MWF	309E	Mr. Heath
		3	VI-VIII	TTh		
			I-III	S	309E	Mr. Heath
33s	Elements of Architecture..... (5 cred.; prereq., 32)					
	Lect.		IV	TS	305E	Mr. Heath, Mr. R. T. Jones
	Lab.	Sec. 1	II-IV	MWF	309E	Mr. Havens
		2	VII-IX	MWTh	309E	Mr. Heath
		3	II-III	TThS		
			VII-IX	Th	309E	Mr. Heath
34f,w-35f,w-36f,w	Architectural Design, Grade I..... (4 cred.; prereq., 33, 61, 62, M.&M. 11, 12, 13; for int. dec. 33, 61, 62)					
		Sec. 1	VII-IX	MF		
			VI-VIII	TTh	401E	Mr. Robertson
		2	I-IV	TS		
			I-III	Th	401E	Mr. Deneen
34s-35s-36s	Architectural Design, Grade I..... (See 34f,w-35f,w-36f,w)					
		Sec. 1	VI-VIII	MWThF	401E	Mr. Robertson
		2	I-IV	T		
			I-III	ThS	401E	Mr. Deneen
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	302E	Mr. R. C. Jones
44f-45w-46s	Building Construction ..... (2 cred. per qtr.; prereq., 33)		I	TTh		
			IV	M	320E	Mr. R. T. Jones
47f-48w-49s	Building Construction ..... (4 cred. per qtr.; prereq., 33)					
	Lect.		I	TTh		
			IV	W	320E	Mr. R. T. Jones
	Lab.		VI-VIII	MT	225E	Mr. Deneen
			III	Th		
51f-52w-53s†	Building Construction ..... (2 cred. per qtr.; prereq., 33)		IV	F	320E	Mr. R. T. Jones
61f	Projections ..... (2 cred.; no prereq.)					
	Lect.		III	Th	305E	Mr. Kirchner
	Lab.	Sec. 1	VI-VIII	W	225E	
		2	VI-VIII	Th	225E	
		3	VI-VIII	F	225E	
62w	Shades and Shadows..... (2 cred.; prereq., 61, or Draw. 41)					
	Lect.		III	Th	305E	Mr. Kirchner
	Lab.	Sec. 1	VI-VIII	W	225E	
		2	VI-VIII	Th	225E	
		3	VI-VIII	F	225E	
		4	I-III	S	225E	

† The entire course must be completed before credit is received for any quarter.

No.	Title	Hour	Day	Bldg.	Instructor
63s	Perspective				
	(2 cred.; prereq., 61)				
	Lect.	VI	Th	305E	**Mr. Kirchner**
	Lab. Sec. 1	VII-IX	W	225E	
	2	VII-IX	Th	225E	
	3	VI-VIII	F	225E	
	4	I-III	S	225E	
64s	Interior Perspective	Ar	Ar	Ar	**Mr. Wise**
	(1 cred.; prereq., 33)				
70f,w,s	Pictorial Composition	VI-VIII	T	405E	**Mr. Burton**
	(1 cred.; prereq., 26 or equiv.)				
74f-75w-76s	Freehand Drawing	III-IV	M		
	(3 cred.; prereq., 23)	II-IV	TS	417E	**Mr. Burton**
81f,w	Stage Design	VI-VIII	TTh	405E	**Mr. Burton**
	(2 cred.; prereq., Sp. 41-42-43*)				
82w	Advanced Stage Design.....	VI-VIII	TTh	405E	**Mr. Burton**
	(2 cred.; prereq., 81)				
84f,w,s-85f,w,s-86f,w,s	Modeling	VI-VIII	MW	405E	**Mr. Burton**
	(2 cred. per qtr.; prereq., 29 or equiv.)				
87f,w,s-88f,w,s-89f,w,s	Advanced Modeling				
	(1 cred. per qtr.; prereq., 86)				
	Sec. 1	VI-VIII	M	405E	**Mr. Burton**
	2	VI-VIII	W	405E	
90f,w,s-91f,w,s-92f,w,s	Illustration	VI-VIII	T	405E	**Mr. Young**
	(1 cred. per qtr.; prereq., 29)				
93f,w,s-94f,w,s-95f,w,s	Hand Print Processes.....	VI-VIII	T	405E	**Mr. Young**
	(1 cred. per qtr.; prereq., 29)				
121f,w,s-122f,w,s-123f,w,s	Freehand Drawing	Ar	Ar	Ar	**Mr. Burton**
	(2 cred. per qtr.; prereq., 29)				
131f,w,s-132f,w,s-133f,w,s	Architectural Design, Grade III....	III-IV	TWF		
	(131, 132, 10 cred. per qtr., 133, 9 cred.; prereq., 39)	VI-IX	MTWThF		
		I-IV	S	317E	**Mr. Arnal**
134f,w,s-135f,w,s-136f,w,s	Interior Decoration Design.....	VI-VIII	WF		
	(7 cred. per qtr.; prereq., 36)	VI-IX	MTTh		
		I-III	S	317E	**Mr. Arnal**
141f-142w-143s	Building Construction	II	TTh	320E	**Mr. R. T. Jones**
	(2 cred. per qtr.; prereq., C.E. 41 or M.&M. 26)				
151f	Architectural Seminar	II	F	320E	**Mr. Mann**
	(1 cred.; prereq., sr. standing)				
152w	Estimating	I	F	320E	**Mr. Sault**
	(1 cred.; prereq., sr. standing)				
153s	Business Relations	II	WF	320E	**Mr. Mann**
	(2 cred.; prereq., Econ. 28)				
160f	History of Landscape Design.....	Ar	Ar	Ar	**Mr. Mann**
	(2 cred.; prereq., 16)				

* May be taken at same time.

No.	Title	Hour	Day	Bldg.	Instructor
161f	Decoration and Applied Arts..... (2 cred.; prereq., 16, 26)	II	MW	320E	Miss Hargrave
162w	Landscape Design ..... (2 cred.; prereq., 39)	II	MW	320E	Mr. Nichols
163s	History of Sculpture and Painting.. (2 cred.; prereq., sr. standing)	I	MW	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	MWS	135E	Miss Hargrave
184s	Furniture and Decoration..... (3 cred.; prereq., 183)	Ar	Ar	Ar	Miss Hargrave

ART EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
20f-21w-22s	Principles of Harmony in Form and Color ..... (3 cred. per qtr.; prereq., 9 cred. in design)	I-II	MWF	30OPh	Mr. Hilpert

ASTRONOMY

No.	Title	Hour	Day	Bldg.	Instructor
51f	General Astronomy ..... (3 cred.; prereq., 15 cred. chosen from any of the following departments: Botany. Chemistry, Geology, Mathematics, Physics, Zoology)	II	MWF	124F	Mr. Beal
51w	General Astronomy ..... (See 51f)	IV	MWF	124F	Mr. Beal
51s	General Astronomy ..... (See 51f)	I	MWF	124F	Mr. Beal

BOTANY

No.	Title	Hour	Day	Bldg.	Instructor
1f	General Botany ..... (4 cred.; all; no prereq.)				
	Lect. Sec. 1	III	TThS	BotAud.	Mr. Huff
	2	VI,VII	T		
		VI	Th		
	Quiz Sec. 1	I	M		
	2	II	T		
	3	III	W		
	4	IV	F		
	5	VI	M		
	6	VII	Th		
	7	VIII	W		
7f,w	Taxonomy of Flowering Plants.... (3 cred.; all; prereq., 1)	I II	MWF	1,4,5,8Bot	Mr. Rosendahl
21s	Elementary Ecology ..... (3 cred.; all; prereq., 1)	VI-VIII	TTh	1 4,5,8Bot	Mr. Cooper

INORGANIC CHEMISTRY

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w-3s	Inorganic Chemistry				
	(4 cred. per qtr.; no prereq.)				
	Sec. 1 (Jr. arch. only)				
	Lect.	VI	MWF	225C	Mr. Reyerson
	Lab. Sec. 1	VI-VII	TTh	110C	Mr. Reyerson
	2	VIII-IX	TTh	110C	
	Sec. 2 (Soph. arch. engr. only) Fall, winter				
	Lect.	VII	MWF	100C	Mr. Pervier
	Lab.	VIII-IX	MW	110C	Mr. Pervier
	Sec. 2 (Soph. arch. engr. only) Spring				
	Lect.	VII	MF		
		IV	S	225C	Mr. Pervier
	Lab.	VIII-IX	MF	110C	Mr. Pervier
4f	Inorganic Chemistry				
	(4 cred.; prereq., h.s. chem.)				
	Lect. Sec. 1	I	TThS	100C	Mr. Heisig
	2	IV	T	225C	
		IV	S	100C	
		VI	Th	100C	
	3	I	TThS	100C	
	Quiz	VIII	M	100C	
	Lab. Sec. 1	VI-VIII	F	110C	
	2	II-IV	M	110C	
	3	III-V	T	110C	
5w	Inorganic Chemistry				
	(4 cred.; prereq., 4)				
		IV	T	225C	
	Lect. Sec. 1	IV	S	100C	Mr. Heisig
		VI	Th	100C	
	2	I	TThS	100C	
	Quiz	VII	M	305E	
	Lab. Sec. 1	VI-VIII	F	110C	
	2	III-V	S	110C	
9w-10s	Inorganic Chemistry				
	(5 cred.; prereq., h.s. chem.)				
	Lect.	III	MWF	100C	Miss Cohen, Mr. Kirk
	Lab. Sec. 1	V-VI	MWF	290C	
	2	VIII-IX	MWF	290C	
12f	Qualitative Chemical Analysis.....				
	(5 cred.; prereq., 5 or 15)				
	Lect.	I	TThS	325C	Mr. Maynard
	Lab.	VI-VIII	MW	290C	
14f	Inorganic Chemistry				
	(5 cred.; no prereq.)				
	Lect.	II	TThS	100C	Mr. Barber
	Lab.	VI-IX	T		
		VI-VII	Th	110C	
	Quiz	VIII	F	490C	
15w	Inorganic Chemistry				
	(5 cred.; prereq., 14)				
	Lect.	II	TThS	100C	Mr. Barber
	Lab.	VI-IX	T		
		VI-VII	Th	110C	
	Quiz	VIII	F	100C	

No.	Title		Hour	Day	Bldg.	Instructor
16s	Qualitative Analysis					
	(5 cred.; prereq., 5 or 15)					
	Lect.	Sec. 1	VII	MWF	100C	Mr. Heisig
		2	I	TThS	100C	Mr. Heisig
		3	II	TThS	100C	Mr. Barber
	Lab.	Sec. 1	IV-V	T		Mr. Heisig
			VI-IX	Th	110C	
		2	VI-IX	M		
			VI-VII	W	110C	Mr. Heisig
		3	VIII-IX	W		
			VI-IX	F	110C	Mr. Barber

ANALYTICAL CHEMISTRY

No.	Tit'e	Hour	Day	Bldg.	Instructor
9w	Analytical Chemistry				
	(3 cred.; prereq , Inorg. Chem. 16)				
	Lect.	VI	T	325C	Mr. Geiger
	Lab.	VII-IX	T		
		VI-IX	Th	310C	

TECHNOLOGICAL CHEMISTRY

No.	Title		Hour	Day	Bldg.	Instructor
1f	Power Plant Chemistry.....					
	(3 cred.; prereq., Inorg. Chem. 16)					
	Lect.		VI	Th	115C	Mr. Brewer
	Rec.		I	S	115C	
	Lab.	Sec. 1	I-III	MF	10C	
		2	I-III	W		
			II-IV	S	10C	
1w	Power Plant Chemistry					
	(See 1f)					
	Lect.		VI	Th	115C	Mr. Brewer
	Rec.		I	S	115C	
	Lab.	Sec. 1	II-IV	MF	10C	
		2	I-III	T		
			II-IV	S	10C	
1s	Power Plant Chemistry					
	(See 1f)					
	Lect.		I	M	115C	Mr. Brewer
	Rec.		I	F	115C	
	Lab.		II-IV	MF	10C	
2w	Boiler Water					
	(3 cred.; prereq., 1)					
	Lect.		I	T	215C	Mr. Harding
	Lab.		VI-IX	TTh	10C	
2s	Boiler Water					
	(See 2w)					
	Lect.		IV	M	215C	Mr. Harding
	Lab.		VI-IX	MF	10C	
3w,s	Petroleum Products					
	(2 cred.; prereq., 1)					
	Lect.		Ar	Ar	Ar	Mr. Harding
	Lab.		VI-IX	W	10C	

CHEMICAL ENGINEERING

No.	Title	Hour	Day	Bldg.	Instructor
31f	Chemistry of Engineering Materials (3 cred.; prereq., Inorg. Chem. 16)	IV	MWF	315C	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.; prereq., soph., jr., or sr.)				
	Lect.	Ar	Ar	Ar	Mr. Montillon
	Lab.	Ar	Ar	Ar	Mr. Ruth

CIVIL ENGINEERING

No.	Tit'e		Hour	Day	Bldg.	Instructor
11f	Surveying ..... (3 cred.; prereq., M.&M. 12, Dr. 2)					
	Lect.	Sec. 1	VII	M	21E	Mr. Boon
		2	III	M	21E	
	Lab.	Sec. 1	I-IV	T		
			I-III	Th	1E	Mr. Boon
		2	VI-VIII	Th		
			I-IV	S	1E	
		3	VI-IX	T		
			VI-VIII	W	1E	
12w	Surveying ..... (3 cred.; prereq., 11)					
	Lect.	Sec. 1	VII	T	21E	Mr. Boon
		2	VI	Th	21E	
	Lab.	Sec. 1	I-IV	T		Mr. Zelner
			I-III	Th	217E	Mr. Cutler
		2	VI-VIII	Th		Mr. Zelner
			I-IV	S	1E	Mr. Cutler
		3	VI-VIII	M		Mr. Cutler
			VI-IX	T	1E	Mr. Zelner
13s	Surveying ..... (3 cred.; prereq., 12)					
	Lect.	Sec. 1	VII	Th	21E	Mr. Cutler
		2	III	Th	21E	
	Lab.	Sec. 1	I-IV	T		Mr. Cutler
			I-III	Th	217E	Mr. Boon
		2	VII-IX	W	1E	Mr. Boon
			I-IV	S	217E	Mr. Cutler
		3	VI-IX	W		Mr. Boon
			VI-VIII	Th	101E	Mr. Cutler
14f	Surveying .... (3 cred.; prereq., 13)					
		Sec. 1	VI-IX	TW	229E	Mr. Zelner
		2	VI-IX	F		
			I-IV	S	229E	
		3	VI-IX	M	229E	
			I-IV	T		
15w	Surveying ..... (2 cred.; prereq., 14)					
		Sec. 1	VI-VII	W		Mr. Zelner
			II-III	Th	21E	
		2	II-III	WF	21E	

No.	Title	Hour	Day	Bldg.	Instructor
16s	**Surveying**				
	(2 cred.; prereq., 15)				
	Sec. 1	III-IV	F		Mr. Zelner
		VI-IX	Th	217E	
	2	I-II	F		
		I-IV	S	229E	
17s	**Surveying**				
	(3 cred.; prereq., M.&M. 12, Dr. 2)				
	Lect.	VI	Th	215E	Mr. Zelner
	Lab.	II-IV	T		
		I-IV	W	227E	
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	Th	104E	Mr. Boon
	Lab. Sec. 1	VI-IX	F	229E	
	2	VI-IX	M	229E	
	3	I-IV	S	217E	
22s	**Railway Engineering**				
	(2 cred.; prereq., 21)				
	Lect.	IV	T	21E	Mr. Boon
	Lab. Sec. 1	VI-IX	F	217E	Mr. Cutler
	2	VI-IX	M	229E	
23su	**Summer Camp**	About Aug. 15			Mr. Cutler, Mr. Zelner, Mr. Boon
	(9 cred.; prereq., 16, 22)				
31f	**Stresses in Structures**.....				
	(3 cred.; prereq., M.&M. 26, Dr. 23)				
	Lect. Sec. 1	I	Th	22E	Mr. Wise
	2	III	Th	135E	
	Lab. Sec. 1	III-IV	M	Ex	Mr. Hughes
		I-IV	S	217E	Mr. Sandberg
	2	VI-IX	M	201E	Mr. Sandberg
		II-III	W	Ex	Mr. Hughes
	3	I-II	F	Ex	Mr. Hughes
		VII-IX	F	217E	Mr. Sandberg
32w	**Stresses in Structures**				
	(3 cred.; prereq., 31)				
	Lect. Sec. 1	III	M	21E	Mr. Wise
	2	II	M	21E	
	Lab. Sec. 1	VI-IX	T	229E	Mr. Sandberg
		I-II	S	Ex	Mr. Hughes
	2	VI-IX	Th	229E	Mr. Sandberg
		VI-VII	F	Ex	Mr. Hughes
32(a)w	**Stresses in Structures (Arch.E.)**...	VI-IX	W	229E	Mr. Sandberg
	(3 cred.; prereq., 31)	VI-VII	F	Ex	Mr. Hughes
33s	**Elementary Structural Design**.....				
	(3 cred.; prereq., M.&M. 128, C.E. 32)				
	Lect.	VI	W	21E	Mr. Wise
	Lab. Sec. 1	VI-IX	T	227E	Mr. Sandberg
	2	VI-IX	F	229E	Mr. Sandberg
33(a)s	**Elementary Structural Design (Arch.E.)**	VI-IX	Th	101E	Mr. Sandberg
	(3 cred.; prereq., 32, M.&M. 128)				

No.	Title	Hour	Day	Bldg.	Instructor
37s	Structural Engineering				
	(3 cred.; prereq., M.&M. 26)				
	Lect.	III	S	203E	Mr. Wise
	Lab.	VII-IX	W		
		VI-IX	Th	229E	
38f	Stresses in Structures (Arch.)....	I-II	TThF	225E	Mr. Hughes
	(3 cred.; prereq., M.&M. 93)				
39w	Structural Design (Arch.).....	I-II	TThF	229E	Mr. Hughes
	(3 cred.; prereq., 38)				
41s	Reinforced Concrete (Arch.).....	I-II	TTh		Mr. Hughes,
	(3 cred.; prereq., M.&M. 93)	III-IV	F	209E	Mr. Sheiry
42s	Structural Engineering (Ag.E.)....	IV	TS		
	(3 cred.; prereq., M.&M. 85)	III	Th	215Ex	
51f	Highways and Pavements				
	(3 cred.; prereq., 12 or Ag.E. 13)				
	Lect. Sec. 1	VI	MTh	215Ex	Mr. Lang
	2	VI	TW	213E	
	3	VII	W		
		VI	F	215Ex	
	Lab. Sec. 1	VII-IX	M	215Ex	
	2	VII-IX	T	215Ex	
	3	VII-IX	Th	215Ex	
52w	Highways and Pavements.....				
	(3 cred.; prereq., 51)				
	Lect.	IV	T	215Ex	Mr. Lang
	Lab. Sec 1	VI-IX	M		Mr. Lang
		VI-VII	Th	215Ex	
	2	VIII-IX	W		
		VI-IX	F	215Ex	
	3	VI-IX	T		
		VI-VII	W	215Ex	
53s	Civil Engineering Practice.....				
	(3 cred.; no prereq.)				
	Sec. 1	I	TTh		Mr. Bass
		VII	W	22E	
	2	I	TTh		
		I	M	22E	
121f	Railway Engineering				
	(3 cred.; prereq., 23)				
	Lect.	III	F	206E	Mr. Cutler
	Lab. Sec. 1	II-IV	W		Mr. Cutler
		VI-VIII	Th	227E	
	2	VI-VIII	M		
		II-IV	T	217E	
122w,s	Railway Engineering				
	(3 cred.; prereq., 23)	Ar	Ar	Ar	Mr. Cutler
123s	Railway Engineering				
	(3 cred.; prereq., 23)	Ar	Ar	Ar	Mr. Cutler
124w	Transportation	II	WS		
	(3 cred.; prereq., 121)	VI	F	135E	Mr. Cutler
125s	Transportation	Ar	Ar	Ar	Mr. Cutler
	(3 cred.; prereq., 121)				
131w	Bridge Analysis				
	(3 cred.; prereq., 134)				
	Sec. 1	II-IV	T		
		VII-IX	F	227E	Mr. Sheiry
	2	II-IV	F		
		VI-VIII	M	227E	

No.	Title	Hour	Day	Bldg.	Instructor
132s	Bridge Design	VI-IX	M		
	(3 cred.; prereq., 131)	III-IV	M	227E	Mr. Sheiry
133f,w,s	Bridge Design	Ar	Ar	Ar	Mr. Sheiry
	(3 cred.; prereq., 132)				
134f	Statically Indeterminate Structures				
	(3 cred.; prereq., 32, M.&M. 128)				
	Lab. Sec. 1	II-IV	T		
		I-III	S	227E	Mr. Wise
	2	II-IV	W		
		VII-IX	Th	229E	
135s	Reinforced Concrete Design.....	III-IV	M		
	(4 cred.; prereq., 142 or 142(a))	VI-IX	T	229E	Mr. Wise
141f	Reinforced Concrete				
	(3 cred.; prereq., M.&M. 128)				
	Sec. 1	VI-IX	M		
		I-III	Th	227E	Mr. Sheiry
	2	VI-VIII	T		
		VI-IX	F	217E	
141(a)f	Reinforced Concrete (Arch. Engr.)	VI-IX	TF	217E	Mr. Sheiry
	(3 cred.; prereq., M.&M. 128)				
142w	Reinforced Concrete Design.....				
	(3 cred.; prereq., 141)				
	Sec. 1	VI-IX	M		
		II-IV	F	217E	Mr. Wise
	2	VI-IX	W		
		VI-VIII	Th	217E	
142(a)w	Reinforced Concrete Design (Arch. Engr.)	VI-IX	W		Mr. Wise
	(3 cred.; prereq., 141a)	VI-IX	Th	217E	
143s	Reinforced Concrete Analysis.....	Ar	Ar	Ar	Mr. Wise
	(3 cred.; prereq., 142)				
144f	Reinforced Concrete				
	(3 cred.; prereq., M.&M. 84, 85 or 127, 128)				
	Rec.	IV	MW	215E	Mr. Sheiry
	Lab.	VIII-IX	Th	229E	
146f	Cement and Concrete Laboratory...	III-IV	M		
	(3 cred.; prereq., M.&M. 141)	VI-IX	W	Ex	Mr. Hughes
146w	Cement and Concrete Laboratory..	VI-IX	T		
	(See 146f)	VII-VIII	F	Ex	Mr. Hughes
146s	Cement and Concrete Laboratory..	VI-IX	Th		
	(See 146f)	VI-VII	F	Ex	Mr. Hughes
147w	Foundations				
	(2 cred.; prereq., 33)				
	Lect.	Ar	Ar	Ar	Mr. Sheiry
	Lab.	Ar	Ar	Ar	
147s	Foundations				
	(See 147w)				
	Lect.	Ar	Ar	Ar	
	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)				
161f	Hydrology				
	(3 cred.; prereq., sr. only)				
	Lect.	II	MF	107E	Mr. Bass
	Lab. Sec. 1	VI-VIII	T	227E	
	2	I-III.	Th	217E	

No.	Title	Hour	Day	Bldg.	Instructor
162f	Water Supply and Sewerage.....				
	(3 cred.; prereq., 162)				
	Lect.	III	M	206E	Mr. Bass
	Lab.	VI-IX	Th	217E	
		II-III	W		
162w	Water Supply and Sewerage.....				
	(See 162f)				
	Lect.	III	MW	206E	Mr. Bass
	Lab.	VI-IX	T	227E	
163w	Water Supply and Sewerage.....				
	(3 cred.; prereq., M.&M. 129)				
	Lect.	I	WF	5E	Mr. Bass
	Lab.	II-III	Th		
		VI-VIII	Th	227E	
163s	Water Supply and Sewerage.....				
	(See 163w)				
	Lect.	II	WTh	21E	Mr. Bass
	Lab.	II-III	F		
		II-IV	S	227E	
164f	Water Power				
	(3 cred.; prereq., M.&M. 129)				
	Lect.	I	T	22E	Mr. Bass
	Lab.	III-IV	M		
		VI-IX	W	217E	
164w	Water Power				
	(See 164f)				
	Lect.	I	M	206E	Mr. Bass
	Lab. Sec. 1	VI-IX	T	227E	
		VII-VIII	F	225E	
	2	VI-IX	W		
		III-IV	S	227E	
164s	Water Power				
	(See 164f)				
	Lect.	VI	Th		Mr. Bass
		IV	WF	21E	
	Lab.	VI-IX	F	227E	
171w	Building Sanitation	I	T		Mr. Bass
	(2 cred.; prereq., sr. arch. only)	II	F	104E	Mr. Martenis
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. Wise
	(3 cred. per qtr.; prereq., 133, 142)				
237w-238s	Structural Laboratory	Ar	Ar	Ar	Mr. Hughes
	(3 to 5 cred. per qtr.; prereq., 133)				
245f-246w-247s	Advanced Reinforced Concrete Analysis	Ar	Ar	Ar	Mr. Wise
	(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)				
261f-262w	Water and Sewage Purification....	Ar	Ar	Ar	Mr. Bass
	(3 to 5 cred. per qtr.; prereq., 162)				
263s	Hydraulic Laboratory	Ar	Ar	Ar	
	(3 to 5 cred.; prereq., 164)				
272f	City Planning	Ar	Ar	Ar	Mr. Bass,
	(3 to 5 cred.; prereq., 52)				Mr. Mann

No.	Title	Hour	Day	Bldg.	Instructor
280f-281w-282s	Civil Engineering Research..... (5 cred. per qtr.; prereq., by permission)	Ar	Ar	Ar	Mr. Bass, Mr. Cutler, Mr. Lang

DAIRY HUSBANDRY

No.	Title	Hour	Day	Bldg.	Instructor
1f,s	Elements of Dairying..... (5 cred.; no prereq.) (Limited to 30)				
	Lect.	III	TWS	100HH(F)	Mr. Combs
		III-IV	MF		

DRAWING AND DESCRIPTIVE GEOMETRY

No.	Title	Hour	Day	Bldg.	Instructor
1f	Engineering Drawing ..... (3 cred.; prereq., Solid Geometry)				Mr. Kirchner, Mr. Archibald,
	Lect. and Rec. Sec. 1	IV	T	136E	Mr. Levens,
	2	IV	T	203E	Mr. Potter,
	3	IV	T	205E	Mr. Schuck,
	4	IV	T	215E	Mr. Williams
	5	VIII	T	106E	Mr. Andreae,
	6	VIII	T	136E	Mr. Cruzen,
	7	VIII	T	203E	Mr. Quaid,
	8	VIII	T	107E	Mr. Shultz
	9	VII	T	136E	
	10	VII	T	203E	
	11	VII	T	205E	
	12	VII	T	215E	
	13	III	Th	110Ex	
	14	III	Th	21E	
	15	III	Th	107E	
	16	III	Th	215Ex	
	Lab. Sec. 1	I-II	MWF	411C	
	2	I-II	MWF	411C	
	3	I-II	MWF	411C	
	4	I-II	MWF	411C	
	5	I-II	TS	411C	
		VIII-IX	W		
	6	I-II	TS	411C	
		VIII-IX	W		
	7	I-II	TS	411C	
		VIII-IX	W		
	8	I-II	TS	411C	
		VIII-IX	W		
	9	III-IV	MWF	411C	
	10	III-IV	MWF	411C	
	11	III-IV	MWF	411C	
	12	III-IV	MWF	411C	
	13	VI-VII	MWF	411C	
	14	VI-VII	MWF	411C	
	15	VI-VII	MWF	411C	
	16	VI-VII	MWF	411C	

No.	Title	Hour	Day	Bldg.	Instructor
1w	Engineering Drawing				
	(See 1f)				
	Lect. and Rec. Sec. 1	VI	T	203E	
	2	VI	T	107E	
	3	VI	Th	206E	
	4	VI	Th	7E	
	5	VII	Th	206E	
	6	VII	Th	215E	
	7	III	Th	110Ex	
	8	III	Th	209Ex	
	Lab. Sec. 1	I-II	MWF	411C	
	2	I-II	MWF	411C	
	3	III-IV	T		
		VIII-IX	TF	411C	
	4	III-IV	T		
		VIII-IX	TF	411C	
	5	III-IV	MWS	411C	
	6	III-IV	MWS	411C	
	7	VI-VII	MWF	411C	
	8	VI-VII	MWF	411C	
2w	Engineering Drawing				Mr. Archibald,
	(3 cred.; prereq., 1)				Mr. Levens,
	Lect. and Rec. Sec. 1	VI	T	206E	Mr. Myers,
	2	VI	T	215E	Mr. Potter,
	3	VI	Th	215E	Mr. Schuck,
	4	VI	Th	5E	Mr. Williams,
	5	VII	Th	107E	Mr. Andreae,
	6	VII	Th	203E	Mr. Cruzen,
	7	III	Th	138EE	Mr. Quaid,
	8	III	Th	107E	Mr. Schultz
	Lab. Sec. 1	I-II	MWF	417C	
	2	I-II	MWF	417C	
	3	VIII-IX	TF		
		III-IV	T	417C	
	4	VIII-IX	TF		
		III-IV	T	417C	
	5	III-IV	MWS	417C	
	6	III-IV	MWS	417C	
	7	VI-VII	MWF	417C	
	8	VI-VII	MWF	417C	
2s	Engineering Drawing				
	(See 2w)				
	Lect. and Rec. Sec. 1	II	T	5E	
	2	II	T	21E	
	3	VI	T	5E	
	4	VI	T	21E	
	5	VII	Th	5E	
	6	VII	Th	22E	
	7	III	Th	209Ex	
	8	III	Th	107E	
	Lab. Sec. 1	I-II	MWTh	411C	
	2	I-II	MWTh	411C	
	3	VIII-IX	WTh		
		III-IV	T	411C	
	4	VIII-IX	WTh		
		III-IV	T	411C	
	5	III-IV	MWS	411C	
	6	III-IV	MWS	411C	
	7	VI-VII	MWF	411C	
	8	VI-VII	MWF	411C	

No.	Title	Hour	Day	Bldg.	Instructor
3f	Descriptive Geometry				Mr. Kirchner,
	(3 cred.; prereq., 2, M.&M. 11, 12)				Mr. French,
	Sec. 1	III	MWF	36EE	Mr. Archibald,
	2	II	MWF	139EE	Mr. Eggers,
	3	VII	MWF	203E	Mr. Levens
3w	Descriptive Geometry	VII	MWF	203E	Mr. Myers,
	(See 3f)				Mr. Potter,
					Mr. Shuck,
					Mr. Williams
3s	Descriptive Geometry				
	(See 3f)				
	Lect. and Rec. Sec. 1	II	T	107E	
	2	II	T	215E	
	3	VI	T	107E	
	4	VI	T	215E	
	5	VII	Th	107E	
	6	VII	Th	215E	
	7	III	Th	139EE	
	8	III	Th	36EE	
	Lab. Sec. 1	I-II	MWTh	417C	
	2	I-II	MWTh	417C	
	3	VIII-IX	WTh		
		III-IV	T	417C	
	4	VIII-IX	WTh		
		III-IV	T	417C	
	5	III-IV	MWS	417C	
	6	III-IV	MWS	417C	
	7	VI-VII	MWF	417C	
	8	VI-VII	MWF	417C	
4f	Engineering Drawing (Chem.).....				
	(2 cred.; prereq., Solid Geometry)				
	Sec. 1	VIII-IX	MTF	443C	Mr. Schuck,
	2	VIII-IX	MTF	445C	Mr. Williams
5w	Engineering Drawing (Chem.).....	VIII-IX	MW		
	(2 cred.; prereq., 4)	VI-VII	Th	1E	Mr. Williams
6s	Engineering Drawing and Descriptive Geometry (Chem.).....	VIII-IX	M		
	(2 cred.; prereq., 5)	III-IV	T		
		VII-VIII	F	101E	Mr. Williams
7w	Engineering Drawing (Chem.).....	VII-IX	TW		
	(3 cred.; prereq., M.&M. 10)	VIII-IX	M	445C	Mr. Schuck
8s	Engineering Drawing and Descriptive Geometry (Chem.).....	VII-IX	MF		
	(3 cred.; prereq., 7)	I-II	T	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	I	MWF		Mr. Archibald,
		IV	T	7E	Mr. Schuck,
	2	II	T		Mr. Cruzen,
		I-II	S	136E	Mr. Quaid
		III	W	206E	
	3	III	MWThS	139EE	
	4	VII	MWF	136E	
		VIII	W		
	5	VII	MWF		
		VIII	W	7E	

No.	Title	Hour	Day	Bldg.	Instructor
M.&M.10w	Solid Geometry	IX	MWF		
	(See 10f)	VI	T	21E	
11f	Engineering Drawing (Mines).....	III-IV	MTWFS	101E	Mr. Myers
	(4 cred.; no prereq.)				
12w	Engineering Drawing (Mines).....	III IV	TS	445C	Mr. Myers,
	(3 cred.; prereq., 11)				Mr. Potter
13s	Engineering Drawing (Mines).....	III-IV	TWFS	445E	Mr. Myers
	(3 cred., prereq., 12)				
14w	Descriptive Geometry (Mines).....	I	MWF	203E	Mr. Myers
	(3 cred.; prereq., 13, Math. 5)				
15w	Drafting (Mines)	III-IV	WF	229E	Mr. Potter
	(2 cred.; prereq., reg. in 14)				
21f	Drafting (C.E.)				
	(2 cred.; prereq., 3)				
	Sec. 1	III-IV	MWF	201E	Mr. French,
	2	I-II	TThS	101E	Mr. Myers
21w	Drafting (C.E.)	III-IV	MWF	201E	Mr. Levens
	(See 21f)				
21s	Drafting (C.E.)	III-IV	MWF	1E	Mr. Archibald
	(See 21f)				
22w	Drafting (C.E.)				
	(2 cred.; prereq., 21)				
	Sec. 1	III-IV	MWF	1E	Mr. French
	2	I-II	TThS	201E	Mr. Myers
22s	Drafting (C.E.)	III-IV	MWF	1E	Mr. Levens
	(See 22w)				
23s	Drafting (C.E.)				
	(2 cred.; prereq., 22)				
	Sec. 1	III-IV	MWF	217E	Mr. Archibald
	2	I-II	TThS	101E	Mr. Levens
26w	Drafting (E.E.)				Mr. Eggers,
	(2 cred.; prereq., 3)				Mr. Quaid
	Sec. 1	VI-VII	TTh		
		III-IV	S	101E	
	2	I-II	TThS	101E	
26s	Drafting (E.E.)	VIII-IX	MWF	101E	Mr. Quaid
	(See 26f)				
27s	Drafting (E.E.)				
	(2 cred.; prereq., 26)				
	Sec. 1	VI-VII	ThF		
		III-IV	S	201E	
	2	I-II	TThS	201E	
28f	Drafting (M.E.)				
	(2 cred.; prereq., 3)				
	Sec. 1	III-IV	T		Mr. Potter,
		VI-VII	T		Mr. Williams
		II-III	Th	201E	
	2	I-II	TS		
		VI-VII	Th	201E	
28w	Drafting (M.E.)	VIII-IX	TWTh	101E	Mr. Williams
	(See 28f)				
28s	Drafting (M.E.)	III-IV	TW		Mr. Schultz
	(See 28f)	VIII-IX	F	201E	
29w	Drafting (M.E.)				
	(2 cred.; prereq., 28)				Mr. Potter,
	Sec. 1	VIII-IX	MTW	201E	Mr. Williams
	2	VI-VII	TThF	201E	
29s	Drafting (M.E.)	VIII-IX	MWF	1E	Mr. Williams
	(See 29w)				

No.	Title	Hour	Day	Bldg.	Instructor
34f,w,s	Lettering ..... (1 cred.; prereq., Draw. 1)				
	Sec. 1	IV	T	107E	Mr. Archibald
	2	II	Th	139EE	
35w,s	Printing and Lettering ..... (2 cred.; prereq., equivalent of 37 or 45)	II	F	36EE	Mr. Levens
37f,w,s	Lettering for Engineers..... (2 cred.; prereq., 2)	I	WF	215E(f) 206E(w,s)	Mr. Schuck
41f,w-42f,w-43f,w	Technical Drawing ..... (2 cred. per qtr.; no prereq.)				
	Sec. 1	I-II	MWF	455C	Mr. Sheridan
	2	III-IV	MWF	455C	
	3	VIII-IX	MWF	455C	
41s-42s-43s	Technical Drawing ..... (See 41f,w-42f,w-43f,w)				
	Sec. 1	I-II	TThS	455C	Mr. Sheridan
	2	III-IV	MWF	455C	
	3	VIII-IX	MWF	455C	
44f,w,s	Lettering ..... (1 cred.; no prereq.)				
	Sec. 1	IV	T	36EE	Mr. Archibald,
	2	II	Th	36EE	Mr. Levens
45f,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	206E	Mr. Kirchner, Mr. Eggers, Mr. Levens, Mr. Myers
51w	Graphs and Charts ..... (3 cred.; prereq., Dr. 1, M.&M. 11)	II	MWF	206E	Mr. Schuck
51s	Graphs and Charts..... (See 51w)				
	Sec. 1	VIII	WThF	203E	Mr. Schuck
	2	VI	MWF	206E	
57f-58w-59s	Graphical Methods ..... (2 cred. per qtr.; prereq., Soph. Draw., M.&M. 26)	I	WF	206E(f) 22E(w,s)	Mr. Levens
69f,w,s	Exercises in Lettering ..... (1 cred.; see School of Nursing bulletin)	Ar	Ar		Mr. Myers
71f,w,s	Graphics for Electrical Engineers.. (3 cred.; prereq., 27, E.E. 111)	I	MWF	5E(f) 138EE(w) 36EE(s)	Mr. Eggers
81f,w,s	Advanced Drawing ..... (3 cred.; prereq., 43 or equiv.)	Ar	Ar	Ar	Mr. Kirchner
86f,w,s	Anatomical Drawing ..... (3 cred.; prereq., 43 or equiv.)	Ar	Ar	Ar	Mr. Kirchner
87f	Introduction to the Graphic Arts.. (2 cred.; open to jr., sr.)	IV	MW	138EE	Mr. Kirchner
88w	Printing Types and Lettering..... (2 cred.; prereq., 87)	IV	MW	138EE	Mr. Kirchner
89s	The Picture and the Printed Word (2 cred.; prereq., 88)	IV	MW	138EE	Mr. Kirchner, Mr. Levens
111f,w,s-112f,w,s-113f,w,s	Advanced Descriptive Geometry .. (2 cred. per qtr.; prereq., 3, Calculus)	Ar	Ar	Ar	Mr. Kirchner

No.	Title	Hour	Day	Bldg.	Instructor
114f,w,s	Perspective ..... (3 cred.; prereq., 63)	Ar	Ar	Ar	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	Ar	Mr. Kirchner, Mr. Levens

ECONOMICS

ECONOMICS

No.	Title	Hour	Day	Bldg.	Instructor
3w	The Mechanism of Exchange..... (5 cred.; no prereq.)				Mr. Stehman, Mr. Bosland, and others
	Lect.	III	TTh		
	Sec. 1	II	MWF	109B	
	2	III	MWF	109B	
	3	IV	MWF	109B	
	4	VI	MWF	303B	
8f-9w	General Economics ..... (3 cred. per qtr.; no prereq.)				
	Sec. 1	I	MWF	107E 22E(s)	Mr. O'Hara
	2	I	MWF	22E(f)	
	3	III	MWF	135E(w)	
	4	IV	MWF	135E	
	5	IV	MWF	335EE 107E	
14s	Elements of Statistics ..... (5 cred.; prereq., 8-9)				Mr. Mudgett and others
	Sec. 1	I	TWThFS	301B	
	2	II	MWThFS	109B	
	3	III	MTThFS	6B	
	4	IV	MTWFS	302B	
	5	VI	MTWThF	302B	
	6	VII	MTWThF	301B	
20w*	Elements of Accounting..... (3 cred.; no prereq.)				Mr. Heilman and others
	Sec. 1	III	TThS	303B	
	2	III	MWF	302B	
25s-(26f)	Principles of Accounting..... (3 cred. per qtr.; prereq., 20)				Mr. Heilman and others
	Sec. 1	II	MWF	301B	
	2	II	TThS	301B	
28f,s	Business Law ..... (3 cred.; prereq., 8-9)	I	MWF	135E	Mr. Palmer
29f	Principles of Accounting..... (3 cred.; no prereq.)	I	MWF	4E	Mr. Heilman
29s	Principles of Accounting..... (See 29f)	I	MWF	339EE	Mr. Heilman

* Students who have had a high school course or experience in bookkeeping may be exempt from this course and admitted to Economics 25 by passing a placement test.

No.	Tit'e	Hour	Day	Bldg.	Instructor
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		
	2	II	M		
	3	III	M		
	4	I	T		
	5	II	T		
	6	III	T		
	7	IV	T		
154w,s	Public Utilities ..... (3 cred.; prereq., 8-9)	III	TThS	202B(w) 102B(s)	Mr. Graves
161f	Labor Problems and Trade Unionism ..... (3 cred.; prereq., jr., sr., 8-9)	IV	MWF	202B	Mr. Hansen
161w	Labor Problems and Trade Unionism ..... (See 161f)	III	TThS	109B	Mr. Hansen
172f*	Economics of Transportation ..... (3 cred.; prereq., 8-9)	VIII	MWF	102B	

BUSINESS ADMINISTRATION

No.	Tit'e	Hour	Day	Bldg.	Instructor
67f,w,s	Market Administration ..... (3 cred.; prereq., 8-9)	I	TThS	209B(f,w) 202B(s)	Mr. Vaile
71f,w,s*	Traffic Management ..... (3 cred.; prereq.. 8-9)	VI	MWF	202B	Mr. Butterbaugh
73w	Transportation Charges ..... (3 cred.; prereq., 71)	VII	MWF	202B	Mr. Butterbaugh
89f,w,s	Production Management ..... (3 cred.; prereq., 8-9)	II	MWF	202B	Mr. O'Hara
112f	Business Statistics ..... (3 cred.; prereq., 14)				Mr. Mudgett
	Sec. 1	II	MWF	6B	
	2	IV	MWF	6B	
112w,s	Business Statistics ..... (See 112f)	II	MWF	6B	
130f	Cost Accounting (General survey). (3 cred.; prereq., 25-26 or 29)				Mr. Ostlund
	Sec. 1	I	TThS	303B	
	2	III	TThS	303B	
130s	Cost Accounting (General survey). (See 130f)	I	TThS	303B	Mr. Ostlund
131f-132w†	Cost Accounting ..... (3 cred. per qtr.; prereq., 25-26 or 29)	II	TThS	301B	Mr. Ostlund
133s	Accounting Systems ..... (3 cred.; prereq.. 130 or 131)	II	TThS	301B	Mr. Ostlund
139f,w,s	Advanced General Accounting..... (3 cred.; prereq., 25-26)	III	MWF	303B	Mr. Heilman
155w	Corporation Finance ..... (3 cred.; prereq., 8-9)	III	MWF	102B	Mr. Stehman

* Students may not receive credit for both Econ. 172 and Bus. Adm. 71.

† The entire course must be completed before credit is received for any quarter.

No.	Title	Hour	Day	Bldg.	Instructor
155s	Corporation Finance				
	(See 155w)				
	Lect.	III	F	202B	
	Sec. 1	II	MW	6B	
	2	III	MW	6B	
167w	Personnel Administration				
	(3 cred.; prereq., 8-9)				
	Sec. 1	I	TThS	202B	Mr. Stead
	2	II	TThS	109B	
168s	Advanced Personnel Administration	I	TThS	209B	Mr. Stead
	(3 cred.; prereq., 167)				

ELECTRICAL ENGINEERING

No.	Title	Hour	Day	Bldg.	Instructor
11f	Elements of Electrical Engineering.				Mr. Todd
	(3 cred.; prereq., reg. in phys., M.&M. 12)				
	Lect. Sec. 1	I	TThS	335EE	
	2	III	TThS	335EE	
	Lab. Sec. 1	VIII-IX	T	21EE	Mr. Todd
	2	VII-VIII	W	21EE	
	3	VI-VII	Th	21EE	
	4	I-II	S	21EE	
	5	III-IV	T	21EE	
	6	III-IV	F	21EE	
	7	VI-VII	T	21EE	
	8	III-IV	S	21EE	
13w	Elements of Electrical Engineering				Mr. Todd
	(3 cred.; prereq., 11, M &M. 13)				
	Lect. Sec. 1	I	TThS	335EE	
	2	III	TThS	335EE	
	Lab. Sec. 1	III-IV	F	21EE	Mr. Todd
	2	III-IV	W	21EE	
	3	I-II	M	21EE	
	4	I-II	F	21EE	
	5	III-IV	W	21EE	
	6	VII-VIII	F	21EE	
	7	VIII-IX	T	21EE	
	8	VI-VII	W	21EE	
15s	Elements of Electrical Engineering				Mr. Todd
	(3 cred.; prereq., 13, M.&M. 24)				
	Lect. Sec. 1	I	TThS	335EE	
	2	III	TThS	335EE	
	3	II	ThS	238EE	
	Lab. Sec. 1	III-IV	M	21EE	Mr. Todd
	2	III-IV	W	21EE	
	3	I-II	M	21EE	
	4	I-II	F	21EE	
	5	VII-VIII	M	21EE	
	6	III-IV	F	21EE	
	7	VI-VII	W	21EE	
	8	VIII-IX	W	21EE	
40f	Electric Wiring and Equipment....	I	MW	138EE	Mr. Todd
	(2 cred.; prereq., Phys. 43)				
41f	Electric Power (Mines)				
	(3 cred.; prereq., Phys. 43)				
	Lect.	II	TTh	238EE	
	Lab.	I-III	F	107EE	

No.	Title	Hour	Day	Bldg.	Instructor
42w,s	Electric Power (C.E.)				
	(4 cred.; prereq., Phys. 43, 44)				
	Lect.	I	TThS	138EE	
	Lab.	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-48s	Electric Power (M.E.)				
	(4 cred. per qtr.; prereq., Phys. 43, 44)				
	Lect.	VI	MWF	237EE	
	Lab. Sec. 1	II-III	W		
		III-IV(f)		107EE	
	2	II-III(w,s)	F	107EE	
49w	Electric Motors	II	MW	138EE	
	(2 cred.; prereq., 40)				
61f-63w-65s	Elements of Communication.....				
	(2 cred. per qtr.; prereq., reg. in 111)				
	Lect.	III	T	238EE	Mr. Hartig
	Lab. Sec. 1	VI-IX	W	307EE	Mr. Hartig
	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.	VI-VIII	M	107EE	Mr. Todd
91s,su	Inspection Trip	Spring vacation or summer time			
	(1 cred.; prereq., 11)				
93	Seminar	(Not offered in 1928-29)			
	(1 cred.; jr. E.E.)				
111f-113w-115s	Direct Current Machinery.....	II	MWF	335EE	Mr. Springer
	(3 cred. per qtr.; prereq., 11, 13, 15)				
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	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. Johnson
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	

No.	Title	Hour	Day	Bldg.	Instructor
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
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	M. Kuhlman
	2	VI-VIII	T	227EE	
	3	VI-VIII	W	227EE	
	4	VI-VIII	Th	227EE	
141f	Central Stations ..... (2 cred.; prereq., reg. in 121)	III	TTh	237EE	Mr. Ryan
142w	Electric Transmission ..... (2 cred.; prereq., reg. in 123)	III	TTh	237EE	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	237EE	Mr. Johnson
145s	Railroad Electrification ..... (1 cred.; prereq., 144)	I	WF	138EE	Mr. Johnson
146	Storage Battery Engineering..... (2 cred.; prereq., 45 or 48 or 113)	(Not offered in 1928-29)			
151f	Electric Lighting ..... (2 cred.; prereq., Phys. 35, 43, 44)	I	WF	237EE	Mr. Johnson
152f	Photometric Laboratory ..... (1 cred.; prereq., reg. in 151)	VI-VII	Th	Ar	Mr. Johnson
153	Illuminating Design ..... (2 cred. per qtr.; prereq., 151)	(Not offered in 1928-29)			
161f-162w-163s	Radio Communication ..... (3 cred.; prereq., reg. in 121, 123, 125)				
	Lect.	II	MW	237EE	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.	I	MW	139EE	Mr. Hartig
	Lab.	VI-VIII	F	307EE	Mr. Hartig
165w-166s	Telegraph and Telephone Circuits.. (2 or 3 cred. per qtr.; prereq., reg. in 123)				
	Lect.	I	MW	139EE	Mr. Hartig
	Lab.	VI-VIII	F	307EE	Mr. Hartig
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. Kuhlman, Mr. Johnson, Mr. Hartig

No.	Title	Hour	Day	Bldg.	Instructor
181	Communication Frequency Measurements ..... (2 cred. per qtr.; prereq., 126)	(Not offered in 1928-29)			
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 Lab. ..... (1 or 2 cred. per qtr.; prereq., jr., sr., grad. by permission)	Ar	Ar	Ar	Mr. Hartig
191-192-193	Seminar ..... (1 cred. per qtr.; prereq., 111)	(Not offered in 1928-29)			
232-234-236	Electrical Design ..... (2 cred. per qtr.; prereq., 136)	(Not offered in 1928-29)			
237	Power Transmission Line Design.. (3 cred.; prereq., 134, 142)	(Not offered in 1928-29)			
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
267f-268w-269s	Telephone Transmission ..... (2 or 3 cred.; by permission)	Ar	Ar	Ar	Mr. Hartig
275f-276w-277s	Electrical Engineering Research.... (2 to 6 cred. per qtr.; grad.)	Ar	Ar	Ar	Ar
284-285-286	Precise Electrical Engineering Measurements ..... (2 cred. per qtr.; prereq., 122)	(Not offered in 1928-29)			
287-288-289	Advanced Communication Laboratory and Seminar ..... (2 or 3 cred.; by permission)	(Not offered in 1928-29)			
291-292-293	Graduate Seminar ..... (1 cred. per qtr.; prereq., 126)	(Not offered in 1928-29)			
294f-295w-296s	Electrical Ignition ..... (2 cred. per qtr.; prereq., 124)	Ar	Ar	Ar	Mr. Springer

ENGLISH

No.	Title	Hour	Day	Bldg.	Instructor
4f	Rhetoric and Composition ..... (3 cred.; no prereq.)				
	Sec. 1	II	TThS	107E	Mr. Richardson,
	2	II	TThS	339EE	Mr. Beers,
	3	II	TThS	5E	Mr. Creamer,
	4	III	TS		Mr. Woodall
		II	W	107E	
	5	III	TS		
		II	W	135E	
	6	III	TS		
		II	W	139EE	
	7	VI	MWF	107E	
	8	VI	MWF	104E	
	9	VI	MWF	203E	
	10	I	TThS	107E	
	11	I	TThS	21E	
	12	I	TThS	4E	
	13	III	MWF	335EE	
	14	III	MWF	107E	

No.	Title	Hour	Day	Bldg.	Instructor
4w	Rhetoric and Composition..... (See 4f)				
	Sec. 1	I	TThS	107E	
	2	VIII	MWTh	107E	
5w	Rhetoric and Composition..... (3 cred.; prereq., 4)				
	Sec. 1	II	TThS	107E	Mr. Richardson,
	2	II	TThS	5E	Mr. Beers,
	3	II	TThS	135E	Mr. Creamer,
	4	II	MWF	107E	Mr. Woodall
	5	II	MWF	238EE	
	6	VI	MWF	107E	
	7	VI	MWF	203E	
	8	VI	MWF	215E	
	9	I	TThS	135E	
	10	I	TThS	22E	
	11	III	MWF	335EE	
	12	III	MWF	107E	
5s	Rhetoric and Composition..... (See 5w)				
	Sec. 1	V	MWF	107E	
	2	VIII	M		
		VI	Th		
		III	S	107E	
6s	Rhetoric and Composition..... (3 cred.; prereq., 5)				
	Sec. 1	VI	MWF	107E	Mr. Richardson,
	2	VI	MWF	203E	Mr. Beers,
	3	VI	MWF	215E	Mr. Creamer,
	4	II	MWF	107E	Mr. Woodall
	5	II	MWF	215E	
	6	II	MWF	206E	
	7	I	MWF	107E	
	8	I	MWF	215E	
	9	I	TThS	107E	
	10	I	TThS	215E	
	11	III	MWF	335EE	
	12	III	MWF	107E	
7w	Explorations in Literature ..... (3 cred.; prereq., 4-5-6 or equiv.)	IV	MWF	203E	Mr. Richardson
8s	Explorations in Literature..... (3 cred.; prereq., 6 or equiv.)	IV	MWF	107E	Mr. Richardson
31s	Technical Writing ..... (3 cred.; prereq., 6)	I	MWF	203E	

FORESTRY

No.	Title	Hour	Day	Bldg.	Instructor
27w	Farm Wood Lots and Windbreaks. (3 cred.; no prereq.)	IV	MWF	301Hr(F)	Mr. Cheyney

GENERAL ENGINEERING

No.	Title	Hour	Day	Bldg.	Instructor
11f-12w	Orientation ..... (No cred.; no prereq.)	IX	Th	100C	Mr. Zelner
81f,w,s	Estimating ..... (3 cred.; jr., sr.; prereq., M.&M. 26)	I	MWF	36EE	Mr. French

No.	Title	Hour	Day	Bldg.	Instructor
101w	Contracts and Specifications..... (3 cred.; prereq., sr. standing)	III	TThS	254ME	
111s	Valuation of Public Utility Properties ..... (2 cred.; prereq., sr. standing)	III	T Th	138EE 238EE	Mr. Ryan
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	Bldg.	Instructor
1su	General Geology ..... (5 cred.; no prereq.)	Ar	Ar	Ar	Mr. Stauffer
5f	Engineering Geology ..... (3 cred.; no prereq.)	I	MWF	110P	Mr. Schwartz
6w-7s	Applied Geology for Civil Engineers (3 cred per qtr.; prereq., 5)	I	MWF	110P	Mr. Schwartz

HORTICULTURE

No.	Title	Hour	Day	Bldg.	Instructor
6f	Fruit Growing ..... (3 cred.; no prereq.) (Laboratory sections limited to 20 each)				
	Lect. Sec. 1	II	MW	102Hr(F)	Mr. Alderman
	2	IV	WF	8aHr(F)	Mr. Alderman
	Lab. 1	I-II	T or F	8Hr(F)	Mr. Alderman
	2	VII-VIII	M	8Hr(F)	Mr. Alderman
32s	Vegetable Growing ..... (3 cred.; no prereq.)				
	Lect. Sec. 1	II	MW	102Hr(F)	Mr. Krantz
	2	IV	TS	102Hr(F)	
	Lab. 1	I-II	T or F	8Hr(F)	
	2	VII-VIII	M	8Hr(F)	
70su	Plant Materials ..... (3 cred.; prereq., Bot. 10 cred.)	Ar	Ar	3Hr(F)	
71f	Plant Materials ..... (3 cred.; prereq., Bot. 10 cred.)	Ar	Ar	8aHr(F)	
72s	Plant Materials ..... (3 cred.; prereq., 71)	Ar	Ar	8aHr(F)	
73w	History of Landscape Gardening... (3 cred.; all; no prereq.)	II	TThS	102Hr(F)	
74f	Landscape Design ..... (5 cred.; sr.; prereq., Arch. 23)	Ar	Ar	8aHr(F)	
75w	Landscape Design ..... (5 cred.; sr.; prereq., 74)	Ar	Ar	305En(F)	
76s	Landscape Construction and Maintenance ..... (5 cred.; sr.; prereq., 75w)	Ar	Ar	8aHr(F)	
77w	Principles of Landscape Design.... (3 cred.; profess. agr. eng.; no prereq.)	III	TThS	102Hr(F)	

MATHEMATICS AND MECHANICS

No.	Title	Hour	Day	Bldg.	Instructor
9f	Higher Algebra (high school).....				
	(No cred.; no prereq.)				
	Sec. 1	III	MTWThF	3E	Mr. Brooke,
	2	III	MTWThF	4E	Mr. Miller
	3	VII	MTWThF	3E	
	4	VII	MTWThF	4E	
	5	II	MTWThF	3E	
	6	II	MTWThF	4E	
	7	IV	MTWFS	3E	
	8	IV	MTWFS	4E	
	9	I	MTWThF	3E	
	10	VI	MTWThF	3E	
9w	Higher Algebra (high school)				
	(See 9f)				
	Sec. 1	III	MTWThF	3E	
	2	VII	MTWThF	3E	
	3	VII	MTWThF	4E	
	4	V	MTWFS	3E	
9s	Higher Algebra (high school).....	V	MTWFS	5E	
	(See 9f)				
10f	Solid Geometry (See Department of Drawing and Descriptive Geometry)				
11f	College Algebra				
	(5 cred.; prereq., higher algebra)				
	Sec. 1	III	MTWThF	104E	Mr. Brooke
	2	III	MTWThF	22E	
	3	III	MTWThF	106E	
	4	VII	MTWThF	106E	
	5	VII	MTWThF	22E	
	6	VII	MTWThF	104E	
	7	II	MTWThF	21E	
	8	II	MTWThF	22E	
	9	II	MTWThF	104E	
	10	IV	MTWFS	21E	
	11	IV	MTWFS	22E	
	12	I	MTWThF	203E	
	13	I	MTWThF	104E	
	14	VI	MTWThF	21E	
11w	College Algebra				
	(See 11f)				
	Sec. 1	III	MTWThF	4E	
	2	III	MTWThF	5E	
	3	VII	MTWThF	205E	
	4	VII	MTWThF	22E	
	5	II	MTWThS	3E	
	6	II	MTWThS	4E	
	7	IV	MTWF		
		III	S	4E	
	8	IV	MTWF	3E	
		III	S	3E	
	9	I	MTWThF	4E	
	10	I	MTWThF	3E	
	11	VI	MTWF		
		III	S	3E	

No.	Tit'e		Hour	Day	Bldg.	Instructor
11s	College Algebra ..... (See 11f)					
		Sec. 1	III	MTWThF	3E	
		2	VII	MWThF		
			I	S	3E	
		3	VII	MWThF		
			I	S	4E	
		4	IV	MTWFS	3E	
		5	I	MTWThF	3E	
12w	Trigonometry ..... (5 cred.; prereq., 11)					
		Sec. 1	III	MTWThF	104E	Mr. McClintock
		2	III	MTWThF	22E	
		3	VII	MTWThF	104E	
		4	II	MTWThS	22E	
		5	II	MTWThS	104E	
		6	II	MTWThS	215E	
		7	IV	MTWFS	205E	
		8	IV	MTWFS	136E	
		9	I	MTWThF	136E	
		10	I	MTWThF	21E	
		11	VI	MTWF		
			III	S	4E	
12s	Trigonometry ..... (See 11w)					
		Sec. 1	III	MTWThF	4E	
		2	III	MTWThF	22E	
		3	VII	MWThF		
			I	S	104E	
		4	VII	MWThF		
			I	S	203E	
		5	II	MTWThS	4E	
		6	II	MTWThS	3E	
		7	IV	MTWF		
			III	S	104E	
		8	IV	MTWF		
			III	S	4E	
		9	I	MTWThF	4E	
		10	I	MTWThF	104E	
		11	VI	MTWThF	4E	
13f	Analytical Geometry ..... (5 cred.; prereq., 12)					
		Sec. 1	V	MTWFS	203E	Mr. Siler
		2	VI	MTWThF	215E	
		3	III	MTWThF	215E	
		4	III	MTWThF	7E	
		5	VIII	MTWThF	215E	
13w	Analytical Geometry ..... (See 13f)					
		Sec. 1	II	MTWThF	136E	
		2	VI	MTWThF	205E	

No.	Title		Hour	Day	Bldg.	Instructor
13s	Analytical Geometry					
	(See 13f)					
		Sec. 1	III	MTWThF	104E	
		2	III	MTWThF	106E	
		3	VII	MWThF		
			I	S	106E	
		4	II	MTWThS	104E	
		5	II	MTWThS	106E	
		6	IV	MTWFS	106E	
		7	I	MTWThF	106E	
		8	VI	MTWThF	104E	
24f	Differential Calculus					
	(5 cred.; prereq., 13)					
		Sec. 1	II	MTWThF	106E	
		2	IV	MTWFS	106E	
		3	II	MTWThF	203E	
		4	VI	MTWThF	136E	
		5	III	MTWThF	136E	
		6	VIII	MTWThF	205E	
		7	III	MTWThF	205E	
		8	III	MTWThF	5E	
24w	Differential Calculus					
	(See 24f)					
		Sec. 1	VI	MTWThF	106E	
		2	VI	MTWThF	136E	
		3	II	MTWThF	203E	
		4	VII	MTWThF	106E	
		5	III	MTWThF	106E	
		6	III	MTWThF	136E	
24s	Differential Calculus					
	(See 24f)					
		Sec. 1	I	MTWThF	21E	
		2	V	MTWFS	106E	
25f	Integral Calculus		V	MTWFS	205E	Mr. Dalaker. Mr. Boehnlein
	(5 cred.; prereq., 24)					
25w	Integral Calculus					
	(See 25f)					
		Sec. 1	II	MTWThF	106E	
		2	IV	MTWFS	104E	
		3	VI	MTWThF	104E	
		4	VII	MTWThF	136E	
		5	III	MTWThF	203E	
		6	III	MTWThF	215E	
25s	Integral Calculus					
	(See 25w)					
		Sec. 1	VI	MTWThF	106E	
		2	II	MTWThF	205E	
		3	VII	MTWThF	205E	
		4	III	MTWThF	205E	
26f	Technical Mechanics (Statics).....					
	(5 cred.; prereq., 25)					
		Sec. 1	V	MTWFS	136E	Mr. Herrick,
		2	II	MTWThF	215E	Mr. Doeringsfeld
26w	Technical Mechanics (Statics).....		V	MTWFS	106E	
	(See 26f)					

No.	Title	Hour	Day	Bldg.	Instructor
26s	Technical Mechanics (Statics)..... (See 26f)				
	Sec. 1	II	MTWThF	136E	
	2	IV	MTWF		
		III	S	205E	
	3	VI	MTWThF	205E	
	4	III	MTWThF	215E	
	5	VII	MWThF		
		IV	S	136E	
	6	III	MTWThFS	203E	
84f	Technical Mechanics (Chem., Agr. Eng., and Pre-Bus.)..... (5 cred.; prereq., 25)	II	MWF		
		VI	TTh	36EE	
84s	Technical Mechanics (Chem., Agr. Eng., and Pre-Bus.)..... (See 84f)	III	MWThFS	203E	
85f	Strength of Materials (Chem., Agr. Eng., and Pre-Bus.)..... (4 cred.; prereq., 84)				
	Lect.	II	MWF	206E	
	Lab.	VI-VII	M	Ex	
86w	Hydraulics (Chem. and Agr. Eng.) (3 cred.; prereq., 84)				
	Lect.	I	MF	104E	
	Lab.	VI-VII	W	Ex	
91f	Calculus (Arch. and Pre-Bus.).... (4 cred.; prereq., 13)	II	MWThF	136E	
92w	Mechanics (Arch.) ..... (4 cred.; prereq., 91)	II	MWThF	7E	
93s	Strength of Materials (Arch.)..... (4 cred.; prereq., 92)	I	MWFS	5E	
127f	Technical Mechanics (Dynamics).. (5 cred.; prereq., 26)				
	Sec. 1	II	MTWThF	205E	Mr. Wilcox,
	2	I	MTWThF	205E	Mr. Hermann,
	3	III	MTWThF	138EE	Mr. Doeringsfeld
127w	Technical Mechanics (Dynamics)... (See 127f)				
	Sec. 1	I	MTWThF	205E	
	2	I	MTWThF	215E	
	3	III	MTWFS	205E	
	4	IV	MTWFS	106E	
127s	Technical Mechanics (Dynamics).. (See 127f)				
	Sec. 1	II	MTWThF	203E	
	2	III	MTWThF	5E	
	3	II	MTWThF	22E	
128f	Strength of Materials..... (5 cred.; prereq., 26)				
	Sec. 1	II	MTWThF	7E	Mr. Priester,
	2	I	MTWThF	136E	Mr. Miller
	3	III	MWThFS	203E	
128w	Strength of Materials..... (See 128f)				
	Sec. 1	II	MTWThF	205E	
	2	I	MTWThF	106E	
	3	III	MTWThF	7E	

No.	Title		Hour	Day	Bldg.	Instructor
128s	Strength of Materials.....					
	(See 128f)	Sec. 1	I	MTWFS	136E	
		2	I	MTWFS	205E	
		3	III	MTWThF	7E	
		4	IV	MTWF	136E	
				S	203E	
129f	Hydraulics					
	(4 cred.; prereq., 26)					
	Lect.		I-II	T	110Ex	
	Rec.	Sec. 1	III	MWF	290Ex	Mr. Jones,
		2	III	TThS	209Ex	Mr. Boehnlein
		3	IV	MWF	203E	
129w	Hydraulics					
	(See 129f)					
	Lect.		I-II	T	215Ex	
	Rec.	Sec. 1	II	MWF	139EE	
		2	III	MWF	209Ex	
		3	I	MWF	209Ex	
129s	Hydraulics					
	(See 129f)					
	Lect.		III-IV	T	110Ex	
	Rec.	Sec. 1	II	MThS	209Ex	
		2	I	TThS	7E	
141f	Materials Testing Laboratory.....					
	(2 cred.; prereq., 128 or reg. in 128)					
	Lect.	Sec. 1	III	T	110Ex	Mr. Priester,
		2	I	S	110Ex	Mr. Miller
	Lab.	Sec. 1	VI-VIII	F	Ex	
		2	VI-VIII	Th	Ex	
		3	VI-VIII	T	Ex	
141w	Materials Testing Laboratory.....					
	(See 141f)					
	Lect.	Sec. 1	VI	Th	110Ex	
		2	VI	W	110Ex	
	Lab.	Sec. 1	VII-IX	Th	Ex	
		2	I-III	S	Ex	
		3	VI-VIII	M	Ex	
141s	Materials Testing Laboratory.....					
	(See 141f)					
	Lect.	Sec. 1	VI	T	110Ex	
		2	VI	W	110Ex	
	Lab.	Sec. 1	II-IV	S	Ex	
		2	I-III	Th	Ex	
		3	VI-VIII	M	Ex	
		4	VII-IX	W	Ex	
143f	Hydraulics Laboratory		I	Th	Ex	Mr. Jones
	(1 cred.; prereq., 129 or reg. in 129)					
143w	Hydraulics Laboratory		III	T	Ex	
	(See 143f)					
143s	Hydraulics Laboratory		IV	S	Ex	
	(See 143f)					
144w	Materials Testing Lab. (Mines)....		VI-IX	Th	Ex	
	(4 hrs. lab.; prereq., with Mech. 10)					
151f	Differential Equations		IV	MWF	7E	
	(3 cred.; prereq., 25)					
152w-153s	Advanced Calculus and Applications		IV	MWF	7E	
	(3 cred. per qtr.; prereq., 151)					

No.	Title	Hour	Day	Bldg.	Instructor
157f-158w-159s	Determinants and Solid Anal. Geom. (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
180w-181s	Advanced Strength of Materials... (3 cred.; prereq., 128)	IV	MWF	206E	Mr. Priester
184f-185s-186w	Advanced Testing Materials Lab. .. (2 to 6 cred. per qtr.; prereq., 141)	Ar	Ar	Ex	Mr. Priester
191w	Hydraulic Motors and Pumps..... (3 cred.; prereq., 129)	IV	MWF	215E	Mr. Jones
192s	Hydraulic Motor Laboratory..... (3 cred.; prereq., 129)				
	Lect.	I	MF	7E	Mr. Jones
	Lab.	Ar	Ar	Ex	
193f	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
254-255-256	Modern Analysis ..... (3 cred. per qtr.; prereq., 153)	(Not offered in 1928-29)			
261f-262w-263s	Functions of a Complex Variable.. (3 cred. per qtr.; prereq., 153)	Ar	Ar	Ar	Mr. Dalaker
264-265-266	Advanced Topics in Functions of a Complex Variable ..... (3 cred. per qtr.; prereq., 263)	(Not offered in 1928-29)			
267f-268w-269s	Advanced Dynamics ..... (3 cred. per qtr.; prereq., 153)	Ar	Ar	Ar	Mr. Brooke
274f-275w-276s	Advanced Dynamics of a Particle.. (3 cred. per qtr.; prereq., 127)	Ar	Ar	Ar	Mr. Brooke
277-278-279	Advanced Statics ..... (3 cred. per qtr.; prereq., 127)	(Not offered in 1928-29)			
291f-292w-293s	Hydrodynamics ..... (3 cred. per qtr.; prereq., 129, 153)	Ar	Ar	Ar	Mr. Brooke
294-295-296	Mathematical Theory of Elasticity. (3 cred. per qtr.; prereq., 128, 153)	(Not offered in 1928-29)			

MECHANICAL ENGINEERING

No.	Title	Hour	Day	Bldg.	Instructor
11f	Elementary Shop Practice (Pattern Shop)* ..... (2 cred.; no prereq.)				
	Lect. Sec. 1	VI	W	202ME	Mr. Richards
	2	III	Th	202ME	
	3	IX	F	202ME	
	4	III	W	202ME	
	(Pre-dent.)	IX	M	202ME	
	Lab. Sec. 1	VI-VIII	T		
		VI-VII	Th	Pattern Shop	
	2	I-II	Th		
		II-IV	F	Pattern Shop	
	3	VII-VIII	F		
		II-IV	S	Pattern Shop	
	4	I-III	M		
		I-II	W	Pattern Shop	
	(Pre-dent.)	VII-VIII	M		
		VII-IX	W	Pattern Shop	

* Students must register for all their shop hours in the same section.

No.	Title			Hour	Day	Bldg.	Instructor
11w	Elementary Shop Practice (Pattern Shop)*						
	(See 11f)						
		Lect.	Sec. 1	VI	M	202ME	Mr. Richards
			2	IV	S	202ME	
			3	IX	F	202ME	
			4	III	W	202ME	
	(Pre-dent.)			IX	W	202ME	
		Lab.	Sec. 1	VII-IX	T		
				V-VI	W	Pattern Shop	
			2	I-III	Th		
				II-III	S	Pattern Shop	
			3	II-IV	F		
				VII-VIII	F	Pattern Shop	
			4	I-III	M		
				I-II	W	Pattern Shop	
	(Pre-dent.)			VII-IX	M		
				VII-VIII	W	Pattern Shop	
11s	Elementary Shop Practice (Pattern Shop)*						
	(See 11f)						
		Lect.	Sec. 1	IV	M	204ME	Mr. Richards
			2	IV	S	204ME	
			3	VI	Th	204ME	
			4	III	W	204ME	
	(Pre-dent.)			IX	M	204ME	
		Lab.	Sec. 1	I-II	F		
				I-III	S	Pattern Shop	
			2	I-II	T		
				I-III	Th	Pattern Shop	
			3	II-IV	T		
				III-V	F	Pattern Shop	
			4	I-III	M		
				I-II	W	Pattern Shop	
	(Pre-dent.)			VII-VIII	M		
				VII-IX	W	Pattern Shop	
12f	Elem. Shop Practice (Foundry)*...						
	(2 cred.; no prereq.)						
		Lect.	Sec. 1	IV	W	202ME	Mr. Moffett
			2	II	F	153ME	
			3	II	S	153ME	
			4	I	M	153ME	
	(Chem.)			I	T	153ME	
	(Pre-dent.)			VII	W	153ME	
		Lab.	Sec. 1	VI-VIII	T		
				VI-VII	Th	Foundry	
			2	I-III	Th		
				III-IV	F	Foundry	
			3	VII-IX	F		
				III-IV	S	Foundry	
			4	II-III	M		
				I-III	W	Foundry	
	(Chem.)			II-IV	T		
				VII-IX	Th	Foundry	
	(Pre-dent.)			VII-IX	M		
				VIII-IX	W	Foundry	

* Students must register for all their shop hours in the same section.

No.	Title		Hour	Day	Bldg.	Instructor
12w	Elem. Shop Practice (Foundry)*..					
	(See 12f) Lect.	Sec. 1	VI	M	153ME	Mr. Moffett
		2	I	Th	153ME	
		3	II	F	153ME	
		4	I	W	153ME	
	(Chem.)		IV	T	153ME	
	(Pre-dent.)		VII	M	153ME	
	Lab.	Sec. 1	VII-IX	T		
			V-VI	W	Foundry	
		2	II-III	Th		
			II-IV	S	Foundry	
		3	III-IV	F		
			VII-IX	F	Foundry	
		4	I-III	M		
			II-III	W	Foundry	
	(Chem.)		I-III	T		
			VIII-IX	Th	Foundry	
	(Pre-dent.)		VIII-IX	M		
			VII-IX	W	Foundry	
12s	Elem. Shop Practice (Foundry)*...					
	(See 12f) Lect.	Sec. 1	IV	M	251ME	Mr. Moffett
		2	IV	S	251ME	
		3	VI	Th	251ME	
		4	I	M	153ME	
	(Chem.)		VII	W	153ME	
	(Pre-dent.)		VII	M	153ME	
	Lab.	Sec. 1	I-II	F		
			I-III	S	Foundry	
		2	I-II	T		
			I-III	Th	Foundry	
		3	III-IV	T		
			III-V	F	Foundry	
		4	II-III	M		
			I-III	W	Foundry	
	(Chem.)		VIII-IX	W		
			VI-IX	Th	Foundry	
	(Pre-dent.)		VIII-IX	M		
			VII-IX	F	Foundry	
13f	Elementary Shop Practice (Forge)* (2 cred.; no prereq.)					
	Lect.	Sec. 1	VI	W	153ME	Mr. T. P. Hughes
		2	I	Th	153ME	
		3	VII	F	153ME	
		4	I	W	153ME	
	(Chem.)		IV	T	153ME	
	(Pre-dent.)		VII	M	153ME	
	Lab.	Sec. 1	VI-VIII	T		
			VI-VII	Th	Forge Shop	
		2	II-III	Th		
			II-IV	F	Forge Shop	
		3	VIII-IX	F		
			II-IV	S	Forge Shop	
		4	I-III	M		
			II-III	W	Forge Shop	
	(Chem.)		I-III	T		
			VIII-IX	Th	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	Bldg.	Instructor
13w	Elementary Shop Practice (Forge)*					
	(See 13f)					
	Lect.	Sec. 1	VII	Th	153ME	Mr. T. P. Hughes.
		2	II	S	153ME	
		3	VII	F	153ME	
		4	I	M	153ME	
	(Chem.)		I	T	153ME	
	(Pre-dent.)		VII	W	153ME	
	Lab.	Sec. 1	VII-IX	T		
			V-VI	W	Forge Shop	
		2	I-III	Th		
			III-IV	S	Forge Shop	
		3	II-IV	F		
			VIII-IX	F	Forge Shop	
		4	II-III	M		
			I-III	W	Forge Shop	
	(Chem.)		II-IV	T		
			VIII-IX	Th	Forge Shop	
	(Pre-dent.)		VII-IX	M		
			VIII-IX	W	Forge Shop	
13s	Elementary Shop Practice (Forge)*					
	(See 13f)					
	Lect.	Sec. 1	IV	M	153ME	Mr. T. P. Hughes.
		2	IV	S	153ME	
		3	VI	Th	153ME	
		4	I	W	153ME	
	(Chem.)		VII	Th	153ME	
	(Pre-dent.)		VII	F	153ME	
	Lab.	Sec. 1	I-II	F		
			I-III	S	Forge Shop	
		2	I-II	T		
			I-III	Th	Forge Shop	
		3	III-IV	T		
			III-V	F	Forge Shop	
		4	I-III	M		
			II-III	W	Forge Shop	
	(Chem.)		VII-IX	W		
			VIII-IX	Th	Forge Shop	
	(Pre-dent.)		VII-IX	M		
			VIII-IX	F	Forge Shop	
14w	Machine Shop Practice.....					Mr. Shipley, Mr. Rogers.
	(3 cred.; prereq., 11, 12, 13)					
		Sec. 1	V-VI	T		
			II-IV	W		
			I-III	Th	Machine Shop	
		2	VI-IX	MW	Machine Shop	
		3	VI-IX	F		
			II-V	S	Machine Shop	
15s	Machine Shop Practice.....					Mr. Shipley, Mr. Rogers.
	(3 cred.; prereq., 14)					
	Lab.	Sec. 1	I-IV	TW	Machine Shop	
		2	VI-IX	MF	Machine Shop	
		3	I-IV	MF	Machine Shop	

* Students must register for all their shop hours in the same section.

No.	Title	Hour	Day	Bldg.	Instructor
16f	Machine Shop Practice.....				
	(2 cred.; prereq., 11, 12, 13)				
	Sec. 1	III-IV	M		Mr. Shipley,
		VII-VIII	M		Mr. Rogers
		V-VI	T	Machine Shop	
	2	I-III	WF	Machine Shop	
	3	VII-IX	T		
		II-IV	S	Machine Shop	
	4	VII-IX	WF	Machine Shop	
17f	Machine Shop Practice (Chem.)...				
	(2 cred.; no prereq.)				
	Lect.	I	T	202ME	Mr. Shipley
	Lab.	II-IV	T		Mr. Rogers
		VII-VIII	Th	Machine Shop	
17w	Machine Shop Practice (Chem.)...				
	(See 17f)				
	Lect.	I	T	102ME	
	Lab.	II-IV	T		
		VIII-IX	Th	Machine Shop	
17s	Machine Shop Practice (Chem.)				
	(See 17f)				
	Lect.	VII	W	102ME	
	Lab.	VIII-IX	W		
		VII-IX	Th	Machine Shop	
18f,w,s	General Woodworking	Ar	Ar	Ar	Mr. Richards
	(3 cred.; no prereq.)				
19f	Mechanical Technology	IV	MF	305E	Mr. Richards
	(1 cred.; prereq., M.&M. 13)				
21f	Elementary Machine Design				
	(2 cred.; prereq., Draw. 29)				
	Lect.	I	S	252ME	Mr. Martenis
	Lab. Sec. 1	VI-IX	M	151ME	
	2	VI-IX	T	151ME	
	3	VI-IX	Th	151ME	
22f	Mechanism				
	(3 cred.; prereq., 24)				
	Sec. 1	III	TThS	252ME	Mr. Martenis
	2	II	TThS	252ME	Mr. Flodin
	3	I	TThF	252ME	
23w	Mechanism and Kinematics.....				
	(3 cred.; prereq., Draw. 27)				
	Sec. 1	III	TThS	252ME	Mr. Martenis,
	2	IV	TS		Mr. Flodin
		VI	Th	252ME	
	3	I	MWF	252ME	
	4	III	MWF	252ME	
24s	Kinematics				
	(2 cred.; prereq., Draw. 29 or reg. in Draw. 29)				
	Sec. 1	I-III	ThS	252ME	Mr. Martenis
	2	VI-VIII	W		
		VII-IX	Th	255ME	
	3	II-IV	TW	255ME	

No.	Title		Hour	Day	Bldg.	Instructor
25w	Machine Design					
	(3 cred.; prereq., 21, M.&M. 128 or reg. in 128)					
	Lect.	Sec. 1	IV	WF	255ME	Mr. Martenis
		2	II	MW	252ME	
		3	I	TTh	252ME	
	Lab.	Sec. 1	VI-VIII	TF	255ME	
		2	II-IV	T		
			VII-IX	W	255ME	
		3	VI-VIII	Th		
			I-III	S	255ME	
26s	Machine Design (M.E.).....					
	(3 cred.; prereq., 25)					
		Sec. 1	III	MWF	252ME	Mr. Flodin
		2	II	WThS	252ME	
		3	IV	MWF	252ME	
27s	Machine Design (E.E.).....					
	(3 cred.; prereq., 23)					
	Lect.	Sec. 1	III	M	254ME	Mr. Martenis,
		2	III	W	254ME	Mr. Flodin
		3	I	T	254ME	
		4	III	F	254ME	
	Lab.	Sec. 1	II-IV	T		
			VII-IX	T	154ME	
		2	VII-IX	MF	154ME	
		3	VII-IX	WTh	154ME	
		4	I-III	ThS	154ME	
28f	Machine Design (Chem.E.).....					
	(3 cred.; prereq., M.&M. 84)					
	Lect.		III	S	254ME	Mr. Martenis
	Lab.		VII-IX	WF	151ME	
30f	Steam Engineering					
	(3 cred.; prereq., Phys. 23, 24)					
		Sec. 1	IV	MWF	251ME	Mr. Du Priest,
		2	III	MWF	251ME	Mr. Shoop,
		3	II	MWF	251ME	Mr. Nicholas
31w	Thermodynamics					
	(3 cred.; prereq , Phys. 23 and 24)					
		Sec. 1	IV	M	252ME	Mr. Du Priest,
			III	TTh	251ME	Mr. Shoop,
		2	III	MWF	251ME	Mr. Nicholas
		3	II	MWF	251ME	
32f	Elementary Mechanical Laboratory.					
	(2 cred.; prereq., M.&M. 26)					
		Sec. 1	VI-IX	T		Mr. Nicholas
			VI-VII	Th	Ex	
		2	VI-VII	T		
			VI-IX	Th	Ex	
		3	VI-IX	M		
			VI-VII	W	Ex	
		4	VI-VII	M		
			VI-IX	W	Ex	
		5	VI-IX	F		
			I-II	S	Ex	
		6	I-IV	S		
			VI-VII	F	Ex	

No.	Title	Hour	Day	Bldg.	Instructor
33w	Steam Laboratory				
	(2 cred.; prereq., 81)				
	Sec. 1	VI-IX	W		Mr. Nicholas
		I-II	S	Ex	
	2	I-IV	S		
		VI-VII	W	Ex	
	3	VI-IX	M		
		VI-VII	Th	Ex	
	4	VI-IX	Th		
		VI-VII	M	Ex	
	5	VI-IX	T		
		VI-VII	F	Ex	
	6	VI-VII	T		
		VI-IX	F	Ex	
34s	Elementary Steam and Power Laboratory				
	(2 cred.; prereq., 81)				
	Lab. Sec. 1	VI-IX	W		Mr. Nicholas
		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	
	5	VI-IX	Th		
		I-II	S	Ex	
35f	Elementary General Laboratory (Mines)				
	(4 hrs.; prereq., Mech.)				
	Sec. 1	VI-IX	Th	Ex	
	2	VI-IX	Th	Ex	
50f	Auto and Airplane Engines.....				
	(3 cred.; prereq., 11, 12, 13)				
	Sec. 1	IV	TS		
		II	Th	110Ex	
	2	IV	MWF	110Ex	
50w,s	Auto and Airplane Engines.....				
	(See 50f)				
	Sec. 1	I	TThS	110Ex	
	2	IV	MWF	110Ex	
63s	Heating and Ventilation				
	(3 cred.: prereq., M.&M. 127, 128, and reg. in 129)				
	Lect.	III	ThS	215Ex	Mr. Rowley
	Rec. Sec. 1	II	W	209Ex	
	2	II	M	110Ex	
	3	II	T	110Ex	
85f,w,s	Ships and Shipping	Ar	Ar	Ar	Mr. Flodin
	(1 cred.; no prereq.; open to soph., jr., sr.)				
110f,w,s	Tool Design	Ar	Ar	Ar	Mr. Shipley
	(3 cred.; prereq., 15, 21)				
111f,w,s	Tool Construction	Ar	Ar	MEShop	Mr. Shipley, Mr. Rogers
	(3 cred.; prereq., 15)				
121f-122w	Advanced Engineering Design.....	VII-IX	MTh	154ME	Mr. Flodin
	(2 cred. per qtr.; prereq., 25)				

No.	Title	Hour	Day	Bldg.	Instructor
123s	Advanced Engineering Design..... (2 cred.; prereq., 122)	VII-IX	WTh	151ME	Mr. Flodin
135f	Steam Engine Design..... (2 cred.; prereq., 30)	VII-IX	MTh	154ME	Mr. Shoop, Mr. Nicholas
136f-137w	Heat Engines (E.E.)..... (3 cred. per qtr.; prereq., M.&M. 26)				
	Rec. Sec. 1	II	WF	110Ex(f)	Mr. Larson
	2	II	WF	215Ex	
	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	
138w	Heat Engines (Chem. Engr.)..... (4 cred.; prereq., M &M. 84)				
	Rec.	IV	MWF	215Ex	
	Lab.	VI-IX	F	Ex	
139s	Heat Engines (Chem. Engr.)..... (3 cred.; prereq., 138)				
	Rec.	VI	MW	215Ex	
		VI-IX	F	Ex	
140f	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	
140w,s	Heat Engines (C.E.)..... (See 140f)				
	Rec.	I	TThS	209Ex	
	Lab.	VI-IX	W	Ex	
141s	Thermodynamics ..... (3 cred.; prereq., 31)				
	Sec. 1	I	TThS	202ME	Mr. Du Priest,
	2	III	MWF	153ME	Mr. Shoop,
	3	II	MWF	153ME	Mr. Nicholas
142w	Steam Turbines ..... (3 cred.; prereq., 141)	I	MWF	110Ex	Mr. Shoop
143w	Applied Thermodynamics ..... (3 cred.; prereq., 141)	IV	MWF	110Ex	Mr. Shoop
144f	Power Plant Machinery ..... (3 cred.; prereq., 31)	I	MWF	254ME	Mr. Shoop
145s	Design of Power Units..... (2 cred.; prereq., 143)				
	Lect.	III	Th	153ME	Mr. Flodin
	Lab.	VII-IX	WTh	151ME	
146s	Fuels and Combustion ..... (3 cred.; prereq., 31)	IV	MWF	102ME	Mr. Shoop
147w	Advanced General Laboratory (Mines) ..... (4 hrs.; prereq., 35)				
	Sec. 1	VI-IX	Th	Ex	
	2	VI-IX	Th	Ex	

No.	Title	Hour	Day	Bldg.	Instructor
148f,w	Advanced Steam Laboratory..... (2 cred.; prereq., reg. in 141)				
	Sec. 1	I-IV	T		
		VI-VII	T	Ex	Mr. Shoop
	2	III-IV	T		
		VI-IX	T	Ex	
150f	Internal Combustion Engines..... (3 cred.; prereq., 30, 31)				
	Sec. 1	I	MWF	209Ex	Mr. Robertson
	2	II	MWF	209Ex	
151w	Internal Combustion Engines..... (3 cred.; prereq., 150)	II	MWF	215Ex	Mr. Robertson
152s	Automobile Engine Testing..... (2 cred.; prereq., 151)	VI-VIII	TTh	Ex	
153s	Automotive Fleet Maintenance .... (3 cred.; sr. only; prereq., M.E. 50)	Ar	Ar	Ar	
155s	Gas Engines and Producers..... (3 cred.; prereq., 137)				
	Rec. Sec. 1	II	WF	110Ex	Mr. Robertson
	2	II	WF	215Ex	
	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	
156f,w	Gas Engine Design	I-III (fall)	TTh	154ME	Mr. Robertson
	(2 cred.; prereq., 150 or reg. in 150)	I-III (winter)	TS	154ME	
157w	Advanced Gas Engine Design..... (2 cred.; prereq., 156)	I-III	TS	154ME	Mr. Robertson
157s	Advanced Gas Engine Design..... (See 157w)	VII-IX	MF	151ME	
158s	Advanced Gas Engine Design..... (2 cred.; prereq., 157)	VII-IX	MF	151ME	
159f	Power and Gas Engine Laboratory (2 cred.; prereq., reg. in 150)				
	Sec. 1	VI-IX	Th		
		I-II	S	Ex	Mr. Robertson
	2	I-IV	S		
		VI-VII	Th	Ex	
159w	Power and Gas Engine Laboratory. (See 159f)				
	Sec. 1	VI-IX	T		
		VI-VII	Th	Ex	
	2	VI-VII	T		
		VI-IX	Th	Ex	
163f	Heating and Ventilation ..... (4 cred.; prereq., M.&M. 127, 128, 129)	IV	MWF	209Ex	Mr. Rowley
		VI-IX	W	154ME	
164s	Heating and Ventilation ..... (2 cred.; prereq., M.&M. 92)	I	TTh	215Ex	Mr. Rowley
165f,w,s	Advanced Heating and Ventilation. (3 cred.; prereq., 63)	I	MWF	251ME	Mr. Rowley
166s	Compressed Air and Refrigerator Machinery ..... (3 cred.; prereq., 141)	I	MWF	209Ex	Mr. Rowley

No.	Title	Hour	Day	Bldg.	Instructor
170w	Industrial Plants ..... (3 cred.; prereq., sr. with 15 or 16)	I	MWF	202ME	Mr. Shipley
171f	Production Methods ..... (3 cred.; prereq., sr. with 15 or 16)	I	MWF	202ME	Mr. Shipley
173s	Industrial Management ..... (3 cred.; prereq., 171)	I	MWF	202ME	Mr. Shipley
185f,w,s	Theoretical Naval Architecture..... (2 cred.; jr., sr.; preferably preceded by 85)	VII-IX VII-IX (spring)	MTh WTh	154ME 151ME	Mr. Flodin
186f,w,s	Theoretical Naval Architecture.... (2 cred.; prereq., jr., sr.)	VII-IX VII-IX (spring)	MTh WTh	154ME 151ME	Mr. Flodin
187f,w,s	Ship Drawing ..... (2 cred.; prereq., 185, 186)	Ar	Ar	Ar	Mr. Flodin
189s	Water Turbines ..... (3 cred.; prereq., M.&M. 129)	IV	MWF	209Ex	Mr. Jones
190f-191w-192s	Seminar ..... (1 cred. per qtr.; jr., sr.)				
	Sec. 1	II (f,w) III (s)	S S	251ME 251ME	Mr. Du Priest
	2	I	Th	251ME	Mr. Rowley
	3	III	M	202ME	Mr. Robertson
	4	III	W	254ME 251ME(s)	Mr. Shipley
194s	Advanced Engineering Laboratory. (2 cred.; prereq., 147, 148)				
	Sec. 1	I-IV II-III	T F	 Ex	Mr. Rowley, Mr. Shoop,
	2	VII-VIII VI-IX	W Th	 Ex	Mr. Robertson
241f	Advanced Thermodynamics ..... (3 cred.; prereq., 143)	Ar	Ar	Ar	Mr. Shoop
242f-243w	Power Plant Design..... (2 cred. per qtr.; prereq., 147)	I-III	TWTh	151ME	Mr. Shoop
244s	Power Plant Management..... (3 cred.; prereq., 145)	Ar	Ar	Ar	Mr. Shoop
251f-252w-253s	Automobile and Motor Truck Design ..... (2 cred. per qtr.; grad.)	Ar	Ar	Ar	Mr. Robertson
254s	Gas Tractor Design..... (2 cred.; prereq., 156)	Ar	Ar	Ar	Mr. Robertson
255f-256w-257s	Automobile Testing and Research.. (3 cred. per qtr.; grad.)	Ar	Ar	Ar	Mr. Robertson
258s	Motor Truck and Bus Transportation ..... (3 cred.; prereq., 152)	Ar	Ar	Ar	Mr. Robertson
265f,w,s	Advanced Heating and Ventilating. (Cred. ar.; prereq., grad. 63)	Ar	Ar	Ar	Mr. Rowley
267w	Mechanical Equipment of Buildings (3 cred.; prereq., 163; Phys. 43)	Ar	Ar	Ar	Mr. Martenis
274f	Industrial Management Laboratory. (3 cred.; prereq., 173)	IV	MWF	252ME	Mr. Shipley
275w	Industrial Management ..... (3 cred.; prereq., 274)	IV	MWF	204ME	Mr. Shipley
276s	Safety Engineering ..... (3 cred.; prereq., 171)	Ar	Ar	Ar	Mr. Shipley
277f-278w-279s	Industrial Engineering Problems... (3 cred.; prereq., 173, 274, 275, or reg. in 274, 275)	Ar	Ar	Ar	Mr. Shipley

No.	Title	Hour	Day	Bldg.	Instructor
281f	Railway Technology ..... (1 cred.; prereq., M.&M. 127, 128, 129)	Ar	Ar	Ar	Mr. Martenis
282f-283w-284s	Locomotive Design and Construction (3 cred. per qtr.; prereq., 281)	Ar	Ar	Ar	Mr. Martenis
290f-291w-292s	Mechanical Engineering Research.. (Cred. ar. per qtr.; prereq., 194 or reg. in 194)	Ar	Ar	Ar	Mr. Du Priest, Mr. Rowley, Mr. Shipley, Mr. Shoop, Mr. Robertson

METALLURGY

No.	Title	Hour	Day	Bldg.	Instructor
109f	Metallurgy (M.E.) ..... (3 cred.; prereq., Chem. 16)	IV	MWF	109M	Mr. Christianson, Mr. Pease
109w	Metallurgy (E.E.) ..... (See 109f)	IV	MWF	109M	Mr. Christianson, Mr. Pease

METALLOGRAPHY

No.	Title	Hour	Day	Bldg.	Instructor
150f	Metallography (E.E.) ..... (3 cred.; prereq., jr., sr., E.E.)				
	Lect.	I	MW	315M	Mr. Dowdell
	Lab.	VI-VIII	M	307M	Mr. Jerabek
151w	Advanced Metallography (E.E.)... (3 cred.; prereq., 150)				
	Lect.	I	MW	315M	Mr. Dowdell
	Lab.	VII-IX	M	307M	Mr. Jerabek
156f	Metallography (M.E.)..... (3 cred.; prereq., sr. M.E.)				
	Lect.	III	ThS	315M	Mr. Harder
	Lab. Sec. 1	VII-IX	W	307M	Mr. Jerabek
	2	VII-IX	F	307M	Mr. Jerabek
157w	Advanced Metallography (M.E.).. (3 cred.; prereq., 156)				
	Lect.	III	ThS	315M	Mr. Harder
	Lab. Sec. 1	VII-IX	W	307M	Mr. Jerabek
	2	VII-IX	F	307M	Mr. Jerabek
163f-164w-165s	Advanced Metallography ..... (Cred. ar.; prereq., 151, 156, or equiv.)	Ar	Ar	315M	Mr. Harder

MILITARY SCIENCE AND TACTICS

No.	Title	Hour	Day	Bldg.	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

No.	Title	Hour	Day	Bldg.	Instructor
6s	Second Year Basic Course, R.O.T.C. (Artillery and Signal Corps)....	VII-IX	T	A	Ar
	(No cred.; prereq., 4-5)				
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	VII-IX	T	A	
	2	III	T	A	
		IX	T	A	
53s	First Year Advanced Course, R.O.T.C. (Signal Corps)	VII-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)	VII-IX	T	A	Capt. Persons
	(1 cred.; prereq., 54-55, reg. in E.E. 165)	I	W	321EE	

PHYSICAL EDUCATION FOR MEN

No.	Tit'e	Hour	Day	Bldg.	Instructor
1f-2w-3s	Freshman Physical Education..... (No cred.*; no prereq.)				
	Sec. 1	II	MW	Field House	
	2	II	TTh	Field House	
	3	III	MW	Field House	
	4	III	TTh	Field House	
	5	IV	MW	Field House	
	6	VI	MW	Field House	
	7	VI	TTh	Field House	
	8	VII	MW	Field House	
	9	VII	TTh	Field House	
	10	VIII	TTh	Field House (Boxing)	
NOTE.—Sections limited to 40 men.					
4f	Freshman Hygiene ..... (Cred.*; no prereq.)				
	Sec. 1	II	T	301F	Mr. 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	Mr. Cooke and others
	2	IV	T	301F	
	3	II	F	301F	
7f,8w,9s	Advanced Leaders ..... (1 cred. per qtr.; soph., jr., sr.; prereq., 1-2-3)				
	Lect.	IV	T	A	Mr. Keller
	Lab.	Ar	Ar		
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	Mr. 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	Bldg.	Instructor
1f-2w-3s†	Elem. Physical Training.....				
	(No cred.; required of all women 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
	6	V	MWF	3,151,153WGm	Ar
4w	Preliminary Hygiene				
	(No cred.; required of all women students; no prereq.)				
	Sec. 1	I	M	Old Ph Aud	Miss Norris
	2	II	T	201Old Law	
	3	III	W	201Old Law	
	4	IV	M	OLAud	
	5	VI	T	OLAud	
	6	III	Th	201Old Law	
4s	Preliminary Hygiene	II	T	201WGm	
	(See 4w)				
7f-8w‡	Sophomore Danish Gymnastics.....	IV	TS	153WGm	Miss Conger
	(No cred.; soph.; prereq., 1-2-3)				
9s	Sophomore Archery	II	MW	151WGm	
	(No cred.; soph.; prereq., 1-2-3)				
10f-11w†	Sophomore Orthopedic and Individual Gymnastics				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	IV	TS	3WGm	Miss Tolg
	2	VI	TTh	3WGm	Miss Denny
	3	II	MW	3WGm	Miss Denny
12s	Sophomore Orthopedic and Individual Gymnastics	IV	TS	3WGm	Miss Tolg
	(See 10-11)				
13f-14w-15s§	Sophomore Interpretive Dancing...	VI	TTh	151WGm	Miss Baker
	(No cred.; soph.; prereq., 1-2-3)				
13f,w-14s§	Sophomore Interpretive Dancing...	II	MW	151WGm	Miss Bockstruck
	(See 13f-14w-15s)				
16f-17w	Sophomore Games and Folk Dancing	I	TTh	151WGm	Miss Warnock
	(No cred.; soph.; prereq., 1-2-3)				
18s	Tennis				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	VII	WF	151WGm	Ar
	2	I	TTh	151WGm	
	3	IV	TS	151WGm	
	4	VIII	TTh	151WGm	
	5	VI	TTh	151WGm	
19f	Sophomore Hockey				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	VII	WF	151WGm	Ar
	2	V	TTh	151WGm	
	3	VIII	TTh	151WGm	

† Students may enter course in any quarter.

‡ The winter quarter is not open to students who have not completed Phys. Ed. 7.

§ The spring quarter is not open to students who have not had either fall or winter quarter.

No.	Tit'e	Hour	Day	Bldg.	Instructor
20w	Sophomore Basket-Ball				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	VII	WF	151WGm	Ar
	2	V	TTh	151WGm	
	3	(3:00)	TTh	151WGm	
	4	VIII	TTh	151WGm	
21s	Sophomore Baseball				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	VII	WF	151WGm	Ar
	2	V	TTh	151WGm	
22f,s-23w§*	Sophomore Elementary Swimming..				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	III	MW	51WGm	Ar
	2	IV(11:30)	MW	51WGm	
	3	II	TTh	51WGm	
	4	IV	TS	51WGm	
	5	VII	TTh	51WGm	
	6	VIII(3:30)	TTh	51WGm	
	7	VIII(4:00)	TTh	51WGm	
	8	VII	MW	51WGm	
22w	Sophomore Elementary Swimming..	VII	MW	51WGm	Ar
	(See 22f)				
24f,s‡	Sophomore Horseback Riding	IX	MW	Ar	
	(No cred.; soph.; prereq., 1-2-3)				
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	TTh	51WGm	Miss Conger
	3	II	WF	51WGm	Miss Conger
27f¶	Sophomore Golf, Advanced.....	Ar	TTh	Ar	Ar
	(No cred.; soph.; prereq., 1-2-3)				
27s¶	Sophomore Golf, Elementary.....				
	(See 27f)				
	Sec. 1	I	TTh	Ar	Ar
	2	II	TTh	Ar	Ar
28f,s-29w§*	Sophomore Advanced Swimming...	VIII(3:30)	MW	51WGm	Miss Conger
	(No cred.; soph., jr., sr.; prereq., 1-2-3, intermediate swimming test)				
30s	Sophomore Life Saving and Water Sports	IX	MW	51WGm	Miss Conger
	(No cred.; soph., jr., sr.; prereq., 1-2-3, advanced swimming test)				
31w‖	Sophomore Skating				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	VII	WF	Ar	Miss Lane
	2	II	TTh	Ar	
41f,42w	Health Projects	Ar	Ar		
	(2 cred.; jr., sr.; prereq., 6 qtrs.)				

* The spring quarter is not open to students who have not had either fall or winter quarter.

‡ Students registering for this course will pay for riding lessons at about $1 per lesson, but not the regular physical education fee. Attendance at class hour is required for credit.

¶ Students must supply their own golf equipment.

§ No student may register for more than two quarters of swimming without permission. Course 22 is never closed for senior registration.

‖ Class meeting will be sixty minutes in length, since weather and ice conditions will cause omissions at times.

No.	Title	Hour	Day	Bldg.	Instructor
43f-44w-45s	Play and Playground ..... (3 cred.; jr., sr.; prereq., 6 qtrs.)				Miss Kissock
	Lab.	II	TTh	(fall)	
	Lect.	III	MWF	(winter)	
	Lab.	V	MW	(spring)	
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

Activities for Which No Registration Is Required

Elective Sports ..... (No cred.; fr., jr., sr.; prereq., permission of director) (Fall)—field hockey, volley ball; (Winter)—basket-ball, ice hockey; (Spring)—track, baseball, swimming	IX	MTWTh	151WGm	Ar
General Swimming ..... (No cred.; all; no prereq.)	IX	TThF	51WGm	

PHYSICS

No.	Title	Hour	Day	Bldg.	Instructor
3f	Elements of Mechanics and Sound. (3 cred.; prereq., M.&M. 12 or equiv.)				
	Lect. Sec. 1	II	MWF	150Ph	Mr. Erikson
	2	VI	MWF	150Ph	
	Quiz Sec. 1	II	Th	150Ph	
	2	IX	Th	150Ph	
3w	Elements of Mechanics and Sound. (See 3f)				
	Lect.	VIII	MWF	150Ph	Mr. Erikson
	Quiz	IX	F or ar	150Ph	
3s	Elements of Mechanics and Sound. (See 3f)				
	Lect.	III	TTh	150Ph	Mr. Erikson
	Quiz	II	F	150Ph	
4f	Elements of Mechanics and Sound Laboratory ..... (1 cred.; prereq., 3 or reg. in 3)				
	Sec. 1	I-II	S	153Ph	Mr. Erikson
	2	III-IV	T	153Ph	and assistants
	3	VI-VII	M	153Ph	
	4	III-IV	F	153Ph	
	5	I-II	M	153Ph	
	6	III-IV	M	153Ph	
	7	VIII-IX	M	153Ph	
	8	III-IV	S	153Ph	
	9	VI-VII	F	153Ph	
	10	I-II	T	153Ph	
	11	III-IV	W	153Ph	
	12	VIII-IX	F	153Ph	

† The entire course must be completed before credit is received for any quarter.

No.	Title		Hour	Day	Bldg.	Instructor
4w,s	Elements of Mechanics and Sound Laboratory					
	(See 4f)					
	Lect.	Sec. 1	VI-VII	T	153Ph	Mr. Erikson
		2	VIII-IX	T	153Ph	and assistants
		3	I-II	Th	153Ph	
		4	VIII-IX	Th	153Ph	
23f	Heat					
	(3 cred.; prereq., 3)					
	Lect.		III	TThS	150Ph	Mr. Miller
	Quiz		IX	Th	150Ph	
23w	Heat					
	(See 23f)					
	Lect.	Sec. 1	II	MWF	150Ph	Mr. Miller
		2	VI	MWF	150Ph	
	Quiz	Sec. 1	II	Th	150Ph	
		2	IX	Th	150Ph	
24f	Heat Laboratory					
	(1 cred.; prereq., 23 or reg. in 23)					
		Sec. 1	VI-VII	M	244Ph	Mr. Miller
		2	VIII-IX	M	244Ph	and assistants
		3	VI-VII	T	244Ph	
		4	VIII-IX	T	244Ph	
24f	Heat Labratory					
	(See 24f)					
		Sec. 1	I-II	S	244Ph	Mr. Miller
		2	III-IV	T	244Ph	and assistants
		3	VI-VII	F	244Ph	
		4	III-IV	W	244Ph	
		5	I-II	W	244Ph	
		6	III-IV	M	244Ph	
		7	VI-VII	M	244Ph	
		8	VIII-IX	F	244Ph	
		9	III-IV	S	244Ph	
		10	VI-VII	W	244Ph	
		11	III-IV	F	244Ph	
		12	I-II	T	244Ph	
33f	Optics					
	(3 cred.; prereq., 3)					
	Lect.		I	TThS	133Ph	Mr. Valasek
	Quiz		IX	F	133Ph	
33w	Optics					
	(See 33f)					
	Lect.		II	TThS	133Ph	
	Quiz		VIII	Th	133Ph	
33s	Optics					
	(See 33f)					
	Lect.		IV	MWF	133Ph	
	Quiz		VI	Th	133Ph	
34f	Optics Laboratory					
	(1 cred.; prereq., 33 or reg. in 33)					
		Sec. 1	VI-VII	Th	236Ph	Mr. Valasek
		2	VI-VII	F	236Ph	
43w	Electricity					
	(3 cred.; prereq., 3)					
	Lect.		III	TThS	Ph	Mr. Zeleny
	Quiz		IX	Th		

No.	Title		Hour	Day	Bldg.	Instructor
43s	Electricity					
	(See 43w)					
	Lect.	Sec. 1	II	MWF	Ph	Mr. Zeleny
		2	VI	MWF	Ph	
	Quiz	Sec. 1	II	Th		
		2	IX	Th		
44w	Electricity Laboratory					
	(1 cred.; prereq., 4, 43 or reg. in 43)					
		Sec. 1	VI-VII	T	231Ph	Mr. Zeleny
		2	VIII-IX	T	231Ph	and assistants
		3	VI-VII	W	231Ph	
44s	Electricity Laboratory					
	(See 44w)					
		Sec. 1	I-II	S	231Ph	Mr. Zeleny
		2	III-IV	T	231Ph	and assistants
		3	VI-VII	F	231Ph	
		4	III-IV	F	231Ph	
		5	I-II	W	231Ph	
		6	III-IV	M	231Ph	
		7	VI-VII	M	231Ph	
		8	VIII-IX	M	231Ph	
		9	III-IV	S	231Ph	
		10	VIII-IX	F	231Ph	
		11	III-IV	W	231Ph	
		12	I-II	T	231Ph	
123s	Pyrometry and Heat		VI-IX	MW	245Ph	Mr. Miller
	(3 cred.; prereq., 23, 24)					
144f	Electrical Measurements					
	(3 cred.; prereq., 43, 44)					
	Lect.		V	T	166Ph	Mr. Zeleny
	Quiz		II	Th	166Ph	
	Lab.	Sec. 1	VI-VII	TTh	231Ph	Mr. Zeleny
		2	VIII-IX	TTh	231Ph	and assistants
		3	VI-VII	WF	231Ph	
		4	III-IV	TS	231Ph	

PREVENTIVE MEDICINE AND PUBLIC HEALTH

No.	Title	Hour	Day	Bldg.	Instructor
3f,w,s	Personal Hygiene and Elementary Sanitation	IV	TS	101bMH	Mr. Lees
	(2 cred.; no prereq.)				
4s	Increasing the Span of Human Life	III	TThS	101bMH	Mr. Myers
	(3 cred.; jr., sr.; prereq., 10 cred. in science of social sciences)				
12s	Hygiene				
	(No cred.; no prereq.)				
	Sec. 1	VI	T	335EE	Mr. Hathaway
	2	IX	F	335EE	
50f,w,s	Public and Personal Health.....	V	MWF	101bMH	Mr. O'Brien
	(3 cred.; prereq., jr., sr.)				
53f,s	Elements of Preventive Medicine...	II	MWF	101bMH	Mr. Diehl
	(3 cred.; prereq., Psy. 1-2; Bact. 41 or equiv. or jr., sr., by permission)				
73w	Occupational Hygiene and Disease..	IV	MW	101bMH	Mr. Myers
	(2 cred.; prereq., 53)				

PSYCHOLOGY

No.	Title		Hour	Day	Bldg.	Instructor
1f-2w	General Psychology					
	(3 cred. per qtr.; no prereq.)					
	Lect.	Div. A	I	MW	OLAud	Mr. Elliott
	Quiz*		I	F		and others
	Lect.	Div. B	III	MW	OLAud	
	Quiz*		I	F		
	Rec. (1 hr.)		I	Th or F or S		
			II	Th or F		
			VII	Th or F		

RHETORIC (COLLEGE OF AGRICULTURE)

No.	Title		Hour	Day	Bldg.	Instructor
22f	Public Speaking					
	(3 cred.; soph., jr., sr.; prereq., Engl. 6)					
		Sec. 1	III	MTWFS	311En(F)	Mr. Miller
		2	IV	MTWFS	311En(F)	
22w	Public Speaking					
	(See 22f)					
		Sec. 1	I	MTWFS	311En(F)	Mr. Miller
		2	IV	MTWFS	311En(F)	
22s	Public Speaking					
	(See 22f)					
		Sec. 1	III	MTWFS	311En(F)	Mr. Miller
		2	IV	MTWFS	311En(F)	

SOILS

No.	Title		Hour	Day	Bldg.	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		Ar	Ar	Ar	Mr. McMiller
	(3 cred.; prereq., 4)					

SPEECH

No.	Title	Hour	Day	Bldg.	Instructor
35w,s	Public Speaking	I	MWF	238EE	Mr. Rarig

* Three times during quarter. All students must register for this hour.