

The Bulletin of the University of Minnesota

*The School of Agriculture
Courses in Agriculture and Home
Economics*

Part I

*Announcement of Courses for the Years
1930-1932*



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THE SCHOOL OF AGRICULTURE

FACULTY

ADMINISTRATION

Lotus Delta Coffman, Ph.D., LL.D., President
Walter C. Coffey, M.S., LL.D., Dean of the Department of Agriculture
John O. Christianson, B.A., Acting Principal
Rodney M. West, B.A., Registrar
Johanna Hognason, B.A., Matron Boys' Dormitories
Laura A. Matson, M.A., Matron Girls' Dormitories
Harriet W. Sewall, B.A., Librarian

AGRICULTURAL BIOCHEMISTRY

Ross A. Gortner, Ph.D., Chief; George S. Taylor, B.A.

AGRICULTURAL ENGINEERING

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AGRONOMY, FARM MANAGEMENT, AND PLANT GENETICS

Herbert K. Hayes, D.Sc., Chief; Harvey E. Brewbaker, Ph.D., Iver J. Johnson, M.S., Stephen M. Raleigh, B.S.

ANIMAL HUSBANDRY

Walter H. Peters, M.Agr., Chief; Philip A. Anderson, B.S. in Agr., Alfred L. Harvey, M.S., Lawrence M. Winters, M.S.

DAIRY HUSBANDRY

Clarence H. Eckles, D.Sc., Chief; Nat N. Allen, B.S., Thor W. Gullickson, M.S., Ramer Leighton, Henry W. Morrison, B.S., William E. Peterson, Ph.D.

ENTOMOLOGY AND ECONOMIC ZOOLOGY

Royal N. Chapman, Ph.D., Chief; Erdman Braun, B.S., Heber C. Donohoe, M.S., Arthur G. Ruggles, M.A.

FARM MANAGEMENT AND AGRICULTURAL ECONOMICS

Oscar B. Jesness, Ph.D., Chief; Louis B. Bassett, Willard P. Ranney, M.S., George A. Sallee, M.S.

FORESTRY

Henry Schmitz, Ph.D., Chief; Edward G. Cheyney, B.S.

GYMNASIUM AND PHYSICAL TRAINING

Robert Thompson, Director; Gladys Kaercher

THE SCHOOL OF AGRICULTURE

HOME ECONOMICS

Wylle B. McNeal, M.A., Chief; Carlotta M. Brown, Hedda Kafka, B.S.,
Frances L. Keller, M.S., Gladys E. Nordeen, B.A., Iva I. Sell, M.S.,
Lucy A. Studley, M.A., Helen J. Topp, B.S.

HORTICULTURE

William H. Alderman, B.S., Chief; Troy M. Currence, Ph.D., Franc P.
Daniels, B.S. in Agr., Fred A. Krantz, Ph.D., Lewis E. Longley, M.S.,
Louis Sando

PLANT PATHOLOGY AND BOTANY

Edward M. Freeman, Ph.D., Chief; Charles S. Holton, M.S., Alvin H.
Larson, B.S. in Agr., Matthew B. Moore, B.S.

POULTRY HUSBANDRY

Arthur C. Smith, B.S., Chief

PREVENTIVE MEDICINE AND PUBLIC HEALTH

Harold S. Diehl, M.D., M.A., Director; Hally J. Fisher, R.N., Joseph C.
Hathaway, M.D.

RHETORIC

Robert C. Lansing, M.A., Chief; Elizabeth Hause, B.A., Marjorie Holbrook,
B.S., Monica Langtry, B.A.

SCHOOL (GENERAL)

John O. Christianson, Acting Principal; Cecil Birder, David W. Boland,
Bernice Dickerman, B.A., Carrie M. Heathcote, Johanna Hognason,
B.A., Peder L. Johnsrud, B.S. in Agr., Paul Leach, Marjorie Martyn,
B.A., Laura A. Matson, M.A., Ruth Pearson, Hazel L. Wade, B.S.,
Mabel Willson

SOILS

Frederick J. Alway, Ph.D., Chief; Paul R. McMiller, M.S., George H.
Nesom, B.A., B.S.

VETERINARY MEDICINE

Clifford P. Fitch, M.S., D.V.M., D.Sc., Chief; Willard L. Boyd, D.V.S.,
Howard C. H. Kernkamp, D.V.M., Reuel Fenstermacher, D.V.M.

GENERAL INFORMATION

LOCATION

The School of Agriculture is located at University Farm, St Paul, Minnesota, about midway between the business portions of the cities of St. Paul and Minneapolis. The school is a part of the Department of Agriculture of the University of Minnesota, and is governed by the Board of Regents.

HOW TO GET TO THE SCHOOL

Check all baggage to Minneapolis or St. Paul and bring checks to the school.

A charge of fifty cents* is made by the school for transporting trunks at the opening of the school year. A charge of not more than fifty cents is made for the return of baggage at the close of school, provided it is ready to go on the days assigned.

Take the Como-Harriet or Como-Hopkins car from either St. Paul or Minneapolis, and get off at Doswell Avenue. University Farm is about a ten-minute walk from the car line. The dormitories are on the campus.

TIME OF OPENING AND CLOSING

The School of Agriculture opens late in September and closes late in March. For exact dates of opening and closing of each term see the calendar in Part II of the bulletin.

Instruction begins promptly at the opening of each term. Students should be present the first day and remain until the close of the term. No student will be allowed to register after the second week of the term except by permission of the Students' Work Committee.

PURPOSE

The School of Agriculture was organized in 1888. Its object is to give a practical education to young men and women. It offers a course of study designed to fit young men and young women for successful farm life, and aims to give its students the necessary preparation for useful citizenship. The school course does not aim to prepare students for college.

ADMISSION

Students should correspond with the registrar, University Farm, St. Paul, Minnesota, prior to coming to the institution, to make the necessary preliminary arrangements for registration.

Farm experience.—All male students are required to have had six months' farm practice before entrance.

Minimum age.—No student under seventeen years of age will be admitted. Exceptions to this rule may be made in the case of applicants who have completed one full year of high school work. Similar exception may be made when no high school is immediately available to the applicant.

Scholastic preparation.—Students who have completed eighth grade work, or its equivalent, in the common schools, are admitted without examination.

Each applicant for admission should send to the registrar for a certificate of admission which, when properly filled out by former teacher or superintendent and returned to the registrar, will be accepted in place of entrance examinations. Diplomas should not be sent.

Students from city or grade schools must present a dismissal card from the last school attended; they will not be admitted before finishing eighth grade work, or until their former school records have been passed upon. These records must be presented at least three weeks prior to the opening of the school.

Unclassed students.—Applicants of mature years who cannot meet the above entrance requirements will be admitted for special programs. Such students can graduate when the entrance requirements as well as the requirements of the prescribed course are fully met.

Credit for high school work.—Students will be accepted from approved high schools and be given credit toward graduation from the School of Agriculture as follows:

Minimum number of credit hours	
High school graduate.....	36
Non-graduate—per unit	2½
Agriculture—per unit (boys)	12½
Maximum number of credit hours.....	72

High school courses equivalent to courses offered in the School of Agriculture will receive the same credit as those offered in the school. The first year's work in sewing, cooking, and freehand drawing will be allowed the same credit as that offered in the school. Additional credit in these subjects will be allowed only on the approval of the Home Economics Division.

COURSES OF STUDY

Courses in both agriculture and home economics are offered. These cover a wide range of subjects and are largely vocational in character. Provision is also made for instruction in English, mathematics, and other academic subjects. The courses require three winters of six months each for completion. The character of instruction and environment tend to educate students toward the farm, and to develop in them a love for farm life by showing them its possibilities. In this respect the school has been very successful, as over eighty per cent of its graduates continue agricultural pursuits.

HOME PROJECTS

Science with practice is the aim of the School of Agriculture. The school is organized on a plan which provides for teaching agriculture through six months of study at the school and six months of supervised home project work on the farm. Home project work is advised for every pupil in the school. The purpose of the home project work is to give the pupils an opportunity to apply some phase of their classroom instruction to the operation of a farm or a farm home.

The students may have a free choice as to the nature of their projects but are advised to choose those connected with the class work being taken.

Freshmen should select projects connected with freshman subjects; juniors, those connected with junior subjects.

Registration blanks are provided instructors in classes for which summer projects will be accepted, and the registration should be completed before the student leaves the school in the spring. At the time of registration a project book with forms suitable for recording the necessary data will be provided.

Registration for home project work after the close of the spring term must be approved by the chairman of the Home Project Committee.

During the summer season the work of the students will be inspected by instructors from the school so far as possible. The project book must be submitted to the classroom instructors and be graded by them but must have final approval of the Home Project Committee.

Home project work cannot be accepted for credit from students who are not properly registered before starting upon the project.

Three credits of home project work is all that any student should attempt to earn in one season. These may be counted toward graduation from the school or, in the event that a student expects to enter the College of Agriculture, Forestry, and Home Economics, they may be used as one unit toward entrance to the college.

A special bulletin on home projects may be obtained from the principal's office.

RULES AND REGULATIONS

A pamphlet containing the rules and regulations of the school will be furnished each student at the time of registration or upon application to the registrar's office.

HOME LIFE ON THE CAMPUS

The life of the student while attending the School of Agriculture is subject to supervision. The home life of each student is carefully guarded, and everything is done to promote a healthful and moral atmosphere. The use of tobacco on the campus, and the use of intoxicating liquors of all kinds is strictly forbidden. Anyone not in accord with these restrictions and not willing to lend a hand toward promoting a strong moral growth should not come to the School of Agriculture.

STUDENTS IN DORMITORIES

The students' social and dormitory life is supervised and directed by two women instructors of the school faculty, one in charge of the girls' dormitories, the other in charge of the boys' dormitories. All regulations governing the campus life of the student are subject to the approval of the dean of the Department of Agriculture and the principal of the school. A feature in the social life of the boys in the dormitories has been contributed in the form of clubrooms in Pendergast Hall and the Boys' New Dormitory.

From 8:15 a.m. to 4:30 p.m. and also after 7:30 p.m. students not at recitation or assembly are expected to be in their rooms or in the library studying or reading. The rooms shall at all times be quiet, especially in the evening, so that no student will be disturbed.

ASSEMBLY

On each school day, at 12:10 p.m., except Monday and Thursday, the students meet in the assembly hall. After the opening exercises, brief talks are given by the principal, members of the faculty, or invited guests. During the year the list of speakers will include prominent state and national officials, business men, particularly those connected with the agricultural industries, professional men and women, prominent clergymen of all denominations, educators from other institutions, and successful farmers and homemakers. It has been found that this plan gives to the students an opportunity to hear men and women of prominence discuss a wide range of topics, many of which relate to rural and agricultural problems.

HOLIDAYS

On Thanksgiving Day no classes will be held, but school will continue as usual on the Friday and Saturday following.

Armistice Day, November 11; Lincoln's birthday, February 12; and Washington's birthday, February 22, will be observed as holidays.

REQUIREMENTS FOR GRADUATION

The diploma of the School of Agriculture is granted on the completion of

1. The prescribed course of study, including all of the required work and enough elective work to make 108 credit hours, at least 36 of which must be earned by class attendance in this school.
2. Gymnasium for the boys, or physical training for the girls, 2 credit hours for each term of residence.
3. Social problems for boys, 1 credit hour, or social training for girls, 2 credit hours.
4. An honorary standing in deportment.
5. An essay of not less than one thousand words upon a topic connected with agriculture or home economics, typewritten on paper of approved size for binding and filing in the library.
6. For boys, at least six months of practical farm experience in addition to the six months required for entrance. This experience may be gained either on the home farm or in the employment of a good farmer. Regularly approved and recorded home project work may be counted toward this requirement. The satisfaction of this requirement shall be certified by the Home Project Committee.

EXPENSES

Each student is required to pay for breakage of apparatus used in practical work.

The cost to the student for board is the actual cost of maintaining the table (including management). Each term board is paid in advance. No deduction in charge is made for any absence of less than five days. If students are compelled to be absent five or more days, they are allowed half rates, if they make arrangements before leaving.

The buildings are all lighted by electric lights and warmed by steam. The sleeping rooms are each furnished with a bedstead, mattress, dressing bureau, chairs, and table.

Each student provides four sheets, two blankets, or one blanket and one quilt, one bedspread, one pillow, three pillowcases, towels, comb and brushes, one glass tumbler, and one teaspoon.

For the boys' gymnasium work a track suit and gymnasium shoes are required.

Each girl is required to provide two smocks suitable for the protection of her clothing in the home economics classes. These should be planned for and purchased after attending her first classes.

For the girls' gymnasium work a uniform suit is required. This should be obtained at the school. All freshmen and junior girls will be required to buy the regular gymnasium shoes sold at the bookstore.

Each girl should be provided with a kimono or bathrobe, a pair of bedroom slippers, at least four changes of undergarments, nightgowns, and hosiery. It is suggested that each girl be provided with two simple school dresses and a dress suitable for social occasions. Rubbers and umbrella are necessities.

TABLE OF CHARGES

Tuition fee, per term. Residents of the state.....	\$ 3.00
Non-residents	6.00
Deposit as guarantee for the return of books and other material.....	5.00
Gymnasium fee. Required of every student. Per term.....	1.00
Post-office box fee. Per term .....	.20
Textbook rental fee. For those not desiring to purchase their books. Per term	1.75
Health fee. Per term.....	2.00
Music fee. Per course.....	10.00
Room in dormitory. (Price subject to change) Per term.....	16.00
Board. First term. (Price subject to change).....	46.50
Second term (Price subject to change).....	43.00
Laundry. Per term. (Price subject to change) Required of all in dormitories	4.00
Gymnasium suits—boys. (Price subject to change).....	\$4.00-5.00
Girls. (Price subject to change).....	8.30
Average cost drawing instruments, notebooks, stationery, and supplies. Per year	\$10.00-12.00

The payments to be made to the school at time of registration are as follows:

	Fall Term	Winter Term
Student in dormitory (resident).....	\$79.25	\$66.75
Non-resident	82.25	69.75
Day student (resident).....	12.95	7.95
Non-resident	15.95	10.95
Not in attendance first term add \$5 to the winter term charges above.		

DORMITORIES

Each student in attendance at the school who expects to return the following year and who desires to room in the dormitory will, before going home, make a deposit of \$2 with the cashier as evidence of good faith that he expects to return on the opening day of the following school year.

Dormitory rooms will be assigned to new students in the order in which their applications are received. Each prospective student who desires to room in the dormitory will be required to send a deposit of \$2, which will be returned in case the application is received after all dormitory rooms are spoken for.

In case of either a former student or a prospective student, this two-dollar deposit will be forfeited if the student does not appear for registration on the opening day of the school term, unless he has signified in writing to the registrar at least ten days before the opening that he does not intend to return. All money orders or checks should be made payable to University of Minnesota, Department of Agriculture.

STUDENTS' HEALTH SERVICE

A health fee of \$2 a term is paid by each student for the maintenance of the Students' Health Service. For this fee the student may receive physical examination and the professional services of the staff when needed.

For services which are specialized and individual in character, such as operations, board and laundry when in the hospital, 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.

The offices of the Health Service and the Students' Hospital and Dispensary on the University Farm campus are located in the Health Service Building. The services of the hospital and dispensary are available at all hours of the day and night. The telephone call is Nestor 2881. Physicians of the Health Service will be in attendance daily. Their office hours will be announced.

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 that 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 examination of students. Complete physical records of all students are kept. From each 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; guarding environment.

(b) Protection of the physically sound student 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) Provisions for the care and treatment of such cases of communicable diseases; isolation hospital.

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

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

2. *Dental hygiene.*—As a part of his entrance physical examination each student is given a complete dental examination by a member of the dental staff, and advised regarding the condition of his teeth. During the year, students at any time may receive dental consultation and, if they so desire, they may obtain expert dental treatment and care on a cost basis.

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

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

CLASS TRUST FUNDS

The classes of 1902, 1916, 1924, and 1925 each left with the school funds "to assist by temporary loans, at a reasonable rate of interest, deserving students needing such help." Applications for loans should be made to the principal.

THE LUDDEN TRUST

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

Mr. Ludden imposed the following conditions: "The beneficiaries must be youths who are residents of the State of Minnesota; they must be and continue of unblemished moral character, and of temperate and industrious habits; and they must be such as by examination and trial shall evince and maintain a taste, habit, and aptitude for study and improvement; and any student who shall fail to come, or shall cease to be, within the above conditions shall forfeit all claims to the benefits of such fund. Subject to these conditions the administration of such income is entrusted to the said

Board of Regents, which may make such rules therefor as they may deem judicious."

This fund produces \$400 a year. Those wishing to avail themselves of its benefits shall apply to the principal of the school. Application blanks may be obtained from the office of the dean of the Department of Agriculture.

THE DORR FUND

This fund was willed by the late Caleb Dorr, of Minneapolis, for the benefit of the Department of Agriculture of the University.

The income from \$20,000 of the fund is to be devoted to establishing and maintaining graduate research fellowships in agriculture; the income from the remainder to be used for scholarships, donations, and loans to worthy and needy students.

CALEB DORR CASH SCHOLARSHIP PRIZES

Cash prizes amounting to \$90 each year are offered to the students securing the highest standings in general scholarship. Of this amount \$35 will be offered each term in five prizes of \$10, \$8, \$7, \$5, and \$5. All students carrying the full work of 18 credit hours per term are eligible for these prizes. One prize of \$25 will be awarded at the close of the second term for the senior student graduating from the School of Agriculture with the highest scholarship and student activity record for the first five terms.

The awards will be made on (1) class standings as recorded by instructors for the term's work, and (2) on student activities and deportment. The class standings will count for 90 per cent and the student activities for 10 per cent. In determining the grades of scholarship the merit point system adopted by the registrar's office will be used. The rating for student activities will be based on the quality of leadership as indicated by a review of the activities participated in and the general deportment of the student during attendance at school. This rating will be determined by the scholarship committee in consultation with the preceptresses and the principal of the School of Agriculture.

Records made in gymnasium will not be counted in making the scholarship awards.

Besides the above, prizes are given for excellence in extemporaneous speaking, community betterment, essay writing, and declamation. The rules governing these scholarships may be found in the booklet of information supplied to each student at the time of his registration.

GIDEON MEMORIAL PRIZE IN HORTICULTURE

A fund of \$500 was established in memory of the late Peter Gideon, the originator of the Wealthy apple. The annual income is to be divided in three prizes for the best papers on some horticultural subject.

CADY MEMORIAL FUND

The Minnesota Garden Flower Society raised by popular subscription the LeRoy Cady scholarship fund of \$1,500, the interest from which is to be used to aid deserving students who are pursuing courses in horticulture.

ORGANIZATIONS

Students' debating societies.—Students are urged to unite with one of the eight literary societies of the school for both pleasure and profit. The work is under the supervision of one of the instructors in the rhetoric section. It affords training in parliamentary practice, public speaking, debating, and dramatic work.

Students' Christian associations.—The Young Men's and Young Women's Christian associations are voluntary organizations which have for their objects the maintenance of a positive moral and religious atmosphere and the development of a complete Christian manhood and womanhood, physical, intellectual, social, and spiritual. These associations carry on various lines of activity. Employment and housing bureaus are maintained for the use of students. A general reception is given at the beginning of each term. Each Sunday morning at 8:30 a song service is held, followed directly by meetings of Bible, mission, and rural study groups, while in the afternoon at 5:30 a vesper service is conducted. Each Thursday evening at 6:30 o'clock the men gather for a fellowship meeting, and the women for a meeting of the Student Girl Reserves Club. The work is under the direction of general secretaries and the supervision of a board of directors made up of professors, business men, and students. The associations are non-sectarian that all students may find in them an opportunity for Christian activity and mutual helpfulness.

PUBLICATIONS

Agrarian.—The *Agrarian* is an annual published by the senior class of the school. The book gives an outline of all school and class activities; is fully illustrated, and contains, in addition to brief articles and items of purely local interest, a number of contributions from students and faculty members, dealing with the various phases of agricultural education and with agricultural problems.

News of the School of Agriculture.—The *News of the School of Agriculture* is published monthly during the school year. It is managed by a student board elected by the various classes. It aims to give publicity of interest to students and alumni and to serve as a tie between the school and the alumni.

LIBRARY

The agricultural library is well equipped for supplying the needs of both undergraduate and graduate students. It contains over 20,000 volumes of general and technical literature, government reports, and 50,000 unbound pamphlets, bulletins, and reports. The general subject and author card index and the index of publications of the state experiment station are always at the disposal of students, to aid them in locating the various sources of information which the library affords. There are complete sets of all the standard encyclopedias and dictionaries, and files of over 225 popular and technical magazines and periodicals.

The librarian and her assistants are always ready and glad to give whatever assistance they can, both to those interested in special research

work and to those doing regular reference work in connection with their classes. All those wishing to read or study are made welcome and are given whatever privileges the library can provide.

ZOOLOGICAL MUSEUM

The zoological museum is on the third floor of the Administration Building, connecting with the entomology lecture room. It contains a collection of birds, a large series of mammals, shells, anatomical models, etc., all used in class instruction. One case is given up to models of injurious insects. Another case is devoted to a beautiful series of Minnesota fishes, reptiles, and amphibians, and on two sides of the large room devoted to museum purposes are cases containing thousands of pinned insects. Carefully arranged collections of typical insect groups, with explanatory text, are to be found in the demonstration cases in the hallway. Friends of the institution who are inclined to donate zoological specimens may rest assured that they will be promptly installed and given the best of care.

COURSES OF STUDY

For courses of study in agriculture, see pages 15 to 23.

For courses of study in home economics, see pages 24 to 25.

Figures following the names of courses indicate the number of credit hours. One credit hour is equivalent to one class period devoted to recitation or lecture or to two such periods devoted to laboratory work.

For description of the courses listed in the following outline see pages 26 to 37, and for schedule of classes, Part II.

See page 6 for statement with reference to home project work.

Courses which may be taken either term are indicated by (f,w), those which are offered in the fall term only are indicated by (f), and those offered only in the winter term by (w).

Every student in agriculture who plans to graduate is expected to select one of the following courses of study: (a) general farming, (b) farm mechanics, (c) grain elevator management, (d) horticultural and nursery training, or (e) livestock production.

Adults desiring a special course should consult the Enrolment Committee.

Special students of mature years, who do not desire a diploma but who wish to take special work, may, by action of the Enrolment Committee, be allowed to arrange a curriculum under the supervision of a faculty adviser. This adviser will be appointed by the Enrolment Committee after the student has consulted with the committee, and will be ordinarily a member of the division in which the student intends to take the larger part of his or her work. No special student will be eligible for a diploma until both the entrance requirements and the requirements of a prescribed course have been satisfied.

GENERAL FARMING

FRESHMAN YEAR

REQUIRED—FIRST TERM

English I, 3(f,w)
Hygiene 1(f,w)
Farm Arithmetic, 3(f,w)
Judging Types and Market Classes of
Livestock, 3(f,w)
Drawing and Farm Buildings, 3(f,w)
Agricultural Botany, 3(f,w)
Gymnasium, 2(f,w)
Social Problems for Boys, 1(f,w)
Electives, 2

REQUIRED—SECOND TERM

English II, 3(f,w)
Soils, 3(f,w)
Judging Breed Types of Livestock, 3(f,w)
Animal Biology, 3(f,w)
Gymnasium, 2(f,w)
Electives, 6

ELECTIVES

Chemistry in Agriculture, 3(f,w)	Food Selection and Preparation, 2(f,w)
Advanced Farm Arithmetic, 3(f,w)	Landscape Gardening, 3(f)
Physiology, 3(f,w)	Elementary Beekeeping II, 3(f,w)
Farm Buildings I, 3(f,w)	Elements of Music I, 2(f,w)
Gas Engines, 3(f,w)	Elements of Music II, 2(f,w)
Mechanical Training I, 3(f,w)	Violin, $\frac{1}{2}$ (f,w) ¹
Mechanical Training II, 3(f,w)	Piano, $\frac{1}{2}$ (f,w) ²
Food Selection and Preparation, 2(f,w)	Instrumental Music, $\frac{1}{2}$ (f,w) ¹
Elementary Beekeeping I, 3(f,w)	Voice, $\frac{1}{2}$ (f,w) ²
Spelling, 1(f,w)	Orchestra, $\frac{1}{2}$ (f,w)
Penmanship, 1(f,w)	Chorus, $\frac{1}{2}$ (f,w)
Plant Propagation and Nursery Practice, 3(f)	Band, $\frac{1}{2}$ (f,w)
Floriculture, 3(w)	Harmony I, 2(f,w)
Dramatic Art, $\frac{1}{2}$ (f,w) ²	Harmony II, 2(f,w)
Debating, 1(w) ²	Appreciation of Music, 3(f,w)
Typewriting I, 3(f,w)	Instrumentation and Conducting, 3(f,w)
Bookkeeping I, 3(f,w)	Poultry Judging, 2(f,w)
Bookkeeping II, 3(f,w)	Dressed Poultry, 1(f)
	Commercial Law, 3(f,w)
	Home Projects, 1 to 3

JUNIOR YEAR

REQUIRED—FIRST TERM

English Classics, 3(f,w)
 Forage Crops and Potatoes, 3(f,w)
 Advanced Livestock Judging, 3(f) or
 Dairy Stock Judging, 2(f,w)
 Farm Horticulture, 3(f,w)
 Dairy Stock Feeding I, 3(f,w) or
 Livestock Feeding, 3(f,w)
 Gymnasium, 2(f,w)
 Electives, 3 or 4

REQUIRED—SECOND TERM

Business English, 3(f,w)
 Grain Crops, 3(f,w)
 Farm Dairying, 3(f,w)
 Poultry, 3(f,w)
 Gymnasium, 2(f,w)
 Electives, 6

ELECTIVES

Dairy Stock Feeding I, 3(f,w)
 Algebra I, 7(f,w)
 Geometry I, 7(f,w)
 Industrial History, 3(f,w)
 Insect Pests of Plants, 3(f)
 Chemistry of Plant and Animal Life I, 3(f)
 Mechanics and Water Supply, 3(f,w)
 Parliamentary Law, 1(f,w)
 Management of Laying Flock, 1(f,w)
 Physiology and Hygiene of Breeding, 2(f)
 Orchard Fruit Growing, 3(f)
 Small Fruit Growing, 3(w)
 Elements of Bacteriology, 3(w)
 Co-operative Accounting, 3³
 Potato Production, 3(w)
 Veterinary Studies, 3(f,w)
 Advanced Beekeeping, 3(f,w)
 Dairy Stock Judging, 2(f,w)
 Land Clearing, 3(w)
 Test Association Methods, 3(w)

Livestock Feeding, 3(f,w)
 Livestock Management, 3(w)
 Greenhouse Construction and Management, 3(w)
 Special Problems in Horticulture (w)
 Algebra II, 7(f,w)
 Geometry II, 7(f,w)
 Meats, 3(f,w)
 Advanced Livestock Judging, 3(f)
 Chemistry of Plant and Animal Life II, 3(w)
 Heat and Electricity, 3(w)
 Incubating and Brooding, 3(w)
 Seed Testing, 2(w)
 Advanced Gas Engines, 3(f,w)
 Commercial Vegetable Gardening, 3(w)
 Weeds, 2(f)
 American History, 3(f,w)
 Forest Nursery Methods and Tree Planting, 3(w)

¹ A special fee of \$10 is charged for this course.

² Credit for this course is allowed only under the conditions specified in the booklet of Faculty Regulations.

³ Not offered in 1930-31.

COURSES OF STUDY

17

SENIOR YEAR

REQUIRED—FIRST TERM

Public Speaking, 3(f,w)
 American Government, 3(f,w)
 Livestock Breeding, 3(f,w)
 Farm Management I, 3(f,w)
 Gymnasium, 2(f,w)
 Electives, 6

REQUIRED—SECOND TERM

English VI, 3(f,w)
 Rural Sociology, 3(f,w)
 Farm Management II, 3(f,w)
 Crop Breeding, 3(w)
 Gymnasium, 2(f,w)
 Electives, 6

ELECTIVES

Dairy Stock Feeding II, 3(w)
 Drainage and Roads, 3(f)
 Farm Implements 3(f,w)
 Economics, 3(f,w)
 English Literature I, 5(f,w)
 Grain Marketing I, 3³
 Cereal Technology, 3³
 Advanced Public Speaking, 3(w)

Plant Diseases, 3(f)
 Farm Buildings II, 3(f)
 Milk Production, 5(w)
 English Literature II, 5(w)
 Dairy Stock Selection, 3(f)
 Judging and Grading Farm Crops, 3(w)
 Grain Marketing II, 3³

FARM MECHANICS

FRESHMAN YEAR

REQUIRED—FIRST TERM

English I, 3(f,w)
 Hygiene, 1(f,w)
 Farm Arithmetic, 3(f,w)
 Judging Types and Market Classes of Livestock, 3(f,w)
 Drawing and Farm Buildings, 3(f,w)
 Agricultural Botany, 3(f,w) or Animal Biology, 3(f,w)
 Gymnasium, 2(f,w)
 Social Problems for Boys, 1(f,w)
 Electives, 2

REQUIRED—SECOND TERM

English II, 3(f,w)
 Soils, 3(f,w)
 Mechanical Training I, 3(f,w)
 Farm Buildings I, 3(f,w)
 Gymnasium, 2(f,w)
 Electives, 6

ELECTIVES

Chemistry in Agriculture, 3(f,w)
 Advanced Farm Arithmetic, 3(f,w)
 Agricultural Botany, 3(f,w)
 Animal Biology, 3(f,w)
 Poultry, 3(f,w)
 Elements of Music I, 2(f,w)
 Elements of Music II, 2(f,w)
 Penmanship, 1(f,w)
 Spelling, 1(f,w)
 Elementary Beekeeping I, 3(f,w)
 Elementary Beekeeping II, 3(f,w)
 Physiology, 3(f,w)
 Judging Breed Types of Livestock, 3(f,w)
 Food Selection and Preparation, 2(f,w)
 Dramatic Art, $\frac{1}{2}$ (f,w)²
 Debating, 1(w)²
 Typewriting I, 3(f,w)
 Bookkeeping I, 3(f,w)
 Bookkeeping II, 3(f,w)
 Violin, $\frac{1}{2}$ (f,w)³

Piano, $\frac{1}{2}$ (f,w)¹
 Instrumental Music, $\frac{1}{2}$ (f,w)¹
 Voice, $\frac{1}{2}$ (f,w)¹
 Orchestra, $\frac{1}{2}$ (f,w)
 Chorus, $\frac{1}{2}$ (f,w)
 Band, $\frac{1}{2}$ (f,w)
 Harmony I, 2(f,w)
 Harmony II, 2(f,w)
 Appreciation of Music, 3(f,w)
 Instrumentation and Conducting, 3(f,w)
 Mechanical Training II, 3(f,w)
 Poultry Judging, 2(f)
 Dressed Poultry, 1(f)
 Plant Propagation and Nursery Practice, 3(f)
 Floriculture, 3(w)
 Landscape Gardening, 3(f)
 Commercial Law, 3(f,w)
 Home Projects, 1 to 3

¹ A special fee of \$10 is charged for this course.

² Credit for this course is allowed only under the conditions specified in the booklet of Faculty Regulations.

³ Not offered in 1930-31.

JUNIOR YEAR

REQUIRED—FIRST TERM

English Classics, 3(f,w)
 Forage Crops and Potatoes, 3(f,w)
 Farm Horticulture, 3(f,w) or
 Advanced Livestock Judging, 3(f)
 Gas Engines, 3(f,w)
 Mechanics and Water Supply, 3(f,w)
 Gymnasium, 2(f,w)
 Electives, 3

REQUIRED—SECOND TERM

Business English, 3(f,w)
 Grain Crops, 3(f,w) or
 Farm Horticulture, 3(f,w)
 Farm Dairying, 3(f,w)
 Heat and Electricity, 3(w)
 Gymnasium, 2(f,w)
 Electives, 6

ELECTIVES

Dairy Stock Feeding I, 3(f,w)
 Algebra I, 7(f,w)
 Insect Pests of Plants, 3(f)
 Parliamentary Law, 1(f,w)
 Veterinary Studies, 3(f,w)
 Chemistry of Plant and Animal Life I,
 3(f)
 Geometry I, 7(f,w)
 Farm Horticulture, 3(f,w)
 Test Association Methods, 3(w)
 Dairy Stock Judging, 2(f,w)
 Industrial History, 3(f,w)
 Physiology and Hygiene of Breeding,
 2(f)
 Management of Laying Flock, 1(f,w)
 Orchard Fruit Growing, 3(f)
 Small Fruit Growing, 3(w)
 Commercial Vegetable Gardening, 3(w)
 Co-operative Accounting, 3^a
 Weeds, 2(f)
 Special Problems in Horticulture, (w)

Greenhouse Construction and Management,
 3(w)
 Livestock Feeding, 3(f,w)
 Livestock Management, 3(w)
 Algebra II, 7(f,w)
 Meats, 3(f,w)
 Geometry II, 7(f,w)
 Advanced Livestock Judging, 3(f)
 Elements of Bacteriology, 3(w)
 Chemistry of Plant and Animal Life II,
 3(w)
 Cereal Crops, 3(f,w)
 Seed Testing, 2(w)
 Incubating and Brooding, 3(w)
 Forest Nursery Methods and Tree Planting,
 3(w)
 American History, 3(f,w)
 Advanced Beekeeping, 3(f,w)
 Potato Production, 3(w)
 Land Clearing, 3(w)

SENIOR YEAR

REQUIRED—FIRST TERM

Public Speaking, 3(f,w)
 Farm Buildings II, 3(f) or
 Drainage and Roads, 3(f)
 Rural Sociology, 3(f,w)
 Farm Implements, 3(f,w)
 Farm Management I, 3(f,w)
 Gymnasium, 2(f,w)
 Electives, 3

REQUIRED—SECOND TERM

English VI, 3(f,w)
 American Government, 3(f,w)
 Farm Management II, 3(f,w)
 Advanced Gas Engines, 3(f,w)
 Gymnasium, 2(f,w)
 Electives, 6

ELECTIVES

Drainage and Roads, 3(f)
 Farm Buildings II, 3(f)
 Economics, 3(f,w)
 Dairy Stock Feeding II, 3(w)
 Plant Diseases, 3(f)
 Livestock Breeding, 3(f,w)
 English Literature I, 5(f,w)
 Grain Marketing I, 3^a

Dairy Stock Selection, 3(f)
 Advanced Public Speaking, 3(w)
 Milk Production, 5(w)
 Crop Breeding, 3(w)
 English Literature II, 5(w)
 Judging and Grading Farm Crops, 3(w)
 Cereal Technology, 3^a
 Grain Marketing II, 3^a

^a Not offered in 1930-31.

GRAIN ELEVATOR MANAGEMENT*

FRESHMAN YEAR

REQUIRED—FIRST TERM

English I, 3(f,w)
 Hygiene, 1(f,w)
 Farm Arithmetic, 3(f,w)
 Grain Crops, 3(f,w)
 Gas Engines, 3(f,w)
 Gymnasium, 2(f,w)
 Social Problems for Boys, 1(f,w)

At least 3 credits chosen from:

Agricultural Botany, 3(f,w)
 Chemistry of Plant and Animal
 Life I, 3(f,w)
 Judging Types and Market Classes
 of Livestock, 3(f,w)
 Penmanship, 1(f,w)

Electives, 2

REQUIRED—SECOND TERM

English II, 3(f,w)
 Advanced Farm Arithmetic, 3(f,w)
 Forage Crops and Potatoes, 3(f,w)
 Soils, 3(f,w)
 Mechanical Training I, 3(f,w)
 Gymnasium, 2(f,w)
 Electives, 3

ELECTIVES

Chemistry in Agriculture, 3(f,w)
 Food Selection and Preparation, 2(f,w)
 Judging Types and Market Classes of
 Livestock, 3(f,w)
 Drawing and Farm Buildings, 3(f,w)
 Agricultural Botany, 3(f,w)
 Physiology, 3(f,w)
 Farm Buildings I, 3(f,w)
 Elementary Beekeeping I, 3(f,w)
 Spelling, 1(f,w)
 Penmanship, 1(f,w)
 Plant Propagation and Nursery Practice,
 3(f)
 Floriculture, 3(w)
 Dramatic Art, $\frac{1}{2}$ (f,w)²
 Debating, 1(w)²
 Typewriting I, 3(f,w)
 Mechanical Training II, 3(f,w)
 Poultry Judging, 2(f)

Dressed Poultry, 1(f)
 Judging Breed Types of Livestock, 3(f,w)
 Animal Biology, 3(f,w)
 Landscape Gardening, 3(f)
 Elementary Beekeeping II, 3(f,w)
 Elements of Music I, 2(f,w)
 Elements of Music II, 2(f,w)
 Violin, $\frac{1}{2}$ (f,w)¹
 Piano, $\frac{1}{2}$ (f,w)¹
 Instrumental Music, $\frac{1}{2}$ (f,w)¹
 Voice, $\frac{1}{2}$ (f,w)¹
 Orchestra, $\frac{1}{2}$ (f,w)
 Chorus, $\frac{1}{2}$ (f,w)
 Band, $\frac{1}{2}$ (f,w)
 Harmony I, 2(f,w)
 Harmony II, 2(f,w)
 Appreciation of Music, 3(f,w)
 Instrumentation and Conducting, 3(f,w)
 Home Projects, 1 to 3

JUNIOR YEAR

REQUIRED—FIRST TERM

English Classics, 3(f,w)
 Dairy Stock Feeding I, 3(f,w)
 Bookkeeping I, 3(f,w)
 Insect Pests of Plants, 3(f)
 Gymnasium, 2(f,w)
 At least 3 credits chosen from:
 Farm Buildings I, 3(f,w)
 Mechanics and Water Supply, 3(f,w)
 Typewriting I, 3(f,w)

Electives, 3

REQUIRED—SECOND TERM

Business English, 3(f,w)
 Co-operative Accounting, 3^a
 Commercial Law, 3(f,w)
 Economics, 3(f,w)
 Parliamentary Law, 1(f,w)
 Seed Testing, 2(w)
 Gymnasium, 2(f,w)
 Electives, 3

¹ A special fee of \$10 is charged for this course.

² Credit for this course is allowed only under the conditions specified in the booklet of Faculty Regulations.

³ Not offered in 1930-31.

ELECTIVES

Bookkeeping II, 3(f,w)	Poultry, 3(f,w)
Advanced Livestock Judging, 3(f)	Greenhouse Construction and Management, 3(w)
Dairy Stock Judging, 2(f,w)	Special Problems in Horticulture, (w)
Farm Horticulture, 3(f,w)	Algebra II, 7(f,w)
Algebra I, 7(f,w)	Geometry II, 7(f,w)
Geometry I, 7(f,w)	Meats, 3(f,w)
Industrial History, 3(f,w)	Chemistry of Plant and Animal Life II, 3(w)
Chemistry of Plant and Animal Life I, 3(f)	Heat and Electricity, 3(w)
Mechanics and Water Supply, 3(f,w)	Incubating and Brooding, 3(w)
Management of Laying Flock, 1(f,w)	Advanced Gas Engines, 3(f,w)
Physiology and Hygiene of Breeding, 2(f)	Commercial Vegetable Gardening, 3(w)
Orchard Fruit Growing, 3(f)	Livestock Feeding, 3(f,w)
Small Fruit Growing, 3(w)	Livestock Management, 3(w)
Elements of Bacteriology, 3(w)	Weeds, 2(f)
Potato Production, 3(w)	American History, 3(f,w)
Advanced Beekeeping, 3(f,w)	Forest Nursery Methods and Tree Planting, 3(w)
Land Clearing, 3(w)	Test Association Methods, 3(w)
Veterinary Studies, 3(f,w)	
Farm Dairying, 3(f,w)	

SENIOR YEAR

REQUIRED—FIRST TERM

Public Speaking, 3(f,w)
 American Government, 3(f,w)
 Farm Management I, 3(f,w)
 Grain Marketing I, 3^a
 Gymnasium, 2(f,w)
 Electives, 6

REQUIRED—SECOND TERM

English VI, 3(f,w)
 Cereal Technology, 3^a
 Crop Breeding, 3(w)
 Grain Marketing II, 3^a
 Judging and Grading Farm Crops, 3(w)
 Farm Management II, 3(f,w)
 Gymnasium, 2(f,w)

ELECTIVES

Livestock Breeding, 3(f,w)	Advanced Public Speaking, 3(w)
Rural Sociology, 3(f,w)	Plant Diseases, 3(f)
Dairy Stock Feeding II, 3(w)	Farm Buildings II, 3(f)
Drainage and Roads, 3(f)	Milk Production, 5(w)
Farm Implements, 3(f,w)	English Literature II, 5(w)
English Literature I, 5(f,w)	Dairy Stock Selection, 3(f)

HORTICULTURAL AND NURSERY TRAINING

FRESHMAN YEAR

REQUIRED—FIRST TERM

English I, 3(f,w)
 Hygiene, 1(f,w)
 Farm Arithmetic, 3(f,w)
 Agricultural Botany, 3(f,w)
 Farm Horticulture, 3(f,w)
 Plant Propagation and Nursery Practice, 3(f)
 Social Problems for Boys, 1(f,w)
 Gymnasium, 2(f,w)
 Electives, 2

REQUIRED—SECOND TERM

English II, 3(f,w)
 Soils, 3(f,w)
 Drawing and Farm Buildings, 3(f,w)
 Floriculture, 3(w)
 Commercial Vegetable Gardening, 3(w)
 Gymnasium, 2(f,w)
 Judging Types and Market Classes of Livestock, 3(f,w)

^a Not offered in 1930-31.

ELECTIVES

Chemistry in Agriculture, 3(f,w)	Gas Engines, 3(f,w)
Judging Breed Types of Livestock, 3(f,w)	Farm Buildings I, 3(f,w)
Elementary Beekeeping I, 3(f,w)	Poultry, 3(f,w)
Advanced Farm Arithmetic, 3(f,w)	Poultry Judging, 2(f)
Elements of Music I, 2(f,w)	Dressed Poultry, 1(f)
Elements of Music II, 2(f,w)	Chorus, $\frac{1}{2}$ (f,w)
Spelling, 1(f,w)	Violin, $\frac{1}{2}$ (f,w) ¹
Penmanship, 1(f,w)	Piano, $\frac{1}{2}$ (f,w) ¹
Physiology, 3(f,w)	Instrumental Music, $\frac{1}{2}$ (f,w) ¹
Dramatic Art, $\frac{1}{2}$ (f,w) ²	Orchestra, $\frac{1}{2}$ (f,w)
Debating, 1(w) ²	Voice, $\frac{1}{2}$ (f,w) ¹
Typewriting I, 3(f,w)	Band, $\frac{1}{2}$ (f,w)
Food Selection and Preparation, 2(f,w)	Harmony I, 2(f,w)
Appreciation of Music, 3(f,w)	Harmony II, 2(f,w)
Instrumentation and Conducting, 3(f,w)	Commercial Law, 3(f,w)
Elementary Beekeeping II, 3(f,w)	Home Project, 1 to 3

JUNIOR YEAR

REQUIRED—FIRST TERM

English Classics, 3(f,w)
 Chemistry of Plant and Animal Life I, 3(f)
 Gas Engines, 3(f,w) or
 Mechanical Training I, 3(f,w)
 Animal Biology, 3(f,w)
 Landscape Gardening, 3(f)
 Gymnasium, 2(f,w)
 Electives, 3

REQUIRED—SECOND TERM

Business English, 3(f,w)
 Chemistry of Plant and Animal Life II, 3(w)
 Seed Testing, 2(w)
 Forest Nursery Methods and Tree Planting, 3(w)
 Greenhouse Construction and Management, 3(w)
 Gymnasium, 2(f,w)
 Electives, 4

ELECTIVES

Grain Crops, 3(f,w)	Meats, 3(f,w)
Forage Crops and Potatoes, 3(f,w)	Mechanical Training II, 3(f,w)
Dairy Stock Feeding I, 3(f,w)	Mechanics and Water Supply, 3(f,w)
Advanced Gas Engines, 3(f,w)	Heat and Electricity, 3(w)
Orchard Fruit Growing, 3(f)	Potato Production, 3(w)
Special Problems in Horticulture (w)	Weeds, 2(f)
Management of Laying Flock, 1(f,w)	Incubating and Brooding, 3(w)
Algebra I, 7(f,w)	Algebra II, 7(f,w)
Geometry I, 7(f,w)	Geometry II, 7(f,w)
Industrial History, 3(f,w)	American History, 3(f,w)
Elements of Bacteriology, 3(w)	Physiology and Hygiene of Breeding, 2(f)
Veterinary Studies, 3(f,w)	Livestock Feeding, 3(f,w)
Advanced Beekeeping, 3(f,w)	Livestock Management, 3(w)
Parliamentary Law, 1(f,w)	Farm Dairying, 3(f,w)
Land Clearing, 3(w)	Co-operative Accounting, 3 ³
Dairy Stock Judging, 2(f,w)	Test Association Methods, 3(w)
Advanced Livestock Judging, 3(f)	

¹ A special fee of \$10 is charged for this course.

² Credit for this course is allowed only under the conditions specified in the booklet of Faculty Regulations.

³ Not offered in 1930-31.

SENIOR YEAR

REQUIRED—FIRST TERM

Public Speaking, 3(f,w)
 American Government, 3(f,w)
 Plant Diseases, 3(f,w)
 Insect Pests of Plants, 3(f)
 Gymnasium, 2(f,w)
 Electives, 6

REQUIRED—SECOND TERM

English VI, 3(f,w)
 Rural Sociology, 3(f,w)
 Crop Breeding, 3(w)
 Bookkeeping I, 3(f,w)
 Small Fruit Growing, 3(w)
 Gymnasium, 2(f,w)
 Electives, 3

ELECTIVES

Judging and Grading Farm Crops, 3(w)	Livestock Breeding, 3(f,w)
Farm Implements, 3(f,w)	Milk Production, 5(w)
Farm Management I, 3(f,w)	Dairy Stock Selection, 3(f)
Dairy Stock Feeding II, 3(w)	Farm Buildings II, 3(f)
Drainage and Roads, 3(f)	English Literature II, 5(w)
English Literature I, 5(f,w)	Advanced Public Speaking, 3(w)
Economics, 3(f,w)	Grain Marketing I, 3*
Cereal Technology, 3*	Grain Marketing II, 3*
Farm Management II, 3(f,w)	

LIVESTOCK PRODUCTION

FRESHMAN YEAR

REQUIRED—FIRST TERM

English I, 3(f,w)
 Hygiene, 1(f,w)
 Farm Arithmetic, 3(f,w)
 Judging Types and Market Classes of
 Livestock, 3(f,w)
 Drawing and Farm Buildings, 3(f,w)
 Agricultural Botany, 3(f,w)
 Gymnasium, 2(f,w)
 Social Problems for Boys, 1(f,w)
 Electives, 2

REQUIRED—SECOND TERM

English II, 3(f,w)
 Soils, 3(f,w)
 Judging Breed Types of Livestock, 3(f,w)
 Animal Biology, 3(f,w)
 Gymnasium, 2(f,w)
 Electives, 6

ELECTIVES

Chemistry in Agriculture, 3(f,w)	Food Selection and Preparation, 2(f,w)
Advanced Farm Arithmetic, 3(f,w)	Elements of Music II, 2(f,w)
Physiology, 3(f,w)	Violin, $\frac{1}{2}$ (f,w) ¹
Mechanical Training II, 3(f,w)	Piano, $\frac{1}{2}$ (f,w) ¹
Farm Buildings I, 3(f,w)	Instrumental Music, $\frac{1}{2}$ (f,w) ¹
Gas Engines, 3(f,w)	Voice, $\frac{1}{2}$ (f,w) ¹
Elementary Beekeeping I, 3(f,w)	Orchestra, $\frac{1}{2}$ (f,w)
Elementary Beekeeping II, 3(f,w)	Chorus, $\frac{1}{2}$ (f,w)
Mechanical Training I, 3(f,w)	Band, $\frac{1}{2}$ (f,w)
Spelling, 1(f,w)	Harmony I, 2(f,w)
Penmanship, 1(f,w)	Harmony II, 2(f,w)
Poultry, 3(f,w)	Appreciation of Music, 3(f,w)
Poultry Judging, 2(f)	Instrumentation and Conducting, 3(f,w)
Dressed Poultry, 1(f)	Plant Propagation and Nursery Practice, 3(f)
Farm Horticulture, 3(f,w)	Floriculture, 3(w)
Dramatic Art, $\frac{1}{2}$ (f,w) ²	Landscape Gardening, 3(f)
Debating, 1(w) ²	Bookkeeping II, 3(f,w)
Typewriting I, 3(f,w)	Commercial Law, 3(f,w)
Bookkeeping I, 3(f,w)	Home Project, 1 to 3
Elements of Music I, 2(f,w)	

¹ A special fee of \$10 is charged for this course.

² Credit for this course is allowed only under the conditions specified in the booklet of Faculty Regulations.

³ Not offered in 1930-31.

COURSES OF STUDY

23

JUNIOR YEAR

REQUIRED—FIRST TERM

English Classics, 3(f,w)
 Forage Crops and Potatoes, 3(f,w)
 Advanced Livestock Judging, 3(f) or
 Dairy Stock Judging, 2(f,w)
 Physiology and Hygiene of Breeding, 2(f)
 Livestock Feeding, 3(f,w) or
 Dairy Stock Feeding I, 3(f,w)
 Veterinary Studies, 3(f,w)
 Gymnasium, 2(f,w)
 Electives, 1 or 2

REQUIRED—SECOND TERM

Business English, 3(f,w)
 Meats, 3(f,w)
 Farm Dairying, 3(f,w)
 Gymnasium, 2(f,w)
 Electives, 9

ELECTIVES

Insect Pests of Plants, 3(f)
 Chemistry of Plant and Animal Life I,
 3(f)
 Mechanics and Water Supply, 3(f,w)
 Algebra I, 7(f,w)
 Industrial History, 3(f,w)
 Parliamentary Law, 1(f,w)
 Geometry I, 7(f,w)
 Management of Laying Flock, 1(f,w)
 Orchard Fruit Growing, 3(f)
 Small Fruit Growing, 3(w)
 Algebra II, 7(f,w)
 Geometry II, 7(f,w)
 Co-operative Accounting, 3^a
 Potato Production, 3(w)
 Special Problems in Horticulture (w)
 Advanced Livestock Judging, 3(f)
 Land Clearing, 3(w)
 Livestock Feeding, 3(f,w)

Dairy Stock Feeding I, 3(f,w)
 Greenhouse Construction and Management,
 3(w)
 Heat and Electricity, 3(w)
 Grain Crops, 3(f,w)
 Test Association Methods, 3(w)
 Incubating and Brooding, 3(w)
 Advanced Gas Engines, 3(f,w)
 Commercial Vegetable Gardening, 3(w)
 Elements of Bacteriology, 3(w)
 Seed Testing, 2(w)
 Chemistry of Plant and Animal Life II,
 3(w)
 Weeds, 2(f)
 American History, 3(f,w)
 Advanced Beekeeping, 3(f,w)
 Dairy Stock Judging, 2(f,w)
 Forest Nursery Methods and Tree Planting,
 3(w)

SENIOR YEAR

REQUIRED—FIRST TERM

Public Speaking, 3(f,w)
 American Government, 3(f,w)
 Dairy Stock Feeding II, 3(w) or
 Livestock Management, 3(w)
 or Milk Production, 5(w)
 Livestock Breeding, 3(f,w) for men or
 Problems in Livestock Improvement,
 3(w) for women
 Farm Management I, 3(f,w)
 Gymnasium, 2(f,w)
 Electives, 0 or 1

REQUIRED—SECOND TERM

English VI, 3(f,w)
 Rural Sociology, 3(f,w)
 Farm Management II, 3(f,w)
 Gymnasium, 2(f,w)
 Electives, 9

ELECTIVES

Plant Diseases, 3(f)
 Crop Breeding, 3(w)
 Farm Buildings II, 3(f)
 Drainage and Roads, 3(f)
 Farm Implements, 3(f,w)
 Economics, 3(f,w)
 English Literature I, 5(f,w)
 Livestock Management, 3(w)
 Grain Marketing I, 3^a

Milk Production, 5(w)
 Dairy Stock Feeding II, 3(w)
 Dairy Stock Selection, 3(f)
 English Literature II, 5(w)
 Advanced Public Speaking, 3(w)
 Judging and Grading Farm Crops, 3(w)
 Cereal Technology, 3^a
 Grain Marketing II, 3^a

^a Not offered in 1930-31.

HOME ECONOMICS

The Home Economics Course is planned primarily to train girls for home making, but in addition it is possible for them to elect work along several different lines in preparation for wage earning. The elective work in millinery and in dressmaking would be sufficiently comprehensive to enable them to utilize their training for wage earning in these occupations. Certain hospitals will accept graduates of the School of Agriculture as probationers for the nurses' training. Courses in music give, to those who have special ability along that line, an opportunity to learn to conduct community singing, orchestras, and to give elementary instruction in music. Each girl makes her program under the direction of one of the members of the Home Economics faculty.

FRESHMAN YEAR

REQUIRED—FIRST TERM

Related Science I, 3(f,w)
 English I, 3(f,w)
 Selection and Preparation of Food, 3(f,w)
 Clothing I, 3(f,w)
 Design, 2(f,w)
 Physical Training, 2(f,w)
 Electives, 2
 Social Training, 2(f,w)

REQUIRED—SECOND TERM

Related Science II, 3(f,w)
 English II, 3(f,w)
 Meal Preparation, 3(f,w)
 Clothing II, 3(f,w)
 Electives, 6
 Physical Training, 2(f,w)

ELECTIVES

Chemistry in Agriculture, 3(f,w)
 Elements of Music I, 2(f,w)
 Elements of Music II, 2(f,w)
 Chorus, $\frac{1}{2}$ (f,w)
 Violin, $\frac{1}{2}$ (f,w)¹
 Piano, $\frac{1}{2}$ (f,w)¹
 Voice, $\frac{1}{2}$ (f,w)¹
 Instrumental Music, $\frac{1}{2}$ (f,w)¹
 Orchestra, $\frac{1}{2}$ (f,w)
 Dramatic Art, $\frac{1}{2}$ (f,w)²
 Debating, 1(w)²
 Harmony I, 2(f,w)
 Harmony II, 2(f,w)
 Appreciation of Music, 3(f,w)
 Instrumentation and Conducting, 3(f,w)
 Poultry Judging, 2(f)
 Dressed Poultry, 1(f)
 Physiology, 3(f,w)
 Typewriting I, 3(f,w)

Stenography I, 3(f,w)
 Bookkeeping I, 3(f,w)
 Bookkeeping II, 3(f,w)
 Spelling, 1(f,w)
 Penmanship, 1(f,w)
 Poultry, 3(f,w)
 Elementary Beekeeping I, 3(f,w)
 Elementary Beekeeping II, 3(f,w)
 Farm Horticulture, 3(f,w)
 Landscape Gardening, 3(f)
 Plant Propagation and Nursery Practice, 3(f)
 Floriculture, 3(w)
 Farm Arithmetic, 3(f,w)
 Advanced Farm Arithmetic, 3(f,w)
 Agricultural Botany, 3(w)
 Commercial Law, 3(f,w)
 Home Project, 1 to 3

JUNIOR YEAR

REQUIRED—FIRST TERM

English Classics, 3(f,w)
 Food and Nutrition, 2(f,w)
 Textiles and Dressmaking I, 3(f)
 Home Nursing and Hygiene I, 2(f,w)
 Electives, 8
 Physical Training, 2(f,w)

REQUIRED—SECOND TERM

Business English, 3(f,w)
 Biology, 3(w)
 House Planning and Furnishing, 3(f,w)
 American History, 3(f,w)
 Electives, 6
 Physical Training, 2(f,w)

¹ A special fee of \$10 is charged for this course.

² Credit for this course is allowed only under the conditions specified in the booklet of Faculty Regulations.

ELECTIVES

Millinery, 3(f,w)	Algebra I, 7(f,w)
Advanced Millinery, 3(w)	Algebra II, 7(f,w)
Decorative Needlework, 3(w)	Geometry I, 7(f,w)
Chemistry of Plant and Animal Life I, 3(f) ²	Geometry II, 7(f,w)
Elements of Bacteriology, 3(w) ²	Industrial History, 3(f,w)
Household Physics, 3(f)	Parliamentary Law, 1(f,w)
Utilization of Meats, 3(w)	Chemistry of Plant and Animal Life II, 3(w) ²
Advanced Beekeeping, 3(f,w)	Insect Pests of Plants, 3(f)
Farm Dairying, 3(f,w)	Orchard Fruit Growing, 3(f)
Stenography II, 3(f,w) ²	Small Fruit Growing, 3(w)
Stenography III, 3(f,w)	Incubation and Brooding, 3(w)
Typewriting II, 3(f,w)	Management of Laying Flock, 1(f,w)
Typewriting III, 3(f,w)	

SENIOR YEAR

REQUIRED—FIRST TERM	REQUIRED—SECOND TERM
Public Speaking, 3(f,w)	English VI, 3(f,w)
American Government, 3(f,w)	Rural Sociology, 3(f,w)
Home Management, 3(f,w)	Home Nursing and Hygiene II, 2(w)
Electives, 9	Textiles and Dressmaking II, 3(w)
Physical Training, 2(f,w)	Child Care and Training, 2(w)
	Electives, 5
	Physical Training, 2(f,w)

ELECTIVES

Trade Dressmaking, 5 ³	English Literature I, 5(f,w)
Trade Millinery, 5 ³	English Literature II, 5(w)
Economics, 3(f,w)	Plant Diseases, 3(f)
Advanced Public Speaking, 3(w)	

ADMISSION TO THE COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

Graduates of the School of Agriculture of the University of Minnesota who have completed the two summers of supervised farm work offered in the school course, one additional school year, and one additional summer's work, or the equivalent thereof, will be admitted to the College of Agriculture, Forestry, and Home Economics.

² Courses should be elected by those who contemplate taking the nurses' training upon graduation.

³ Not offered in 1930-31.

DESCRIPTION OF COURSES

AGRICULTURAL BIOCHEMISTRY

- A1-2. Chemistry of Plant and Animal Life. The fundamental principles of chemistry necessary for an understanding of common daily phenomena. The scope of agricultural chemistry and the help which the farmer may expect from the chemical laboratories of the state are outlined. (Equivalent of high school chemistry.)
- A3. Cereal Technology. Lecture, laboratory and demonstration course dealing with the fundamental bases of grain grading, the merchandising, storage, and utilization of grain crops.
- A4. Chemistry in Agriculture. A survey discussion—lecture course indicating the important part that chemistry plays in agriculture and modern civilization. (Not equivalent of high school chemistry.)

AGRICULTURAL ENGINEERING

- A10. Farm Implements. Studies and discussions of the selection, operation, and care of farm machinery, also the cost, depreciation, deficiency, and adaptability of the various machines to the work to be accomplished.
- A11. Gas Engines. Theory and practice work in gasoline and kerosene engines.
- A12. Advanced Gas Engines. An advanced course in gasoline and kerosene engines and tractors, giving attention to adjustments, care, and operation.
- A16. Mechanical Training I. General. Instruction and laboratory practice in rope splicing, knots, belt lacing, pulleys and shafting, soldering, electric wiring, and cement work.
- A17. Mechanical Training II. Iron Work. Instruction and laboratory practice in pipe fitting, valves, babbiting, roller and ball bearings, forge work and cold metal work.
- A18. Mechanics and Water Supply. The mechanics of solids, liquids, and gases. Special emphasis is given to water supplies, water systems, sewage disposals, weather conditions, and forecasts. Laboratory work will be a part of this course.
- A19. Heat and Electricity. Heat and electricity as applied to home heating and lighting, with a study of electric batteries, motors, and other appliances. Laboratory work will be given.
- A21. Farm Buildings I. Each student is required to sharpen tools and is given instruction in painting, estimating building materials, and farm building construction.
- A31. Drawing and Farm Buildings. Sketching, practice in pictorial drawing, and drawing farm building plans. Set of instruments not required.
- A32. Farm Buildings II. Location, planning, construction and maintenance of farm buildings.

- A41. Household Physics. Household mechanics, air, and water pressure, heat, and electricity. The economics of power, heat, light, and electricity in the home are considered.
- A51. Drainage and Roads. Conditions requiring, purposes of, benefits from drainage. Legal organization for extensive drainage. Kinds of drainage; essential features of a drainage system; practice ditching and tile laying to grade. Soil erosion control. Country road administration; earth road construction and maintenance.
- A52. Land Clearing. Systematized development of timber land farms; brushing; burning; timber salvage for fences, buildings, and fuel; stump and stone removal; blasting temporary ditches; breaking and management of virgin timber soils.

AGRONOMY AND PLANT GENETICS

- A1. Grain Crops. Including the history, culture, judging, and uses of the important grain crops including corn.
- A2. Forage Crops and Potatoes. A study of the characteristics, growing, harvesting, and storing of the important forage and silage crops followed by a brief study of potatoes as a field crop.
- A3. Judging and Grading Farm Crops. Factors which influence the value of crops for seed, feed, and market, with practice in comparative judging and the application of federal grades.
- A5. Crop Breeding. Modern methods of propagating and breeding the various farm and horticultural crops with plans for growing and certifying pedigreed seed.

ANIMAL HUSBANDRY

- A1. Judging Types and Market Classes of Livestock. The livestock industry; demonstration of types and market classes of cattle, horses, sheep, and swine, and their relation to production; score card practice and the fundamentals of livestock judging.
- A2. Judging Breed Types of Livestock. The origin, present day characteristics and adaptability of the breeds of cattle, horses, sheep, and swine. Practice in judging purebred animals.
- A3. Advanced Livestock Judging. Practice in judging livestock from both the market type and breed standpoint.
- A4. Meats. Lectures, demonstrations, and practice work in dressing animals, cutting and curing meats.
- A5. Livestock Breeding. Livestock improvement and variation, heredity, environment and selection as factors therein; line breeding, inbreeding, crossbreeding and grading up; the purebred sire; pedigree registration; practical breeders' problems.
- A7. Utilization of Meats. Lectures on methods of utilizing cuts from the beef, pork, and mutton carcass; curing and storing of meats for summer use; laboratory practice in preparing cuts of meat for cooking;

- sausage making and lard rendering. (This course is intended primarily for women students.)
- A8. Problems in Livestock Improvement. Methods used in improving the various types of livestock. The problems of heredity, variation, environment, and selection as affecting livestock improvement. Herd record keeping and the registration of purebred livestock.
- A9. Livestock Feeding. The important principles involved in the selection of feeds, preparation of feeds, and methods of feeding beef cattle, swine, sheep, and horses.
- A10. Livestock Management. The business side of livestock production, buying and selling animals, housing, care, and sanitary measures necessary to success.

DAIRY HUSBANDRY

- A1. Dairy Stock Feeding I. The principles of feeding. A study of feed-stuffs, formulation of rations, feeding the dairy cow.
- A2. Farm Dairying. Milk, its composition, properties, cleanly production, and care. Principles of, and practice in, separating, testing, and farm butter making. Forms and methods of marketing.
- A3. Dairy Stock Judging. Practice in judging dairy cattle both from the standpoint of the farmer who is interested in the production of dairy products for market and the breeder of purebred cattle.
- A5. Milk Production. Characteristics of the dairy breeds, selection, care and management of the dairy herd, selection of the sire, calf-raising; dairy barns.
- A6. Dairy Stock Feeding II. An advanced course dealing with rations and special feeding problems.
- A7. Dairy Stock Selection. A study of type, comparative judging, a study of pedigrees in relation to values. Visits to noted herds near the Twin Cities.
- A8. Test Association Methods. A study of methods, organization, and procedure in cow testing associations; designed to fit the student to serve as a tester.

ENTOMOLOGY AND ECONOMIC ZOOLOGY

- A1. Animal Biology. Fundamental principles of animal life such as metabolism, respiration, digestion, growth, and reproduction. The more important groups of the animal kingdom and their relation to man.
- A3. Biology. Such topics as inheritance, reproduction, natural selection, nervous activity, and metamorphosis are dealt with.
- A4. Elementary Beekeeping I. Fundamentals of bee behavior and of beekeeping practice during spring and early summer; spring management. Swarming, swarm control, and increase.
- A5. Elementary Beekeeping II. Fundamentals of bee behavior and of beekeeping practice during late summer, fall, and winter. Production of extracted honey, comb honey, and wax. Feeding, requeening. Wintering of bees. Bee diseases.

- A6. Advanced Beekeeping. Commercial and out-apiaries. Migratory bee-keeping. Package bees and nuclei. Home queen rearing. Marketing of honey.
- A16. Insect Pests of Plants. Life cycles of insect pests injurious to cultivated plants and methods of combating them.

FARM MANAGEMENT AND AGRICULTURAL ECONOMICS

- A1. Co-operative Accounting. Nature and kind of accounts for co-operative business. Practice in properly recording business transactions, preparation and interpretation of balance sheets and income statements for various types of co-operative organizations.
- A21. Farm Management I (Records). Practice in taking farm inventories and in keeping labor, crop, field, and feed records. Studies of cost of production. The use of farm capital; mortgages; farm loans; contracts; deeds; taxes; insurance; general farm business methods.
- A22. Farm Management II (Organization). Farm organization as related to types of farming, combinations of enterprises, crop rotation, soil management, field and farmstead arrangement, and the efficient use of labor and equipment.
- A40. Grain Marketing I. Management problems of the grain business in local markets. Financial and business organization of local grain elevators. Analysis of buying, selling, hedging, and sideline problems.
- A41. Grain Marketing II. Organization of terminal grain markets and their relation to country grain business; function of grain exchanges, future trading, commission firms, terminal elevators, and central co-operative organizations.

FORESTRY

- A17. Forest Nursery Methods and Tree Planting. Seed collecting, storing, sowing, raising seedlings, transplanting, packing for shipment; woodlot and windbreak plans, kinds of trees used, planting and care.

GYMNASIUM AND PHYSICAL TRAINING

MEN

The gymnasium with its facilities is kept open every afternoon and evening for the use of students.

The primary aim of the gymnasium work is to provide exercise and recreation for all the students of the school. Interclass basket-ball, volley ball, indoor baseball, track meets, and handball tournaments are organized, and interscholastic competition in track and basket-ball is provided for.

Special attention is given to teaching such games as tennis, handball, volley ball, baseball, boxing and wrestling, with the thought that such games can be continued at home, thereby helping in making the home and community life more interesting.

- A1. Gymnasium. Proper use of gymnasium facilities, swimming, various athletic games and how to play them. Emphasis placed on athletic games as a means of recreation as well as physical development.

WOMEN

The aim of this department is to maintain the health of the student; to give gymnastic exercises and deep breathing; to stimulate functional activity, and to give co-ordination and poise. The department offers opportunities for swimming in the gymnasium swimming pool, organized games, cross-country tramps, and skating.

All girls entering the school for the first time are required to take a physical examination. This examination is conducted by the director of health and physical education for women, and a corps of doctors and nurses. It consists of an examination of the heart and lungs, nose and throat, spine and feet. Height and weight are measured, eyes and ears tested. Medical advice is given and recommendations for special exercises are made for students who would be benefited by them.

A1. Freshman Physical Training. Formal gymnastics, games, beginning apparatus work, folk dancing, remedial gymnastics, and swimming.

HOME ECONOMICS

- A1. Clothing I. Study of materials used for construction of simple undergarments and children's clothes; comparison with ready-made garments; use and care of sewing machines; use of commercial patterns.
- A2. Clothing II. Study of cotton and linen fabrics; selection and construction of a simple wash dress; comparison with ready-made dresses. Care of clothing, repair, storage, and cleaning.
- A4. Textiles and Dressmaking I. Study of wool fabrics; selection and construction of a wool dress; comparison with ready-made dresses. Problems of buying coats, hats, shoes, hosiery, and dress accessories.
- A5. Textiles and Dressmaking II. Study of silk fabrics; selection and construction of a silk dress; comparison with ready-made dresses. Problems in buying household textile furnishings.
- A6. Decorative Needlework. Applied design in needlework, adapted to decoration of clothing, hats, and household furnishings; emphasis on attaining sufficient skill and speed to have work of commercial value.
- A7. Millinery. Design and construction of different types of hats. Care and renovation of hat materials and trimmings.
- A8. Advanced Millinery. Continuation of Millinery I with more advanced work in designing and construction of all types of hats. Emphasis on commercial problems. Work planned on a shop basis.
- A12. Trade Dressmaking. To be offered in co-operation with city dressmaking shops, giving students actual trade experience. (Not offered in 1930-31.)
- A13. Trade Millinery. To be offered in co-operation with city millinery shops, giving students actual trade experience. (Not offered in 1930-31.)
- A21. Design. Principles of design and color harmony with special reference to suitable clothing; furnishing and arrangement of rooms; craft problems.

- A26. **House Planning and Furnishing.** A consideration of the house in regard to location, convenient arrangement of floor space, and heating and plumbing equipment; selection and cost of interior finish, wall and floor coverings, furniture, curtains, and pictures.
- A31. **Selection and Preparation of Food.** Food combinations, planning of menus, and serving simple breakfasts and luncheons.
- A32. **Meal Preparation.** Continuation of A31 with emphasis on dinner menus.
- A33. **Food and Nutrition.** Adequate diet for members of class, based on height-weight record and food requirements. Planning and preparing meals for all members of the family considering health and economy.
- A34. **Home Management.** The homemaker's responsibilities; distribution of the family income, household accounts, scheduling and dispatching of work in connection with meal preparation; care of the house, and its equipment. Family and community relationships.
- A35. **Child Care and Training.** Physical care of infants and small children. Habit formation and methods of control; games and reading suitable for the pre-school child.
- A50. **Related Science I.** Interesting phenomena of everyday life, especially those relating to the home and scientific principles which explain them.
- A51. **Related Science II.** A continuation of Course A50.
- A73. **Food Selection and Preparation.** A study of food combinations suitable for meals at home or in camp. Practical work in the fundamental cookery processes.

HORTICULTURE

- A1. **Farm Horticulture.** Growing fruits, vegetables, and ornamentals for use on the farm. Location and planting of the orchard and garden and the culture of the important crops. Propagation of common plants. Culture and use of ornamentals.
- A2. **Orchard Fruit Growing.** Commercial orcharding with a special consideration of the profitable management of an orchard on the Minnesota farm. Location; planting; selection of varieties; cultural systems; pruning; pest control; harvesting and marketing of fruit.
- A3. **Commercial Vegetable Gardening.** Growing of vegetable crops for market. Locating, planting, and care of the commercial garden; consideration of the important crops; marketing methods; types of glass structures, their uses, and the production of vegetables under glass.
- A4. **Small Fruit Growing.** A practical study of berry growing as a commercial enterprise in Minnesota and the Northwest, covering the establishing and management of plantations of strawberries, raspberries, blackberries, gooseberries, currants, and grapes.
- A5. **Plant Propagation and Nursery Practice.** Methods of propagation of plants by seeds, cuttings, layers, grafting, and budding are studied. The principles of greenhouse management, transplanting, watering, and ventilation are studied.

- A7. Floriculture. A working knowledge of the culture and use of house plants, annuals, and perennials.
- A8. Landscape Gardening. Practice and principles of ornamental plantings as applied to the home and community, with a brief study of plant materials.
- A10. Greenhouse Construction, Management, and Practice. Construction and management of the greenhouse from the standpoint of the fruit, vegetable, or flower grower. Various crops in relation to types of glass construction. Practice work in crops in the greenhouse.
- A14. Potato Production. Growth, climatic requirements, regional distribution, standardization of varieties according to soil, climate, and markets. Identification, exhibiting, judging, handling of seed plots, certification, cultural methods, storage, and marketing.
- A15. Special Problems. Individual instruction in the various phases of horticulture adjusted to meet the needs of the student. Credit may be earned in one or more quarters.

PLANT PATHOLOGY AND BOTANY

- A1. Agricultural Botany. The parts of economic flowering plants, emphasizing their significance in relation to agricultural practice. Seeds, fungi causing diseases of plants, and decay organisms.
- A2. Seed Testing. The seeds of the common farm weeds, with special attention to those of noxious weeds. A set of seed cases is made and practice is given in testing seeds for purity and germination.
- A4. Agricultural Botany. Economic flowering plants. The course also contains a brief study of molds, mushrooms, rots or decays, and yeast.
- A11. Plant Diseases. Important diseases of Minnesota crop plants, with special emphasis on methods of control.
- A12. Weeds. Farm weeds with special emphasis on their identification, control, and eradication.

POULTRY HUSBANDRY

- A1. Poultry. Importance of the industry, market products, best methods of house construction, feeding for egg production.
- A2. Management of Laying Flock. Practice in feeding and management, feeds, a study of laying rations, selection for laying qualities, selection for breeding qualities, keeping accounts.
- A3. Incubation and Brooding. The best methods of incubation and brooding, natural and artificial, includes selection of breeders, eggs for incubation, feeding and care of chicks, how to avoid losses.
- A7. Poultry Judging. Practice in the selection of the most profitable fowls; a study of standard requirements of the commercially important breeds.
- A10. Dressed Poultry. Modern methods of killing, picking, and dressing for home and trade use.

PREVENTIVE MEDICINE AND PUBLIC HEALTH

- A1. Home Nursing and Hygiene I. Personal and community hygiene. Prevention and care of illness in the home; methods of improving nursing equipment.
- A2. Home Nursing and Hygiene II. Hygiene requirements during infancy, childhood, womanhood. Preparation for maternity, care of infant, household emergencies.
- A8. Hygiene. Methods for promotion of health and prevention of disease will be considered with a view to acquainting the student with the fundamentals of right living and the individual and community activities against the spread of disease.

RHETORIC

- A1. English I. The sentence, parts of speech, punctuation, spelling, supplementary reading.
- A2. English II. Paragraphs and themes in narration, description, and exposition. Supplementary reading.
- A3. English Classics. American and English authors.
- A4. Business English. Practice in various forms of correspondence and business forms.
- A5. Public Speaking. Voice exercise, platform deportment. Practice in delivery of memorized and extemporaneous speeches.
- A6.* English VI. Exposition and argument. Gathering and outlining material. Instruction in the writing of senior thesis. Debating.
- A14. Advanced Public Speaking. A continuation of Course A5. Selecting and organizing material for speeches and the presentation of speeches effectively before a given audience.
- A21-22. English Literature I-II. The history of English literature, with a study of selections. For students planning to enter the College of Agriculture, Forestry, and Home Economics.
- A32. Debating. Students participating in inter-society debates under the supervision of a teacher of debating will receive a one point credit upon completing a required amount of work. Debaters should report to the coach as soon as they are chosen.

SCHOOL (GENERAL)

- A1. Farm Arithmetic. Training in simple mathematical processes, applications of principles to problems requiring measurements of material, extension, capacity. Practical applications to farm and home life. Assists in the mathematics of the technical school courses.
- A2. Advanced Farm Arithmetic. Similar in outline to Course A1. Special emphasis on farming as a business.

* Students who substitute credits in English gained in other schools for the credits in this course must register for the course to receive instructions in writing the senior thesis.

- A4. Algebra I. Fundamental operations: properties of algebraic numbers, addition, subtraction, multiplication, division, factoring, simple equations, fractions.
- A5. Algebra II. Fractional equations, literal numbers, proportions, simultaneous equations, radicals, quadratics. Emphasis upon the development and use of formulae. Problems taken from fields allied to agriculture.
- A6. Geometry I. Parallel and perpendicular lines, triangles, loci, polygons, proportion, similar polygons. Theorems developed both inductively and deductively. In this term's work emphasis is placed upon geometry as a reasoning process.
- A7. Geometry II. Inequalities, circles, numerical relations, areas, regular polygons. Special emphasis on those problems relating to farm life such as the calculation of areas, surveying, and problems taken from mechanics.
- A21. Elements of Music I. Fundamental principles of musical notation, pitch, rhythm, musical terms, formation of major scales, sight reading, singing, and ear training.
- A22. Elements of Music II. Formation of minor scales, intervals, chord construction, ear training in rhythm and intervals. Musical terms. Chords applied to piano.
- A23. Chorus. Sight reading and ear training. From this chorus, students with unusual ability and experience will be chosen for the school chorus, which is divided into men's glee club, girls' chorus, mixed chorus and quartet.
- A24. Violin. Elementary: Hofmann, *Kayser Etudes*, *Schradieck Scales*, *Solos in Comparison*. Intermediate: scales in all positions, Seveik, Mazas, Dont, compositions of medium difficulty. Advanced: Kreutzer, Fiorillo, Rode, Gavinie, sonatas of Handel, Gade, David, concertos of Viotti, DeBeriot, Mendelssohn. Ten thirty-minute lessons, \$10 per term.
- A25.* Piano. Elementary and advanced technical training, scales, arpeggios, octaves, chords, selected technical studies. Bach: Inventions, Well-Tempered Clavicorn. Sonatinas: Clementi, Kuhlan. Sonatas: Haydn, Mozart, Beethoven. Solos for all grades; classics and best modern material. Ten thirty-minute lessons, \$10 per term.
- A26. Instrumental Music. Band and orchestral instruments, such as cornet, clarinet, saxophone, trombone, baritone, alto, horn, tuba, etc., using standard textbook containing latest methods. Ten thirty-minute lessons, \$10 per term.
- A27.* Orchestra. Standard works in orchestral music. Special attention is given to interpretation, rhythm, phrasing, intonation, and sight reading.
- A28. Voice. Voice placing, breath development, enunciation, diction, illustrated by elementary studies and exercises by Sieber, Clippinger, Con

* Piano students may register for orchestra and receive training through piano quartet (two pianos), subject to the approval of the instructor.

- Cone; songs of medium difficulty. Ten thirty-minute lessons, \$10 per term.
- A29. Harmony I. Formation and progression of triads, seventh and ninth chords, harmonizing a given bass.
- A30. Harmony II. Harmonizing simple melodies, cadences, modulations, transposition, accompaniment writing, and melody building.
- A32. Appreciation of Music. Appreciation of music; brief history; biographies of well-known composers; and a knowledge of standard musical literature for the orchestra, band, chorus, solo work, and any combination or group of instruments or voices.
- A33. Instrumentation and Conducting. A knowledge of instruments of the band and orchestra, their origin and development, construction, part they play, and how played. Combinations of instruments. Essentials of conducting and actual practice in directing band and orchestra.
- A34. Band. Ensemble playing, sight reading, breathing, scales, intonation, phrasing, rhythm, and a practical band experience is given. Best standard musical literature. Advanced methods in non-pressure tone production and attack, etc.
- A35. Dramatic Art. Students who are selected by the coach of dramatics to take major parts in a play will receive one half credit upon recommendation of the coach.
- A41. Parliamentary Law. Principles of parliamentary law, how to organize a society, duties of officers, how to record proceedings, and how to conduct meetings. Students will be given practice under the direction of the instructor.
- A42. American Government. Origin, necessity, nature, and various forms of government. Functions of the legislative, executive, and judicial departments in each division of government. Local, state, national, and international government as it operates today. Current problems.
- A43. Economics. Fundamental laws governing production, consumption, distribution, and exchange. Principles of economics as applied to the farmer's relationships, as a producer and as a consumer. Special attention devoted to taxation, co-operation and co-operative societies, rural credit, international trade, marketing of farm products, farm labor and tendency.
- A45. Industrial History. The general industrial development in the United States with special emphasis upon the development of agriculture. The yearbooks of the Department of Agriculture are used in connection with assigned readings.
- A46. Rural Sociology. A practical course including a study of rural conditions, how to make a survey, the cause of present conditions and how they may be improved. Study of rural organizations, religions, and educational institutions.
- A47. American History. Causes and effects of great movements are emphasized. History of the westward migration, immigration, foreign relations, and special emphasis on our history since 1900.

- A55. Social Training. Fundamental principles governing the individual in social contacts; attention to the rights and the responsibilities of the individual in institutional life; the home as the social center; discussion of problems arising in current social activities.
- A56. Social Problems for Boys. An open forum for the discussion of social conventions of home, school, and public life.
- A61. Spelling. Students poor in spelling should elect this course and continue until able to spell words in ordinary conversation and correspondence. A spelling text is used and drills on lists of commonly misspelled words are given.
- A62. Penmanship. A standard muscular movement system is taught. Students who are poor in penmanship should elect this course.

BUSINESS COURSES

The object of these courses is to prepare students, whose services are not immediately required at home, for office work on the farm, in the village, or subordinate positions in regular business offices.

The subject-matter of these courses, combined with the courses in home-making and agriculture, gives the students a training which well qualifies them to take positions as office assistants in farm bureaus, co-operative creameries, and local elevators.

- A80. Typewriting I. The touch method of typewriting is taught. Following the memorization and fingering of the keyboard, drills for acceleration, concentration, and rhythm are given.
- A81. Typewriting II. A continuation of carefully planned drills for the development of accuracy and speed. Work in tabulating, letter writing, and practice on different makes of typewriters, with their care.
- A82. Typewriting III. Business correspondence from the typist's viewpoint. Business letters and documents which help in gaining correct first impressions are studied and copied. Construction work requiring judgement in arrangement, and the exercising of initiative in solving original problems. Drills for the development of speed and accuracy are stressed.
- A83. Stenography I. The principles of phonography are taught by the Gregg system. Thoro drill is given on word forms, and in the combining of them in phrases.
- A84. Stenography II. A continuation of Stenography I. Drills on words and phrases. Dictation and the reading of Gregg exercises. Short paragraphs dictated and read back.
- A85. Stenography III. Students review carefully the principles of stenography, and take short letters from dictation. Letters transcribed on the typewriter. Accuracy of transcription is the aim, rather than speed.
- A86. Bookkeeping I. Principles of double entry illustrated by keeping a set of books for a firm, making out the forms necessary for the various transactions, and closing the books.

- A87. Bookkeeping II. Takes up the partnership form of business organization and continues accounting principles. An advanced set of books is kept.
- A88. Commercial Law. Elementary principles governing contracts, business papers, partnerships and corporations, insurance, wills, deeds, mortgages, stocks and bonds. Safe investments and the proper use of credit and special laws governing co-operative associations.

SOILS

- A1. Soils. Minnesota soils, their formation, properties, and characteristics. Treatment of lime-deficient, alkali, and peat soils. Farm manures, green manures, and commercial fertilizers. Laboratory demonstrations, examination of soils, and discussion of soil problems.

VETERINARY MEDICINE

- A1. Physiology. The purpose of the course is to give an intelligent conception of the various organs and systems of the body; how they function and how managed for continued health and efficiency.
- A4. Elements of Bacteriology. Lectures and demonstrations of the fundamental principles underlying the science of bacteriology, with special reference to organisms which cause disease. The preparation and use of vaccines, bacterines, antitoxins, immune sera.
- A5. Physiology and Hygiene of Breeding. Gross anatomy of the reproductive organs; physiology of reproduction; the breeding season; gestation and care of the female during parturition and lactation.
- A7. Veterinary Studies. The animal body in health and disease; causes, prevention, and management of disease including common parasitic diseases.

NOTICE TO PROSPECTIVE STUDENTS

Please read the bulletin carefully, noting the paragraphs headed How to Get to the School, Admission, Home Life on the Campus, and Expenses. If you plan to enter the school, send to the registrar, University Farm, St. Paul, for an admission blank. Please do NOT send DIPLOMAS. In case you have had any work of HIGH SCHOOL grade, be sure to have it recorded on the blank or send certificates covering the work done.

If you desire a room in the dormitory, send with your admission blank to the registrar a money order or draft for \$2 made payable to University of Minnesota, Department of Agriculture. In case your application is received after all space in the dormitories is spoken for, your money will be returned to you. In case you decide after making application that you cannot enter the school, you should notify the registrar as soon as possible. If this is done prior to ten days before the opening of school, the money which you sent to reserve a room will be returned to you, otherwise it will not. ROOMS WILL NOT BE HELD AFTER THE OPENING DAY OF THE TERM FOR THOSE WHO ARE NOT PRESENT TO CLAIM THEM.

New students should not depend upon obtaining work at the institution to pay expenses. The regular work of the course takes so much time that a student should not do any outside work unless compelled to by necessity. Practically all the work at the institution for which pay is given is spoken for a year ahead, so none is left for new students. Any able-bodied student ought to be able to earn enough during the six months of vacation to pay his way through the school year.

Students who for any reason cannot enter the school on the opening day or very soon thereafter should wait until the opening of the next term before coming.

The Bulletin of the University of Minnesota

*The School of Agriculture
Courses in Agriculture and Home
Economics*

Part II

*Announcement of Program for the Year
1931-1932*



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1931							1932														
JULY							JANUARY							JULY							
Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	
..	..	..	1	2	3	4	..	..	..	..	..	1	2	..	..	..	..	..	1	2
5	6	7	8	9	10	11	3	4	5	6	7	8	9	3	4	5	6	7	8	9	
12	13	14	15	16	17	18	10	11	12	13	14	15	16	10	11	12	13	14	15	16	
19	20	21	22	23	24	25	17	18	19	20	21	22	23	17	18	19	20	21	22	23	
26	27	28	29	30	31	..	24	25	26	27	28	29	30	24	25	26	27	28	29	30	
..	..	..	..	..	..	..	31	..	..	..	..	..	..	31	..	..	..	..	..	..
AUGUST							FEBRUARY							AUGUST							
..	..	..	..	..	..	1	..	1	2	3	4	5	6	..	1	2	3	4	5	6
2	3	4	5	6	7	8	7	8	9	10	11	12	13	7	8	9	10	11	12	13	
9	10	11	12	13	14	15	14	15	16	17	18	19	20	14	15	16	17	18	19	20	
16	17	18	19	20	21	22	21	22	23	24	25	26	27	21	22	23	24	25	26	27	
23	24	25	26	27	28	29	28	29	..	..	..	..	..	28	29	30	31	..	..	..
30	31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
SEPTEMBER							MARCH							SEPTEMBER							
..	1	2	3	4	5	1	2	3	4	5	1	2	3
6	7	8	9	10	11	12	6	7	8	9	10	11	12	4	5	6	7	8	9	10	
13	14	15	16	17	18	19	13	14	15	16	17	18	19	11	12	13	14	15	16	17	
20	21	22	23	24	25	26	20	21	22	23	24	25	26	18	19	20	21	22	23	24	
27	28	29	30	..	..	..	27	28	29	30	31	..	..	25	26	27	28	29	30	..
..	
OCTOBER							APRIL							OCTOBER							
..	..	..	..	1	2	3	..	..	..	..	..	1	2	..	..	..	..	..	..	1
4	5	6	7	8	9	10	3	4	5	6	7	8	9	2	3	4	5	6	7	8	
11	12	13	14	15	16	17	10	11	12	13	14	15	16	9	10	11	12	13	14	15	
18	19	20	21	22	23	24	17	18	19	20	21	22	23	16	17	18	19	20	21	22	
25	26	27	28	29	30	31	24	25	26	27	28	29	30	23	24	25	26	27	28	29	
..	..	..	..	..	..	..	..	..	..	..	..	..	..	30	31	..	..	..	..	..
NOVEMBER							MAY							NOVEMBER							
1	2	3	4	5	6	7	1	2	3	4	5	6	7	..	..	1	2	3	4	5
8	9	10	11	12	13	14	8	9	10	11	12	13	14	6	7	8	9	10	11	12	
15	16	17	18	19	20	21	15	16	17	18	19	20	21	13	14	15	16	17	18	19	
22	23	24	25	26	27	28	22	23	24	25	26	27	28	20	21	22	23	24	25	26	
29	30	..	..	..	..	..	29	30	31	..	..	..	..	27	28	29	30	..	..	..
..	
DECEMBER							JUNE							DECEMBER							
..	1	2	3	4	5	1	2	3	4	1	2	3
6	7	8	9	10	11	12	5	6	7	8	9	10	11	4	5	6	7	8	9	10	
13	14	15	16	17	18	19	12	13	14	15	16	17	18	11	12	13	14	15	16	17	
20	21	22	23	24	25	26	19	20	21	22	23	24	25	18	19	20	21	22	23	24	
27	28	29	30	31	..	..	26	27	28	29	30	..	..	25	26	27	28	29	30	31
..	

CALENDAR

SCHOOL OF AGRICULTURE

1931-32

1931

September	28	Monday	First term begins; entrance examinations, registration, payment of fees
September	29	Tuesday	Regular class work begins
November	26	Thursday	Thanksgiving Day; a holiday
December	18	Friday	First term closes; Christmas vacation begins, 12:00 m.

1932

January	4	Monday	Second term begins; entrance examinations, registration, payment of fees
January	5	Tuesday	Regular class work begins
February	12	Thursday	Lincoln's Birthday; a holiday
March	19	Saturday	Second term closes
March	22	Tuesday	Alumni Day
March	23	Wednesday	Forty-third annual commencement

COURSES OF STUDY

The following summary of required work in the various courses of study is for convenience in registration. For the full outline see Part I of the bulletin.

In addition to the courses listed, Gymnasium is required each term for all boys and Physical Training for all girls.

A project is required of all boys each summer after the student has been in residence.

GENERAL FARMING

Freshman year.—English I and II, Hygiene, Farm Arithmetic, Judging Types and Market Classes of Livestock, Drawing, Agricultural Botany, Social Problems for Boys, Soils, Judging Breed Types of Livestock, Animal Biology, Chemistry in Agriculture.

Junior year.—English Classics or Debating, Forage Crops and Potatoes, Advanced Livestock Judging or Dairy Stock Judging, Farm Horticulture, Dairy Stock or Livestock Feeding, Business English, Grain Crops, Farm Dairying, Poultry.

Senior year.—Public Speaking, American Government, Livestock Breeding, Farm Management I and II, English VI, Rural Sociology, Crop Breeding.

FARM MECHANICS

Freshman year.—English I and II, Hygiene, Farm Arithmetic, Judging Types and Market Classes of Livestock, Drawing, Agricultural Botany or Animal Biology, Social Problems for Boys, Soils, Mechanical Training I, Farm Buildings I, Chemistry in Agriculture.

Junior year.—English Classics or Debating, Forage Crops and Potatoes, Farm Horticulture or Advanced Livestock Judging, Gas Engines, Mechanics and Water Supply, Business English, Grain Crops or Farm Horticulture, Farm Dairying, Heat and Electricity.

Senior year.—Public Speaking, Farm Buildings II or Drainage and Roads, Rural Sociology, Farm Implements, Farm Management I and II, English VI, American Government, Advanced Gas Engines.

HORTICULTURAL AND NURSERY TRAINING

Freshman year.—English I and II, Hygiene, Farm Arithmetic, Agricultural Botany, Farm Horticulture, Plant Propagation and Nursery Practice, Judging Types and Market Classes of Livestock, Social Problems for Boys, Soils, Drawing, Floriculture. Commercial Vegetable Gardening.

Junior year.—English Classics or Debating, Chemistry of Plant and Animal Life I and II, Animal Biology, Greenhouse Construction and Management, Landscape Gardening, Business English, Seed Testing, Gas Engines or Mechanical Training I, Forest Nursery Methods and Tree Planting.

Senior year.—Public Speaking, American Government, Plant Diseases, Insect Pests of Plants, English VI, Rural Sociology, Crop Breeding, Bookkeeping I, Small Fruit Growing.

LIVESTOCK PRODUCTION

Freshman year.—Same as for General Farming, see above.

Junior year.—English Classics or Debating, Forage Crops and Potatoes, Advanced Livestock Judging or Dairy Stock Judging, Physiology and Hygiene of Breeding, Dairy Stock or Livestock Feeding, Business English, Meats, Farm Dairying, Veterinary Studies.

Senior year.—Public Speaking, American Government, Dairy Stock Feeding II or Livestock Management or Milk Production, Livestock Breeding (men) or Problems in Livestock Improvement (women), Farm Management I and II, English VI, Rural Sociology.

HOME ECONOMICS

Freshman year.—Related Science I and II, English I and II, Selection and Preparation of Food, Clothing I and II, Design, Social Training, Meal Preparation.

Junior year.—English Classics or Debating, Foods and Nutrition, Textiles and Dressmaking I, Home Nursing and Hygiene I, Business English, Biology, House Planning and Furnishing, American History.

Senior year.—Public Speaking, American Government, Home Management, English VI, Rural Sociology, Home Nursing and Hygiene II, Textiles and Dressmaking II, Child Care and Development.

TABULAR STATEMENT AND PROGRAM OF COURSES

EXPLANATION OF TABULAR STATEMENT

Course numbers.—All courses in the School of Agriculture are designated by the capital letter A preceding the course number to distinguish them from collegiate courses of the same number. The letter f indicates a fall term course, and the letter w, a winter term course. For example: A5f,w indicates that Course A5 is offered both fall and winter terms. A5f-6w would indicate a year course continuing through two terms.

Credits and prerequisites.—The number of credits which each course counts toward graduation, the classes of students to which the course is offered, and the prerequisite courses are indicated in parentheses, immediately below the descriptive name of the course. For example: (2 cred.; sr. agr.; prereq., A1, A2) means that the course counts two credits; that it is offered to senior students in agriculture (not home economics); and that before registering for the course, Courses A1 and A2, offered by the same division, must have been satisfactorily completed. If neither agriculture nor home economics students are designated the course may be taken by both.

ABBREVIATION OF BUILDINGS

Ad Administration	HH Haecker Hall
Ag Agronomy	Hr Horticulture
BB Beef Barn	MS Meat Shop
BCh Biochemistry	MuH Music Hall
Da Old Dairy Hall	PP Plant Pathology
DB Dairy Barn	So Soils
En Agricultural Engineering	St Stock Pavilion
Gy Gymnasium	Ve Veterinary
HE Home Economics	WH Women's Hall

CLASS HOURS

I 8:15- 9:05	VI 1:30-2:20
II 9:15-10:05	VII 2:30-3:20
III 10:15-11:05	VIII 3:30-4:20
IV 11:15-12:05	IX 4:30-5:20

No classes are scheduled for the V hour, which is reserved for assembly (12:10-12:45) and dinner hour.

PROGRAM

AGRICULTURAL BIOCHEMISTRY

No.	Title	Hour	Day	Bldg.	Instructor
A1f-2w	Chemistry of Plant and Animal Life	I, II	MWF	102BCh	Mr. Taylor
	(6 cred.;* jr.; sr.; no prereq.)				
A3	Cereal Technology	Not offered	1931-32		
	(3 cred.; sr. agr.; prereq., A1-2 advised)				
A4f	Chemistry in Agriculture	IV	MWF	113BCh	Mr. Taylor
	(3 cred.; all; no prereq.)				
A4w	Chemistry in Agriculture				
	(Same as A4f)				
	Sec. 1	IV	MWF	113BCh	Mr. Taylor
	2	IV	TThS	113BCh	Mr. Taylor

AGRICULTURAL ECONOMICS

No.	Title	Hour	Day	Bldg.	Instructor
A21f,w	Farm Management I				
	(3 cred.; sr. agr.; no prereq.)				
	Sec. 1	III, IV	MWF	311HH	Mr. Ranney
	2	VIII, IX	MWF	311HH	Mr. Sallee
A22f,w	Farm Management II				
	(3 cred.; sr. agr.; no prereq.)				
	Sec. 1	III, IV	MWF	102Ad	Mr. Bassett
	2	VIII, IX	MWF	302HH	Mr. Bassett

AGRICULTURAL ENGINEERING

No.	Title	Hour	Day	Bldg.	Instructor
A10f,w	Farm Implements				
	(3 cred.; jr., sr. agr.; no prereq.)				
	Lect.	VI	M	106En	Mr. Schwantes
	Lab. Sec. 1	VI, VII	WF	49En	
	2	VI, VII	TTh	49En	
A11f	Gas Engines	VI, VII,			
	(3 cred.; all agr.; no prereq.)	VIII	TTh	216,37En	Mr. Torrance
A11w	Gas Engines				
	(Same as A11f)				
	Sec. 1	VI, VII,			
	2	VIII	TTh	216,37En	Mr. Torrance
		VI, VII,			
		VIII	WF	216,37En	Mr. Torrance
A12f,w	Advanced Gas Engines	III, IV	TThS	216,37En	Mr. Torrance
	(3 cred.; jr., sr. agr.; prereq., C grade in A11)				
A16f,w	Mechanical Training I	VI, VII,			
	(3 cred.; all agr.; no prereq.)	VIII	TTh	20,106En	Mr. Dent
A17f,w	Mechanical Training II	VI, VII,			
	(3 cred.; all agr.; no prereq.)	VIII	WF	20,106En	Mr. Dent

* Both Course A1 and A2 must be completed in order to receive credit. Not offered for less than 8 students.

THE SCHOOL OF AGRICULTURE

No.	Title	Hour	Day	Bldg.	Instructor	
A18f	Mechanics and Water Supply (3 cred.; jr., sr. agr.; no prereq.)	Lect.	I	MW	101En	Mr. Tyler
		Lab. Sec. 1	I, II	F	102En	Mr. Tyler
		2	VI, VII	M	103En	Mr. Tyler
A18w	Mechanics and Water Supply (3 cred.; jr., sr. agr.; no prereq.)	II	ThS	101En	Mr. Tyler	
A19w	Heat and Electricity (3 cred.; jr., sr. agr.; prereq., A18)	I	MW	101En	Mr. Tyler	
		I, II	F	102En	Mr. Tyler	
A20w	Farm Electrical Equipment . . (3 cred.; jr., sr.; prereq., A19)	VI, VII, VIII	TTh	101En	Mr. Romness	
A21f,w	Farm Buildings I (3 cred.; all agr.; no prereq.)	Sec. 1	VI, VII, VIII	TTh	48En	Mr. Berggren
		2	VI, VII, VIII	WF	48En	Mr. Berggren
A31f,w	Drawing (3 cred.; all agr.; no prereq.)	Sec. 1	VI, VII, VIII	TTh	303En	Mr. Neubauer
		2	VI, VII, VIII	WF	303En	Mr. Neubauer
A32f	Farm Buildings II (3 cred.; sr. agr.; prereq., A31)	I	M	305En	Mr. White	
		I, II	WF	305En	Mr. White	
A41f	Household Physics (3 cred.; jr., sr. H.E.; no prereq.)	IV	TTh	101En	Mr. Tyler	
		VIII, IX	W	102En	Mr. Tyler	
A51f	Drainage and Roads (3 cred.; sr. agr.; no prereq.)	I, II	MWF	105En	Mr. Neal, Mr. Howe	
A52w	Land Clearing (3 cred.; jr., sr. agr.; no prereq.)	III	TThS	217En	Mr. Schoen- leber	

AGRONOMY AND PLANT GENETICS

No.	Title	Hour	Day	Bldg.	Instructor	
A1f,w	Grain Crops (3 cred.; jr., sr. agr.; no prereq.)	Lect. Sec. 1	I	TS	112Ag	Mr. Hall
		Lab.	I, II	Th	112Ag	
		Lect. 2	IV	ThS	112Ag	
		Lab.	III, IV	T	112Ag	
A2f,w	Forage Crops and Potatoes . . (3 cred.; jr., sr. agr.; no prereq.)	Sec. 1	I, II	T	100Ad	Mr. Haines
		II	ThS	100Ad		
		2	III, IV	Th	100Ad	
		III	TS	100Ad		

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
A5w	Crop Breeding (3 cred.; sr. agr.; no prereq.)				
	Sec. 1	I	MWF	102Ad	Mr. Doxtator
	2	II	MWF	102Ad	

ANIMAL HUSBANDRY

No.	Title	Hour	Day	Bldg.	Instructor
A1f,w	Judging Types and Market Classes of Livestock (3 cred.; all agr.; no prereq.)				
	Sec. 1	I, II	MWF	Est	Mr. Winters
	2	III, IV	TThS	Est	
	3	VIII, IX	MWF	Est	Mr. Harvey
A2f,w	Judging Breed Types of Live- stock (3 cred.; all agr.; prereq., A1)				
	Sec. 1	VI, VII	MWF	WSt	Mr. Harvey
	2	III, IV	TThS	WSt	
A3f	Advanced Livestock Judging.. (3 cred.; jr., sr. agr.; prereq., A2)	VI, VII	MWF	Est	
A4f	Meats (3 cred.; jr., sr. agr.; prereq., A2)	VI, VII, VIII	WF	MS	Mr. Anderson
A4w	Meats (Same as A4f)	VI, VII, VIII	TTh	MS	Mr. Anderson
A5f,w	Livestock Breeding (3 cred.; sr. agr.; prereq., A2)	III	MWF(f) (w)	3St WSt	Mr. Winters
A7w	Utilization of Meats (3 cred.; jr., sr. H.E.; no prereq.)	II	MWF	MS	Mr. Anderson
A8w	Problems in Livestock Im- provement (3 cred.; sr. women spec. in livestock production; prereq., A2)	I	TThS	3St	Mr. Peters
A9f,w	Livestock Feeding (3 cred.; jr., sr. agr.; prereq., A1)	IV	TThS	3St	Mr. Winters
A10w	Livestock Management (3 cred.; jr., sr. agr.; prereq., A9)	IV	MWF	WSt	Mr. Peters

DAIRY HUSBANDRY

No.	Title	Hour	Day	Bldg.	Instructor
A1f,w	Dairy Stock Feeding I (3 cred.; jr., sr. agr.; no prereq.)				
	Sec. 1	II	MWF	100HH	Mr. Gullick- son
	2	II	MWF	109HH	Mr. Allen
A2f,w	Farm Dairying (3 cred.; jr., sr.; no prereq.) (Limited to 30 students each)				
	Sec. 1(f,w)	I, II	TThS	109HH	Mr. Morrison
	2(f,w)	VI, VII	MWF	109HH	Mr. Gullick- son
	3(w)	VI, VII	MWF	100HH	Mr. Allen

THE SCHOOL OF AGRICULTURE

No.	Title	Hour	Day	Bldg.	Instructor
A3f	Dairy Stock Judging (2 cred.; jr., sr. agr.; no prereq.) (Limited to 25 students each)	Sec. 1 2	III, IV VI, VII	MW DB MW DB	Mr. Allen Mr. Petersen
A3w	Dairy Stock Judging (Same as A3f) (Limited to 25 students each)	Sec. 1 2 3	III, IV VI, VII VIII, IX	MW DB TTh DB TTh DB	Mr. Peterson Mr. Allen Mr. Gullickson
A5w	Milk Production (5 cred.; sr. agr.; no prereq.)	I	MTWThF	100HH	Mr. Petersen
A6w	Dairy Stock Feeding II (3 cred.; sr. agr.; prereq., A1)	II	MWF	210HH	Mr. Petersen
A7f	Dairy Stock Selection (3 cred.; sr. agr.; prereq., A3, A5)	VI, VII, VIII	TTh	100HH	Mr. Petersen
A8w	Test Association Methods (3 cred.; jr., sr. agr.; prereq., A1, A2, and approval of instructor)	Ar	Ar	Ar	Mr. Leighton

ENTOMOLOGY AND ECONOMIC ZOOLOGY

No.	Title	Hour	Day	Bldg.	Instructor
A1f,w	Animal Biology (3 cred.; all agr.; no prereq.) Sec. 1 2 3	I II IV	TThS MWF MWF	301Ad 301Ad 301Ad	Mr. Buchanan Mr. Buchanan Mr. Buchanan
A3w	Biology (3 cred.; jr., sr. H.E.; no prereq.)	II	TThS	301Ad	Mr. Buchanan
A4f,w	Elementary Beekeeping I (3 cred.; all; no prereq.) Sec. 1 2	VII IV	MWF MWF	307Ad 307Ad	Mr. Braun Mr. Braun
A5f,w	Elementary Beekeeping II (3 cred.; all; prereq., A4)	VIII, IX	MWF	307Ad	Mr. Braun
A6f,w	Advanced Beekeeping (3 cred.; jr., sr.; prereq., A5, and one summer experience)	Ar	Ar	Ar	Mr. Braun
A16f	Insect Pests of Plants (3 cred.; jr., sr.; no prereq.)	VI, VII, VIII	TTh	302Ad	Mr. Ruggles

FARM MANAGEMENT

See Agricultural Economics.

FORESTRY

No.	Title	Hour	Day	Bldg.	Instructor
A1w	Forest Nursery Methods and Tree Planting (3 cred.; jr., sr. agr.; no pre- req.)	II	TThS	102Hr	Mr. Cheyney

PROGRAM

GYMNASIUM AND PHYSICAL TRAINING

No.	Title	Hour	Day	Bldg.	Instructor
<i>Men</i>					
A1f,w	Gymnasium				
	(2 cred. per term; all agr.; no prereq.)				
	Sec. 1	VII	MW	Gy	Mr. Thompson
		1 additional	hour	to be arranged	
	2	IX	MW	Gy	
		1 additional	hour	to be arranged	
	3	VII	TTh	Gy	
		1 additional	hour	to be arranged	
	4	IX	TTh	Gy	
		1 additional	hour	to be arranged	
	(Basket-ball practice)	5	7:30 p.m.	MW Gy	
		1 additional	hour	to be arranged	

Women

A1f,w	Physical Training				
	(2 cred. per term; all H.E.; no prereq.)				
	Sec. 1	VIII	MW	Gy	Miss Kaercher
		1 additional	hour	to be arranged.	
	2	III	TTh	Gy	
		1 additional	hour	to be arranged	
	3	IV	TTh	Gy	
		1 additional	hour	to be arranged	
	(Basket-ball practice)	4	6:15	MF Gy	
		1 additional	hour	to be arranged	
	(Dancing)	5	Ar	Ar Gy	
		1 additional	hour	to be arranged	

HOME ECONOMICS

No.	Title	Hour	Day	Bldg.	Instructor
A1f	Clothing I				
	(3 cred.; all H.E.; no prereq.)				
	Sec. 1	II	MTWThF	114HE	Miss Ennis
	2	VI, VII	MWF	114HE	Miss Ennis
A1w	Clothing I	II	MTWThF	114HE	Miss Ennis
	(Same as A1f)				
A2f,w	Clothing II	I	MTWThS	114HE	Miss Brown, Miss Keller
	(3 cred.; all H.E.; prereq. A1)				
A4f	Textiles and Dressmaking I ..	III, IV	MWF	114HE	Miss Keller
	(3 cred.; jr., sr. H.E.; prereq. A2)				
A5w	Textiles and Dressmaking II..	VI, VII	MWF	114HE	Miss Keller
	(3 cred.; jr., sr. H.E.; prereq., A4)				
A6w	Decorative Needlework	VI, VII	MWF	112HE	Miss Segolson
	(3 cred.; jr., sr. H.E.; prereq., A1, A21)				
A7f	Millinery	VI, VII, VIII	TTh	112HE	Miss Brown
	(3 cred.; jr., sr. H.E.; prereq., A2, A21)				

THE SCHOOL OF AGRICULTURE

No.	Title	Hour	Day	Bldg.	Instructor
A21f	Design (2 cred.; all H.E.; no prereq.)				
	Sec. 1	III, IV	TTh	112HE	Miss Segolson
	2	VII, VIII	MW	112HE	Miss Segolson
A21w	Design (2 cred.; all H.E.; no prereq.)	III, IV	TTh	112HE	Miss Segolson
A26f,w	House Planning and Furnish- ing (3 cred.; all H.E.; prereq., A21)	VI, VII, VIII	TTh	114HE	Miss Segolson
A31f	Selection and Preparation of Food (3 cred.; all H.E.; no prereq.)				
	Sec. 1	I	MTWThF	105HE	Miss Nordeen
	2	VI	MTWThF	105HE	Miss Ennis
A31w	Selection and Preparation of Food (Same as A31f)	I	MTWThF	105HE	Miss Nordeen
A32f	Meal Preparation (3 cred.; all H.E.; prereq., A31)	III, IV	TThS	105HE	Miss Kafka
A32w	Meal Preparation (Same as A32f)				
	Sec. 1	III, IV	TThS	105HE	Miss Kafka
	2	VI, VII	MWF	105HE	
A33f,w	Foods and Nutrition (2 cred.; jr., sr. H.E.; prereq., A32)	II	MTWTh	105HE	Miss Keller
A34f,w	Home Management (3 cred.; sr. H.E.; prereq., A33)	III, IV	MWF	105HE	Miss Studley
A35f,w	Child Care and Development.. (3 cred.; sr. H.E.; prereq., A33, Prev. Med. A1)	II Lab.	WF Ar	110HE	Miss Studley
A50f,w	Related Science I (3 cred.; all H.E.; no prereq.)	IV	MWF	202So	Miss Kafka
A51f,w	Related Science II (3 cred.; all H.E.; prereq., A50)	II	MWF	202So	Miss Kafka
A73f,w	Food Selection and Preparation (2 cred.; all agr.; no prereq.)	VIII, IX	TTh	105HE	Miss Nordeen

HORTICULTURE

No.	Title	Hour	Day	Bldg.	Instructor
A1f,w	Farm Horticulture (3 cred.; all; no prereq.)				
	Sec. 1	III	MWF	102Hr	Mr. Daniels
	2	IV	MWF	102Hr	Mr. Daniels
A2f	Orchard Fruit Growing (3 cred.; jr., sr.; no prereq.)	II	MWF	8aHr	Mr. Daniels
A3w	Commercial Vegetable Garden- ing (3 cred.; jr., sr. agr.; no prereq.)	II	TThS	8aHr	Mr. Currence
A4w	Small Fruit Growing (3 cred.; jr., sr.; no prereq.)	II	MWF	102Hr	Mr. Daniels

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
A5f	Plant Propagation and Nursery Practice (3 cred.; all; prereq., Pl. Path. 1 or 4)	I VIII, IX	MW T	8aHr 8Hr	Mr. Sando
A7w	Floriculture (3 cred.; all; no prereq.)	IV	MWF	8aHr	Mr. Sando
A8f	Landscape Gardening I (3 cred.; all; no prereq.)	III	MWF	8aHr	Mr. Longley
A9w	Landscape Gardening II (3 cred.; all; prereq., A8 or equiv.)	VIII VIII, IX	M WF	107Hr	Mr. Longley
A10w	Greenhouse Construction, Management and Practice (3 cred.; jr., sr. agr.; prereq., A5)	VI, VII	MW	102Hr	Mr. Sando
A14w	Potato Production (3 cred.; jr., sr. agr.; prereq., Agron. A2)	II	MWF	8aHr	Mr. Hutchins
A15w	Special Problems (Variable credit; prereq., instructor's permission)	Ar	Ar	Ar	Mr. Alderman and staff

PLANT PATHOLOGY AND BOTANY

No.	Title	Hour	Day	Bldg.	Instructor
A1f,w	Agricultural Botany (3 cred.; all; no prereq.)				
	Lect. Sec. 1	VI	M	100PP	Mr. Holton
	Rec.	VI	F	100PP	
	Lab.	VI, VII	W	100PP	
	Lect. 2	VII	W	100PP	Mr. Moore
	Rec.	VII	F	100PP	
	Lab.	VI, VII	M	100PP	
A2w	Seed Testing (2 cred.; jr., sr. agr.; prereq., A1)	VI, VII	TTh	100PP	Mr. Larson
A11f	Plant Diseases (3 cred.; sr.; prereq., A1 or A4)	IV	MWF	107PP	Mr. Holton
A12f	Weeds (2 cred.; jr., sr. agr.; prereq., A1)	VI, VII	TTh	100PP	Mr. Larson

POULTRY HUSBANDRY

No.	Title	Hour	Day	Bldg.	Instructor
A1f,w	Poultry (3 cred.; all; no prereq.)				
	Sec. 1	II	TThS	102Ve	Mr. Smith, Mr. Johnson
	2	IV	TThS	102Ve	Mr. Smith, Mr. Johnson
	(w only) 3	VII	MWF	102Ve	Mr. Smith, Mr. Johnson
A2f,w	Management of Laying Flock (1 cred.; jr., sr.; prereq., A1 or parallel)	Ar	Ar	Ar	Mr. Johnson

THE SCHOOL OF AGRICULTURE

No.	Title	Hour	Day	Bldg.	Instructor
A3w	Incubating and Brooding (3 cred.; jr., sr.; prereq., A1)				
	Lect.	III	MF	102Ve	Mr. Smith,
	Lab.	Ar	Ar	Ar	Mr. Johnson
A7f,w	Poultry Judging (2 cred.; all; no prereq.)	VI, VII	TTh	102Ve	Mr. Johnson
A10f	Dressed Poultry (1 cred.; all; no prereq.)	Ar	Ar	Ar	Mr. Peterson

PREVENTIVE MEDICINE AND PUBLIC HEALTH

No.	Title	Hour	Day	Bldg.	Instructor
A1f	Home Nursing and Hygiene I (2 cred.; jr., sr. H.E.; no prereq.) (Limited to 20)				
	Lect.	I	W	11WH	Miss Fisher
	Lab.	I, II	F	11WH	
A1w	Home Nursing and Hygiene I (Same as A1f) (Limited to 20)				
	Lect.	II	W	11WH	Miss Fisher
	Lab.	I, II	F	11WH	
A2w	Home Nursing and Hygiene II (2 cred.; sr. H.E.; prereq., A1)				
	Lect.	I	W	11WH	Miss Fisher
	Lab.	I, II	M	11WH	
A8f,w	Hygiene (1 cred.; all agr.; no prereq.)				
	Sec. 1	II	S	108Da	Mr. Boardman
	2	III	S	108Da	Mr. Boardman

RHETORIC

No.	Title	Hour	Day	Bldg.	Instructor
A1f	English I (3 cred.; all; no prereq.)				
	Sec. 1	I	MWF	306En	Mrs. Hause
	2	I	TThS	312En	Miss Holbrook
	3	VI	MWF	312En	Miss Holbrook
	4	II	TThS	312En	Miss Holbrook
A1w	English I (Same as A1f)				
	Sec. 1	II	MWF	107En	
	2	VI	MWF	306En	
	3	I	MWF	105En	
	4	VI	MWF	312En	
A2f	English II (3 cred.; all; prereq., A1)	IV	MWF	312En	Miss Holbrook
A2w	English II (Same as A2f)				
	Sec. 1	I	MWF	312En	Miss Holbrook
	2	VI	MWF	306En	
	3	II	TThS	306En	Mrs. Hause

PROGRAM

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No.	Title	Hour	Day	Bldg.	Instructor
A3f	English Classics (3 cred.; jr., sr., prereq., A2)	Sec. 1	I	TThS 306En	Mrs. Hause
		2	III	MWF 105En	
A3w	English Classics (Same as A3f)	Sec. 1	II	MWF 306En	Mrs. Hause
		2	IV	TThS 307En	Miss Langtry
A4f	Business English (3 cred.; jr., sr.; prereq., A3)	Sec. 1	III	MWF 306En	Mrs. Hause
		2	III	TThS 306En	Mrs. Hause
A4w	Business English (Same as A4f)	Sec. 1	I	TThS 306En	Mrs. Hause
		2	III	MWF 306En	Mrs. Hause
		3	IV	MWF 306En	Mrs. Hause
A5f	Public Speaking (3 cred.; sr.; prereq., A4)	Sec. 1	I	TThS 307En	Miss Langtry
		2	II	MWF 307En	Miss Langtry
		3	I	TThS 311En	
A5w	Public Speaking (Same as A5f)	Sec. 1	VII	MWF 307En	Miss Langtry
		2	III	TThS 307En	Miss Langtry
A6f	English VI (3 cred.; sr.; prereq., A4)		II	TThS 307En	Miss Langtry
A6w	English VI (Same as A6f)	Sec. 1	II	TThS 311En	Miss Langtry
		2	III	TThS 312En	Miss Holbrook
		3	VI	MWF 307En	Miss Langtry
A14w	Advanced Public Speaking ... (3 cred.; sr.; prereq., A5)		III	MWF 311En	Miss Langtry
A21f,w	English Literature I (5 cred.; sr.; prereq., A4)	IV	MTWThF(f)	317En	Miss Langtry
		II	MTWThF(w)	312En	Miss Holbrook
A22f,w	English Literature II (5 cred.; sr.; prereq., A21)	III	MTWThF(f)	312En	Miss Holbrook
		IV	MTWThF(w)	312En	Miss Holbrook
A32f	Debating (3 cred.; jr.; prereq., A2)	III	TThS	311En	Miss Langtry

SCHOOL (GENERAL)

No.	Title	Hour	Day	Bldg.	Instructor
A1f,w	Farm Arithmetic (3 cred.; all; no prereq.)	Sec. 1	I	TThS 203Da	Mr. Johnsrud
		2	I	MWF 203Da	Mr. Johnsrud
		3	VIII	MWF 203Da	Mr. Johnsrud
A2f,w	Advanced Farm Arithmetic .. (3 cred.; all; prereq., 1 or high school cred. in arith.)	IV	MWF	203Da	Mr. Johnsrud
A4f	Algebra I (7 cred.; all; no prereq.)	III	MTWThFS	217En	Miss Martyn
A4w	Algebra I (Same as A4f)	IV	MTWThFS	217En	Miss Martyn

THE SCHOOL OF AGRICULTURE

No.	Title	Hour	Day	Bldg.	Instructor
A5f	Algebra II (7 cred.; all; no prereq.)	IV	MTWThFS	217En	Miss Martyn
A5w	Algebra II (Same as A5f)	III	MTWThFS	107En	Miss Martyn
A6f,w	Geometry I (7 cred.; all; no prereq.)	I	MTWThFS	217En	Miss Martyn
A7f,w	Geometry II (7 cred.; all; prereq., algebra or parallel advised)	II	MTWThFS	217En	Miss Martyn
A21f,w	Elements of Music I (2 cred.; all; no prereq.)	Sec. 1	III	TTh	201MuH Miss Wendt
		2	VII	TTh	201MuH Miss Wendt
A22f,w	Elements of Music II (2 cred.; all; prereq., A21)	VI	TTh	301MuH	Miss Willson
A23f,w	Chorus (½-3* cred.; all; no prereq.)				
	Mixed Chorus	6:15	W	201MuH	Miss Wendt
	Girls' Glee Club	4:30	Th	201MuH	
	Boys' Glee Club	6:15	T	201MuH	
A24f,w	Violin (½-3* cred.; all; no prereq.)	Ar	TF	302MuH	Miss Wendt
A25f,w	Piano (½-3* cred.; all; no prereq.)	Ar	Ar	301MuH	Miss Willson
A26f,w	Instrumental Music (½-3* cred.; all; no prereq.)	Ar	Ar	103MuH	Mr. Boland
A27f,w	Orchestra (½-3* cred.; all; no prereq.)	4:00	TTh	20MuH	Mr. Boland
A28f,w	Voice (½-3* cred.; all; no prereq.)	Ar	Ar	202, 203MuH	Mr. Birder, Miss Wendt
A29f,w	Harmony I (2 cred.; all; prereq., A22)	II	TTh	301MuH	Miss Willson
A30f,w	Harmony II (2 cred.; all; prereq., A29)	VII	TTh	301MuH	Miss Willson
A32f,w	Appreciation of Music (3 cred.; all; no prereq.)	VI	MWF	103MuH	Mr. Boland
A33f,w	Instrumentation and Conduct- ing (3 cred.; all; prereq., A22, two terms of A25 or A26)	VI	TTh	103MuH	Mr. Boland
A34f,w	Band (½-3* cred.; all agr.; no pre- req.)	IX	MWF	201MuH	Mr. Boland
A35f,w	Dramatic Art (½-3* cred.; all; no prereq.)	IX	T	202MuH	Mr. Birder
A41f,w	Parliamentary Law (1 cred.; jr., sr.; no prereq.)	I	S	202Ad	
A42f,w	American Government (3 cred.; sr.; no prereq.)	VIII	MWF	102Hr	Mr. Gray
A43f,w	Economics (3 cred.; sr.; no prereq.)	III	MWF	204Da	Mr. Dankers
A44f,w	Marketing (3 cred.; jr., sr.; no prereq.)	I	TThS	204Da	Mr. Dankers
A45f,w	Industrial History (3 cred.; jr., sr.; no prereq.)	VI	MWF	204Da	Mr. Dankers

* This course may be continued for six quarters giving a maximum of 3 credits.

PROGRAM

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No.	Title	Hour	Day	Bldg.	Instructor
A46f,w	Rural Sociology (3 cred.; sr.; no prereq.)	III	TThS	204Da	Mr. Christianson
A47f,w	American History (3 cred.; jr., sr.; no prereq.)	IX	MWF	102Hr	Mr. Gray
A48f,w	History of Civilization (3 cred.; jr., sr.; no prereq.)	IV	TThS	108Da	Mr. Johnson
A55f,w	Social Training (2 cred.; all H.E.; no prereq.)	III	MW	WH	Miss Matson
A56f,w	Social Problems for Boys (1 cred.; all agr.; no prereq.)				
	Sec. 1	I	Th	202So	Miss Hognason
	2	II	T	202So	
	3	III	W	202So	
A61f,w	Spelling (1 cred.; all; no prereq.)				
	Sec. 1	II	S	107MuH	Mrs. Stern
	2	IV	S	107MuH	
A62f,w	Penmanship (1 cred.; all; no prereq.)				
	Sec. 1	IX	TTh	107MuH	Mrs. Heathcote
	2	IV	TTh	107MuH	
A80f,w	Typewriting I (3 cred.; all; no prereq.)				
	Sec. 1	III, IV	MWF	106MuH	Mrs. Heathcote
	2	III, IV	TThS	106MuH	
	3	VI, VII	MWF	106MuH	
	4	I, II	MWF	106MuH	
	5	I, II	TThS	106MuH	
A81f,w	Typewriting II (3 cred.; jr., sr. H.E.; prereq., A80)				
	Sec. 1	I, II	MWF	106MuH	Mrs. Heathcote
	2	VI, VII, VIII	TTh	106MuH	
A82f,w	Typewriting III (3 cred.; jr., sr. H.E.; prereq., A81)	VI	MWF	106MuH	Mrs. Heathcote
A83f,w	Stenography I (3 cred.; all H.E.; no prereq.)	IV	MWF	104MuH	Mrs. Stern
A84f,w	Stenography II (3 cred.; jr., sr. H.E.; prereq., A83)	III	MWF	104MuH	Mrs. Stern
A85f,w	Stenography III (3 cred.; jr., sr. H.E.; prereq., A84)	II	MWF	104MuH	Mrs. Heathcote
A86f,w	Bookkeeping I (3 cred.; all; no prereq.)	VI, VII	TTh	107MuH	Mrs. Stern
		2 hours to be arranged			
A87f,w	Bookkeeping II (3 cred.; all; prereq., A86)	III, IV	TThS	107MuH	Mrs. Stern
A88f,w	Commercial Law (3 cred.; all; no prereq.)	II	MWF	202Ad	Mr. Dankers

SOILS

No.	Title	Hour	Day	Bldg.	Instructor
A1f,w	Soils (3 cred.; all agr.; no prereq.)				
	Sec. 1	I	MWF	204So	Mr. McMiller
	2	IV	MWF	204So	Mr. McMiller

THE SCHOOL OF AGRICULTURE

VETERINARY MEDICINE

No.	Title	Hour	Day	Bldg.	Instructor
A1w	Physiology (3 cred.; all; no prereq.)	II	TThS	103Ve	Mr. Kern- kamp
A4w	Elements of Bacteriology (3 cred.; jr., sr.; no prereq.)	II	MWF	103Ve	Mr. Fenster- macher
A5f	Physiology and Hygiene of Breeding (2 cred.; jr., sr. agr.; no pre- req.)	II	WF	103Ve	Mr. Boyd
A7f,w	Veterinary Studies (3 cred.; jr., sr. agr.; no pre- req.)	I	MWF	102Ve	Mr. Boyd

The Bulletin
of the University of
Minnesota

Northwest School and Experiment
Station

Crookston, Minnesota

Announcement for the Year
1931-1932



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1931							1932													
JULY							JANUARY							JULY						
Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa
..	..	..	1	2	3	4	..	..	..	..	..	1	2	..	..	..	..	..	1	2
5	6	7	8	9	10	11	3	4	5	6	7	8	9	3	4	5	6	7	8	9
12	13	14	15	16	17	18	10	11	12	13	14	15	16	10	11	12	13	14	15	16
19	20	21	22	23	24	25	17	18	19	20	21	22	23	17	18	19	20	21	22	23
26	27	28	29	30	31	..	24	25	26	27	28	29	30	24	25	26	27	28	29	30
..	..	..	..	..	..	..	31	..	..	..	..	..	..	31	..	..	..	..	..	..
AUGUST							FEBRUARY							AUGUST						
Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa
..	..	..	..	..	..	1	..	1	2	3	4	5	6	..	1	2	3	4	5	6
2	3	4	5	6	7	8	7	8	9	10	11	12	13	7	8	9	10	11	12	13
9	10	11	12	13	14	15	14	15	16	17	18	19	20	14	15	16	17	18	19	20
16	17	18	19	20	21	22	21	22	23	24	25	26	27	21	22	23	24	25	26	27
23	24	25	26	27	28	29	28	29	..	..	..	..	..	28	29	30	31	..	..	..
30	31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
SEPTEMBER							MARCH							SEPTEMBER						
Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa
..	..	1	2	3	4	5	..	..	1	2	3	4	5	..	..	..	..	1	2	3
6	7	8	9	10	11	12	6	7	8	9	10	11	12	4	5	6	7	8	9	10
13	14	15	16	17	18	19	13	14	15	16	17	18	19	11	12	13	14	15	16	17
20	21	22	23	24	25	26	20	21	22	23	24	25	26	18	19	20	21	22	23	24
27	28	29	30	..	..	..	27	28	29	30	31	..	..	25	26	27	28	29	30	..
..
OCTOBER							APRIL							OCTOBER						
Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa
..	..	..	..	1	2	3	..	..	..	..	..	1	2	..	..	..	..	..	..	1
4	5	6	7	8	9	10	3	4	5	6	7	8	9	2	3	4	5	6	7	8
11	12	13	14	15	16	17	10	11	12	13	14	15	16	9	10	11	12	13	14	15
18	19	20	21	22	23	24	17	18	19	20	21	22	23	16	17	18	19	20	21	22
25	26	27	28	29	30	31	24	25	26	27	28	29	30	23	24	25	26	27	28	29
..	..	..	..	..	..	..	..	..	..	..	..	..	..	30	31	..	..	..	..	..
NOVEMBER							MAY							NOVEMBER						
Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa
1	2	3	4	5	6	7	1	2	3	4	5	6	7	..	..	1	2	3	4	5
8	9	10	11	12	13	14	8	9	10	11	12	13	14	6	7	8	9	10	11	12
15	16	17	18	19	20	21	15	16	17	18	19	20	21	13	14	15	16	17	18	19
22	23	24	25	26	27	28	22	23	24	25	26	27	28	20	21	22	23	24	25	26
29	30	..	..	..	..	..	29	30	31	..	..	..	..	27	28	29	30	..	..	..
..
DECEMBER							JUNE							DECEMBER						
Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa
..	..	1	2	3	4	5	..	..	1	2	3	4	..	..	..	..	1	2	3	
6	7	8	9	10	11	12	5	6	7	8	9	10	11	4	5	6	7	8	9	10
13	14	15	16	17	18	19	12	13	14	15	16	17	18	11	12	13	14	15	16	17
20	21	22	23	24	25	26	19	20	21	22	23	24	25	18	19	20	21	22	23	24
27	28	29	30	31	..	..	26	27	28	29	30	..	..	25	26	27	28	29	30	31
..

SCHOOL CALENDAR

1931-32

1931

June	15-18		Sixth Annual Women's Camp
September	28	Monday	Registration
September	29	Tuesday	Organization of classes
October	31	Saturday	Homecoming Day
November	26	Thursday	Thanksgiving Day
December	18	Friday	First term closes; Christmas recess begins

1932

January	4	Monday	Registration of new students
January	5	Tuesday	Second term begins; organization of classes
February	8-12	Week	Northwest School Farmers' Week
March	25	Friday	School term closes
June	13-16		Junior Short Course

COMMENCEMENT WEEK

March	18	Friday	Superintendent's reception to graduating class
March	19	Saturday	Interclass field meet
March	20	Sunday	Baccalaureate address
March	21	Monday	Musical recital
March	22-23	Tuesday and Wednesday	Senior class play
March	24	Thursday	Class Day exercises and commencement

FACULTY

Lotus D. Coffman, Ph.D., LL.D., President of the University
Walter C. Coffey, M.S., LL.D., Dean of the Department of Agriculture

AT CROOKSTON

ADMINISTRATION

Austin A. Dowell, M.S., Superintendent
J. W. Mlinar, B.S., Registrar
Fanny B. Lippitt, B.S., Director of Dining Hall
Ruth Sheldon, R.N., School Nurse
Vivian Sanders, Secretary
Kate Bedard, Accountant

AGRICULTURAL ENGINEERING

Arnold M. Foker, Carpentry and Farm Engineering
S. A. Anderson, B.S., Farm Motors and Mechanics
E. L. Ocock, B.S.A., Assistant in Farm Motors and Mechanics

AGRONOMY

Ray S. Dunham, B.S., Farm Crops and Soils
Elmer R. Clark, B.S.A., Pure Seed Work and Home Projects

ANIMAL HUSBANDRY

Orville M. Kiser, B.S.A., Animal and Dairy Husbandry
R. J. Christgau, B.S.A., Animal Husbandry and Physical Training
George F. Wight, M.S., Animal Husbandry
Alvey M. Pilkey, Poultry

HORTICULTURE

Thomas M. McCall, M.S., Horticulture

HOME ECONOMICS

Fanny B. Lippitt, B.S., Foods and Nutrition
Retta Bede, B.S., Foods and Cookery
Elsie Mae Kingston, B.S., Clothing and Textiles
Ruth Sheldon, R.N., Nursing

ASSOCIATED SUBJECTS

Robert H. Connery, M.A., Advanced Subjects, Debate
Hildur Peterson, B.A., Music and Vocal Training
DeEtte Cenfield Genung, B.A., English
Fae Hughbanks, Business Training
John W. Mlinar, B.S., Academic Subjects
Henry A. Pflughoeft, B.S., Boys' and Girls' Club Work
Rose C. Polski, B.A., Piano
Cynthia F. Weinberger, B.A., English
Grace M. Warne, B.A., English and Violin

GENERAL INFORMATION

LOCATION

The Northwest School of Agriculture is located at the Experiment Farm, one and one-half miles north of Crookston, Minnesota. There is a paved roadway between the school and the city, and regular auto bus service is maintained.

PURPOSES

The school was organized in 1906. It offers a practical course of study designed to fit young men and young women for successful farm life, and aims to give its students the necessary preparation for useful citizenship.

The work of the school aims to interpret for the young men and the young women from the farms, the life with which they are familiar. It gives reasons for the various farm operations, and makes a scientific basis for the proper management of the farm and the home.

TIME OF OPENING

The fall term of the Northwest School of Agriculture will open for registration on September 28, 1931, and classes will begin at 8 o'clock on Tuesday, September 29. The fall term closes on December 18, 1931.

The winter term will open for registration on January 4, and classes will begin at 8 o'clock on January 5, 1932. The winter term closes March 25, 1932.

THREE YEARS' COURSE

The course of study offered covers a wide range of subjects, and is largely technical in character. It is briefly outlined on pages 17 to 30. The regular course for both young men and young women requires three winters of six months each for completion.

The methods of instruction tend to educate students toward the farm instead of away from it, to develop in them a love for farm life by showing them its possibilities. In this respect the school has been very successful, as nearly all of its graduates continue agricultural pursuits.

ADVANCED COURSES

It has been found that the eighteen months of the long course is a very short time in which to give all the work that should be included in a satisfactory course. Therefore a fourth six months of work is offered. During this fourth session, graduates of the long course may elect to specialize in one of the lines of work listed below. They may at the same time choose from the elective lists subjects that they could not obtain during their first three sessions. The major lines of work suggested for boys are dairying, beef production, farm engineering, carpentry, advanced farm management, and academic subjects. The major lines for girls are dress-making, advanced home management, nursing, music, and business training.

COLLEGE PREPARATORY

Graduates of the Northwest School of Agriculture, who have completed two summers of supervised work on their home farms, one additional school year of six months, and one additional summer's work or the equivalent thereof, will be admitted to the College of Agriculture, Forestry, and Home Economics of the University of Minnesota and state teachers colleges.

DEPARTMENT OF MUSIC

For those who are interested, credit courses in piano and voice instruction are offered. Twelve half-hour lessons per term are given, with special time for practice. Fees of \$7 per term for the lessons and \$2.50 per term for piano rental are charged. Special rooms are set aside for practice, making it possible to do good, thoro work. A class in musical theory meets once a week, and instruction is also given in the history of music, ear training, and the rudiments of harmony and interpretation.

WHEN TO COME

Students should not come before Monday, September 28, or Monday, January 4. Dormitories will not be open before that time and the first meal in the dining hall will be served at noon on those days.

HOW TO GET TO THE SCHOOL

Check all baggage to Crookston and bring checks to the school. A charge of 25 cents is made by the school for transporting trunks at the opening of school. The same charge is made for the return of the baggage at the close of school, provided it is ready to go on the days assigned. A charge of 50 cents is made for transporting trunks at any other time.

ADMISSION

Applicants who have completed a common school course will be admitted without examination and boys must have had six months' practical experience on a farm.

Applicants who have not completed the common school course should write to the registrar for further information.

Students more than twenty-one years of age who cannot pursue the full course, either from lack of time or of proper preparation, may make special arrangements for taking such projects as will be most helpful to them.

Students from city or grade schools will not be admitted before finishing eighth grade work, or until their former school records have been passed upon by the superintendent. These records must be presented at least three weeks prior to the opening of school.

State High School Board certificates are accepted for work in English, physiology, algebra, geometry, and civics, or credits of 75 per cent or more received on state teachers' examinations.

ROOMS IN DORMITORIES

Old or new students planning to attend the School of Agriculture should reserve rooms in advance. Write early to the registrar, asking him to reserve a room in one of the dormitories. This may be done by paying a deposit fee of \$2 which will apply on the first month's rent. If the student is unable to enter school, the deposit may be reclaimed before September 15, after which time it is forfeited. Each dormitory room is furnished with two single beds, a dresser, table, and chairs. The rooms are all lighted by electric light and heated by steam. Preferences as to roommates should be stated early and will be considered as far as possible.

WHAT TO BRING

Each student should come provided with sheets, blankets, quilts, one bedspread, one pillow, three pillow cases, dresser scarf, towels, napkins, comb, brushes, one glass tumbler, and one teaspoon, and at least two nightgowns.

Each girl should bring with her, in addition to her ordinary supply of clothing, kimono and bedroom slippers, laundry bag, black gymnasium shoes, black bloomers, and swimming cap. Be prepared to purchase material for blouse.

EXPENSES

Necessary expenses for the year do not exceed \$150. This amount does not include traveling and personal expenses.

Each student is required to pay for breakage of apparatus used in practical work, and for all damage done to school property.

Textbooks are furnished at a rental of \$2 per year to students who do not desire to purchase. A gymnasium fee of \$1 per term is charged all students.

Music fees for private lessons are \$7 for each term. Piano rental is \$2.50 per term.

A fee of \$2.50 each term entitles each student to attend all school functions, athletic contests, and games and entertainments.

It should be remembered that expenses for fees are for the entire term, and after the first month the only expenses are for board and room.

The cost to the student for board is the actual cost of maintaining the table (including management). Board is payable the first of each month in advance. *A surcharge of 10 per cent is added to all bills delinquent more than ten days. No deduction is made for board for any absence of less than five days. No room refunds will be made for any period of less than one month. If students are compelled to be absent for that length of time, they are allowed half rates, provided they make arrangements with the accountant before leaving.*

On entering the school, each student should bring sufficient money to pay one month's board and room, and to pay for his books and fees. This will amount to from \$35 to \$45.

The following expenses are charged to all students. Fees are payable at the time of registration, and board and room at the first of each month.

Registration fee for any part of school year	\$ 5.00
For non-residents of Minnesota	10.00
Deposits as guarantee of proper treatment of school property	5.00
Health fee for term, required of all students	3.00
Board per week (price subject to change)	4.00
Room per week, including flat laundry (price subject to change)	1.25
Book rent, per term	1.00
Gymnasium fee (required of all), per term	1.60
Student privilege tickets for all school functions, athletic contests, and games and entertainments (required of all students)	2.50

Special fees in laboratory courses are as follows: blacksmithing, \$2 a term; carpentry, engineering, farm mechanics, cooking, sewing, chemistry, or dairying, 50 cents each a term. Farm accounts 75 cents a term. A fee of \$1 a month is charged for the use of typewriters.

HEALTH SERVICE

The health fee collected from all students is used to maintain the Students' Health Service. A fully equipped hospital is maintained and a full time nurse is engaged during the school year. The health fee provides for physical examinations for all students and care by the nurse in case of sickness. *It does not provide for extra nurses or physicians in case of serious sickness, when such are necessary. A charge of 75 cents a day will be made for detention in the hospital after the first twenty-four hours.*

REQUIREMENTS FOR GRADUATION

1. *Boys' and girls' regular courses.*—The completion of the prescribed courses of study, including all the required work and enough elective work to make a total of 160 credit hours for the boys and 154 for the girls.
2. Honorable standing in deportment.
3. An essay of not less than one thousand words upon a topic selected from a list of topics suggested by the faculty, typewritten on paper of approved size for binding and filing in the library.
4. For young men, practical experience in farm work during each of the two summers that come between the freshman and senior years. Students will register for the study of some definite farm problem to be studied each summer and report at stated intervals during the summer the progress made. Five of the 160 credits must be earned by home projects and ten are allowed. (See also College Preparatory, page 6.)

HOME LIFE ON THE CAMPUS

The life of the student while attending the school is subject to supervision. Students residing in the school dormitories are not allowed to leave the campus without permission of the preceptor or preceptress. The home life of each student is carefully guarded and everything is done to promote a healthful and moral atmosphere. The use of tobacco is strictly forbidden.

The preceptor of the School of Agriculture has charge of the boys in their dormitory and social life, and the preceptress has charge of the girls in their dormitory and social life, under such regulations as may be approved by the superintendent. Students are required to be correct in their habits, and to observe pleasantly all directions for their government.

From 8:15 a.m. to 4:30 p.m., students not at recitation or assembly are expected to be in their rooms or in the library, studying or reading; also after 7:30 in the evening. The rooms shall at all times be quiet, especially in the evening, so that no student may be disturbed.

Anyone not in accord with these restrictions, and not willing to lend a hand toward a strong moral growth, should not come to the School of Agriculture.

ASSEMBLY

On each Tuesday, Thursday, and Saturday at 11:40 a.m., the students assemble in the auditorium. After the opening exercises, brief talks are given by the superintendent, members of the faculty, or invited guests.

During the year the list of speakers includes prominent men, state and national officials, business men, particularly those connected with the agricultural industries, professional men, prominent clergymen of all denominations, educators from other institutions, and successful farmers. The addresses are of great interest and value to the students.

LECTURE COURSE

During the school year, a lecture and entertainment course, consisting of five lectures and musical programs, will be given at a low cost. It is hoped to provide high grade lectures and programs which will furnish a pleasant relaxation from school work and be instructive as well.

STUDENTS' LITERARY SOCIETIES

Societies for the purpose of improvement in public speaking and debate, and for obtaining instruction in the form of lectures, give excellent opportunities for entertainment and culture. Practice in parliamentary procedure is given which will greatly benefit the student. Each student is expected to associate himself with one of these societies as early in his course as possible.

MUSICAL ORGANIZATIONS

A school orchestra is maintained each year. A competent leader has charge of this work. Glee clubs, choruses, and quartets contribute greatly toward creating an interest in music.

STUDENTS' CHRISTIAN ASSOCIATIONS

Young Men's and Young Women's Christian associations have been formed, having for their objects social fellowship and moral and spiritual development. Bible classes will be held Sunday morning at 8:45. The associations are non-sectarian. Religious exercises are held at the school each Sunday evening at 7 o'clock. Various pastors and business men address the students at these meetings. The Christian associations conduct the exercises and secure the speakers.

RED RIVER AGGIE

The *Red River Aggie* is an annual published by the senior class of the school. The book gives an outline of all school and class activities, is fully

illustrated, and contains, in addition to brief articles of student interest, a complete record of the development and growth of the institution.

THE NORTHWEST MONTHLY

The *Northwest Monthly* is published by the faculty of the school. It serves as a community publication, and is a medium by which former students and alumni are kept in touch with one another and with the school. It is also published to disseminate useful information and results of station work.

SCHOLARSHIP AND LOAN FUNDS

The Northwest School of Agriculture considers itself very fortunate in being able to present the following loan fund provisions. The donors have specified the purposes for which each may be used. The general purpose, however, is to enable the school to reach a large number, to provide the means of encouraging many to acquire the training which the school offers, and to stimulate greater effort in school work.

THE GILFILLAN TRUST FUND

This fund may be used by students of the Northwest School of Agriculture in accordance with the action of the Board of Regents taken September 26, 1916. The regulations governing the administration of the income from the fund may be learned by addressing the superintendent of the Northwest School of Agriculture, Crookston, Minnesota.

CALEB DORR CASH SCHOLARSHIP PRIZES

By a decision made in April, 1922, by the Board of Regents of the University of Minnesota, a part of the Dorr fund is now made available to the schools of agriculture. This fund consists of \$50,000 willed by the late Caleb Dorr, of Minneapolis, the income of which will be used to promote scholarship and student activity records. Further information regarding this fund as it applies to the Northwest School of Agriculture may be obtained by writing to the superintendent.

FAIRFAX-ANDOVER SOCIAL CLUB LOAN FUND

The Fairfax-Andover Social Club (a farm club near Crookston) provided \$150 to be used as a students' loan fund. This money will be loaned to students at 6 per cent interest as a temporary loan.

CLASS OF 1917 LOAN FUND

The class of 1917 has provided \$140 to be used as a students' loan fund. The interest from this fund shall be awarded annually to the student who makes the greatest progress in debating.

SPECIAL COURSES

A few students are unable to enter in the fall or unable to attend school for the three years. In order to provide for such students, the course of

study for the first year has been so arranged that new students may take the regular work and complete a course of study, beginning January 5, 1932.

JUNIOR SHORT COURSE

The nineteenth annual Junior Short Course, from June 8 to June 11, 1931, is open to boys and girls from 12 to 20 years of age. With the exception of \$3 for board, there is no expense connected with the course. The course aims to deepen the interest of boys and girls in life on the farm. Special emphasis is placed on boys' and girls' club work. Instruction is given for the planning and carrying out of work in such projects and contests as gardening, corn and potato growing, pig, calf, and chicken raising, cooking, sewing, and canning. Illustrated lectures, moving pictures of educational value, games, singing, and excursions add interest and pleasure to the course.

NORTHWEST SCHOOL FARMERS' AND WOMEN'S WEEK

The exhibit of farm crops in connection with the course was the origin of the annual Red River Valley winter show held at Crookston during the second week of February, which now includes farm crops, livestock, poultry, and industrial exhibits. A five-day meeting at this time held under the auspices of the Northwest School serves the purpose of the original short course.

WOMEN'S CAMP

The sixth annual Women's Camp will be held at the Northwest School June 15-18, 1931, to provide instruction and recreation for homemakers. Instruction in the form of demonstrations will be offered in homemaking, community building, child training, music, and recreation.

EXPERIMENT STATION

The Northwest School and Station is now conducting extensive experiments in agronomy, soils, horticulture, animal husbandry, and agricultural engineering. Bulletins and circulars containing discussions of the results of experiments carried on are issued from time to time. These are mailed free upon application.

SCHOOL FARM

The farm comprises approximately 600 acres, and furnishes an extensive laboratory for the work of the school. Information concerning the methods employed on the farm is always available to the students. The classroom work is supplemented with actual practice either in the field or with crops grown on the farm.

STATION FLOCKS AND HERDS

The school now maintains an abundance of livestock, all of which is used for student work in the Animal Husbandry Department. Purebred Holstein, Guernsey, and Shorthorn cattle; grade and purebred Percheron horses; Shropshire sheep; Duroc Jersey hogs; White Leghorn and Rhode Island Red chickens are maintained for station and school purposes. These furnish excellent opportunities for students to study intelligently the various courses in animal husbandry.

COURSES OF STUDY

The numbers preceding the names of courses refer to description given on pages 17-30. Courses listed in the first column are required of all boys. Courses listed in the second column are electives. Students should select electives to make a total of not more than 27 credit hours per semester together with the required subjects.

BOYS' THREE-YEAR COURSE

FIRST YEAR

Fall Term

REQUIRED			ELECTIVES		
No.	Title	Credits	No.	Title	Credits
101a	English I	4	121	Industrial Geography ...	5
101a	Speech I	1	51	Poultry Principles	2
106a	Debate I	1	16	Carpentry	5
32	Dairy Breeds*	2	15	Blacksmithing	5
31	Types and Market Classes*	3	11a	Elementary Motors A ..	4
61	Botany*	5	13	Field Machinery	5
1	Cereal Crops*	5	14	Farm Shop	3
111	Arithmetic†	5	151a	Typewriting I	3
141a	Music I	1	153a	Shorthand I	5
171	Hygiene and Social Ethics	2	140	Private Music	2
172	Physical Education	1			

Winter Term

No.	Title	Credits	No.	Title	Credits
101b	English I	4	122	Industrial History	5
101b	Speech I	1	51	Poultry Principles	2
106b	Debate I	1	16	Carpentry	5
32	Dairy Breeds*	2	15	Blacksmithing	5
31	Types and Market Classes*	3	11b	Elementary Motors B ..	4
61	Botany*	5	13	Field Machinery	5
1	Cereal Crops*	5	14	Farm Shop	3
111	Arithmetic†	5	151b	Typewriting I	3
141b	Music I	1	153b	Shorthand I	5
171	Hygiene and Social Ethics	2	140	Private Music	2
172	Physical Education	1			

* Select only two of these four during each semester.

† Arithmetic will be required during the first semester of only students who have not already been awarded a state board certificate in this subject. However, all freshmen will be given an arithmetic test at the end of the first semester and those not receiving a passing grade will be required to register for this subject during the second semester.

COURSES OF STUDY

SECOND YEAR

Fall Term

REQUIRED			ELECTIVES		
No.	Title	Credits	No.	Title	Credits
102a	English II	4	123	Ancient History	5
102a	Speech II	1	11c	Tractor Construction	4
33	Livestock Feeding	5	18	Mechanical Drawing	5
2	Agricultural Chemistry	5	64	Beekeeping	3
62	Fruits and Vegetables	5	35	Farm Meats	3
107a	Debate II	1	142a	Music II	1
172	Physical Education	1	151a	Typewriting I	3
			153a	Shorthand I	5
			152a	Typewriting II	3
			154a	Shorthand II	5
			140	Private Music	2
			17	Advanced Carpentry	3

Winter Term

No.	Title	Credits	No.	Title	Credits
102b	English II	4	124	Modern History	5
102b	English II	1	12	Advanced Electricity	4
107b	Debate II	1	19	Farm Drawing	5
52	Poultry Husbandry	5	34	Dairy Production	5
3	Forage Crops	5	35	Farm Meats	3
4	Farm Accounts	2½	36	Judging Breed Types of Livestock	2
63	Farm Forestry	2½	156	Bookkeeping	5
172	Physical Education	1	142b	Music II	1
			128	Parliamentary Law	1
			151b	Typewriting I	3
			153b	Shorthand I	5
			152b	Typewriting II	3
			154b	Shorthand II	5
			140	Private Music	2
			17	Advanced Carpentry	3

NOTE.—Second year boys may choose from the list of electives offered for first year boys.

THIRD YEAR

Fall Term

REQUIRED			ELECTIVES		
No.	Title	Credits	No.	Title	Credits
103a	English III	4	126	Civics	5
103a	Speech III	1	53	Poultry Management	3
5	Soil Management	5	38	Advanced Stock Judging	2
37	Animal Breeding	3	114a	Algebra	5
127	Rural Sociology	3	125a	American History	5
129a	Farm Marketing	2	109a	Modern Drama	2
172	Physical Education	1	108a	Debate III	1
			143a	Music III	1
			140	Private Music	2

Winter Term

REQUIRED			ELECTIVES		
No.	Title	Credits	No.	Title	Credits
103b	English III	4	20	Physics	5
103b	Speech III	1	53	Poultry Management ...	3
6	Farm Management	5	108b	Debate III	1
39	Livestock Management ..	5	109b	Modern Drama	2
129b	Marketing	2	114b	Algebra	5
172	Physical Education	1	125b	American History	5
			143b	Music III	1
			140	Private Music	2

NOTE.—Third year boys may choose from the list of electives offered for first and second year boys.

CREDIT REGULATIONS REGARDING BOYS' THREE-YEAR COURSE

In addition to the required work of the term, students must elect enough work to make a total of not more than 27 credit hours.

Students desiring to complete the business training work may elect such subjects in the second and third year in place of a required subject, upon conference with the Students' Work Committee.

Credit toward graduation will be allowed for work in debate, literary societies, school athletic teams, or other student activities, on a basis to be determined by the Students' Work Committee.

Two credits per term may be earned by approved work in instrumental or vocal music. A special fee will be charged for such courses.

A class will not be maintained for less than six students, except in shop work, where the minimum is eight students.

GIRLS' THREE-YEAR COURSE

FIRST YEAR

Fall Term

REQUIRED			ELECTIVES		
No.	Title	Credits	No.	Title	Credits
101a	English I	4	54	Poultry Culling and Housing	2
101a	Speech I	1	61	Botany	5
106a	Debate I	1	121	Industrial Geography ...	5
81a	Freshman Sewing	3	140	Private Music	2
84a	Related Art	3	151a	Typewriting I	3
71a	Freshman Clothing	3	153a	Shorthand I	5
76	Physiology, Hygiene and Social Ethics	3			
141a	Music I	1			
111	Arithmetic*	5			
181	Physical Education	1			

* Arithmetic will be required during the first semester of only students who have not already been awarded a state board certificate in this subject. However, all freshmen will be given an arithmetic test at the end of the first semester and those not receiving a passing grade will be required to register for this subject during the second semester.

Winter Term

No.	Title	Credits	No.	Title	Credits
101b	English I	4	54	Poultry Culling and Housing	2
101b	Speech I	1		Botany	5
106b	Debate I	1	61	Industrial History	5
81b	Freshman Sewing	3	122	Private Music	2
84b	Related Art	3	140	Typewriting I	3
71b	Freshman Cooking	3	151b	Shorthand I	5
77	Public Health and Sanitation	2	153b		
141b	Music I	1			
111	Arithmetic*	5			
181	Physical Education	1			

SECOND YEAR

Fall Term

REQUIRED			ELECTIVES		
No.	Title	Credits	No.	Title	Credits
102a	English II	4	55	Poultry Sanitation and Feeding	2
102a	Speech II	1		Fruits and Vegetables	5
107a	Debate II	1	62	Beekeeping	3
72a	Junior Cooking	3	64	Ancient History	5
82a	Junior Sewing	3	123	Agricultural Chemistry	5
74	Household Science	3	2	Mechanical Drawing	5
78	Home Hygiene and Care of the Sick	2	18	Private Music	2
142a	Music II	1	140	Typewriting I	3
182	Physical Education	1	151a	Shorthand I	5
			153a	Typewriting II	3
			152a	Shorthand II	5
			154a		

Winter Term

No.	Title	Credits	No.	Title	Credits
102b	English II	4	55	Poultry Sanitation and Feeding	2
102b	Speech II	1		Farm Forestry	2½
107b	Debate II	1	63	Modern History	5
72b	Junior Cooking	3	124	Parliamentary Law	1
82b	Junior Sewing	3	128	Private Music	2
79	Care and Training of Infants and Children	2	140	Typewriting I	3
142b	Music II	1	151b	Shorthand I	5
182	Physical Education	1	153b	Typewriting II	3
			152b	Shorthand II	5
			154b	Bookkeeping	5
			156		

NOTE.—Second year girls may choose from the list of electives offered for first year girls.

THIRD YEAR

Fall Term

REQUIRED			ELECTIVES		
No.	Title	Credits	No.	Title	Credits
103a	English III	4	56	Poultry Culture	2
103a	Speech III	1	108a	Debate III	1
75a	Home Management	2	109a	Modern Drama	2
73	Senior Cooking	1	114a	Algebra	5
127	Rural Sociology	3	125a	American History	5
143a	Music III	1	40	Utilization of Meats	2
*83	Physical Education	1	126	Civics	5
			140	Private Music	2

* See footnote, page 14.

Winter Term

REQUIRED			ELECTIVES		
No.	Title	Credits	No.	Title	Credits
103b	English III	4	56	Poultry Culture	2
103b	Speech III	1	65	Floriculture	2
75b	Home Management	3	108b	Debate III	1
83	Senior Sewing	3	109b	Modern Drama	2
143b	Music III	1	114b	Algebra	5
183	Physical Education	1	125b	American History	5
			40	Utilization of Meats	2
			20	Agricultural Physics	5
			140	Private Music	2

NOTE.—Third year girls may choose from the list of electives offered for first and second year girls.

ADVANCED AND COLLEGE PREPARATORY COURSES

The work offered in this course is arranged to fit young men and women to enter the College of Agriculture, Forestry, and Home Economics, and state teachers colleges. It will cover a period of six months, beginning and closing at the same time as the regular school classes. Students capable of carrying satisfactorily all the subjects required will be granted a certificate.

Graduates of the three-year course of the Northwest School of Agriculture who have completed two summers of supervised work on their home farms, one additional school year of six months, and one additional summer's work or the equivalent thereof, will be admitted to the University of Minnesota, to the state teachers colleges, and the high school teacher training departments.

Students from other schools who wish to prepare for college or university entrance may elect subjects from the school course which will meet the necessary requirement.

OUTLINE OF COURSES (FOURTH YEAR)

<i>Fall Term</i>			<i>Winter Term</i>		
No.	Title	Credits	No.	Title	Credits
114a	Algebra	5	114b	Algebra	5
115a	Plane Geometry	5	115b	Plane Geometry	5
104a	American Literature and Composition	4	104b	American Literature and Composition	4
104a	Speech IV	1	104b	Speech IV	1
105a	English Literature	5	105b	English Literature	5
125a	American History	5	125b	American History	5

NOTE.—Students registered in the fourth year may select electives offered in the first, second, and third years.

DESCRIPTION OF COURSES

Following each course is a statement, in parentheses, of credits, classes of students eligible, prerequisites, and recitation and laboratory hours, required. Thus (5 cred.; fr., jr., sr., adv.; prereq., Carpentry; 4 hrs. rec., 5 hrs. lab.) means that the course carries 5 credits, is open to freshmen, juniors, seniors, and students of advanced standing, has for a prerequisite Carpentry, and requires 4 hours of recitation and 5 hours of laboratory.

AGRICULTURE

1. Cereal Crops. Leading cereal crops, classes and varieties adapted to northwestern Minnesota, production and distribution, soil and climate adaptations, seed treatment, cultural practices, and control of diseases. Laboratory includes specimens of grain diseases and exercises in grain judging. (5 cred.; fr., jr., sr., adv.; 4 hrs. rec., 2 hrs. lab.) Mr. Clark.
2. Agricultural Chemistry. A study of elementary chemistry and its application to soil and fertilizers. Laboratory experiments in elementary chemistry and soil tests. (5 cred.; jr., sr., adv.; 5 hrs. rec.) Mr. Dunham.
3. Forage Crops. Grasses, legumes, roots, and tuber crops grown for livestock. Cultural directions. Laboratory work with dried and green specimens includes identification, characteristics, and habits of growth of the various crops. (5 cred.; jr., sr., adv.; 5 hrs. rec.) Mr. Dunham.
4. Farm Accounts. Practical farm records and their uses for the Red River Valley farmer. Calculations involved in farm accounting. Special emphasis upon the requirements of the income tax law. (2½ cred.; jr., sr., adv.; 5 hrs. rec., 6 weeks.) Mr. Clark.
5. Soil Management. Soil formation and classification. The principles of soil management are brought out in a study of soil moisture, pore space, organic matter, tillage, drainage, and crop rotations. Laboratory experiments with soils from students' home farms. (5 cred.; sr., adv.; 5 hrs. rec.) Mr. Dunham.
6. Farm Management. Systems of farming; selection of farm; the planning of rotations suitable to the students' home farms and to farms operated under different systems. Cost of producing crops; marketing products; business methods applied to the farm. (5 cred.; sr., adv.; 5 hrs. rec.) Mr. Dunham.

• AGRICULTURAL ENGINEERING

- 11a. Elementary Motors A. Principles of motors; engine construction; valve timing; ignition timing; cooling; and lubrication. Six weeks of the course are devoted to an elementary course in agricultural-engineering physics, and its practical application. (4 cred.; fr., jr., sr., adv.; 2 hrs. rec., 4 hrs. lab.) Mr. Anderson.

- 11b. Elementary Motors B. Elementary ignition; fuels and oil; carburetion; clutches; transmissions; drive methods; differentials; rear axles; and steering gears. Four weeks of this course are devoted to troubleshooting on motors in the laboratory. (4 cred.; fr., jr., sr., adv.; prereq., Elementary Motors A; 2 hrs. rec., 4 hrs. lab.) Mr. Anderson.
- 11c. Tractor Construction and Overhauling. Students are given thorough training in modern tractor design and construction, as well as practical work in valve grinding, bearing tightening, piston and piston ring fitting; ignition timing, valve clearance setting, carburetor adjustment and overhauling of transmission, and rear and front axles. (4 cred.; jr., sr., adv.; prereq., Elementary Motors B; 2 hrs. rec., 4 hrs. lab.) Mr. Anderson.
12. Advanced Electricity. Course deals with the construction, operation, and adjustment of the electrical parts of the automobile, starting and lighting, and ignition system. Practical work is given in overhauling, ignition systems, starting motors, and generators. (4 cred.; jr., sr., adv.; prereq., Tractor Construction and Overhauling; 2 hrs. rec., 4 hrs. lab.) Mr. Anderson.
13. Field Machinery. A course dealing with the construction, operation, and adjustments of farm implements, including plows, harrows, cultivators, mowers, binders, threshing machines, and combines. (5 cred.; fr., jr., sr., adv.; 3 hrs. rec., 4 hrs. lab.) Mr. Ocock.
14. Farm Shop. Rope work; soldering; pipe fitting, belt work; cement work; and babbitting. Recommendations are given on practical farm shops and equipment. (3 cred.; fr., jr., sr., adv.; 6 hrs. lab.) Mr. Ocock.
15. Blacksmithing. Instruction is given in the management of the forge; in bending, shaping, and welding iron and steel, and tempering steel tools, thus familiarizing the student with operations necessary for blacksmithing repair work on the farm. (5 cred.; fr., jr., sr., adv.; 10 hrs. lab.) Mr. Foker.
16. Carpentry. Care and use of tools taught by means of practical farm problems, methods of sharpening tools, practical application of the various carpentry tools. (5 cred.; fr., jr., sr., adv.; 10 hrs. lab.) Mr. Foker.
17. Advanced Carpentry. Continuation of carpentry with emphasis on building construction including foundation, framing, stair and rafter cutting and selection of material, and concrete work. (3 cred.; jr., sr., adv.; prereq., Carpentry; 6 hrs. lab.) Mr. Foker.
18. Mechanical Drawing. Practice in lettering and emphasis on working drawings for the shop. Designing of small farm structures. (5 cred.; jr., sr., adv.; 5 hrs. rec.) Mr. Foker.
19. Farm Drawing. Continuation of Mechanical Drawing. Specializing in the planning and arranging of various buildings on the farm. Attention is given to building materials, estimates of costs, and specifications. (5 cred.; jr., sr., adv.; prereq., Mechanical Drawing; 5 hrs. rec.) Mr. Foker.

20. Agricultural Physics. Nature of matter and force, heat, light, sound, and electricity in their applications of everyday use. (5 cred.; sr., adv.; 5 hrs. rec.) Mr. Clark.

DAIRY AND ANIMAL HUSBANDRY

31. Types and Market Classes of Livestock. The livestock industry; the market classes of cattle, sheep, swine, and horses and their relation to production; fundamentals of livestock judging. (3 cred.; fr., jr., sr., adv.; 1 hr. rec., 4 hrs. lab.) Mr. Christgau.
32. Dairy Breeds. Study of the dairy breed type; origin, adaptability, and characteristics of dairy breeds; practice in dairy stock judging. (2 cred.; fr., jr., sr., adv.; 1 hr. rec., 2 hrs. lab.) Mr. Christgau.
33. Livestock Feeding. The principles of plant growth as applied to the production of feeds. Physiological functions of the organs of digestion and circulation as applied to animal nutrition. Feeding standards, characteristics of various feeding stuffs, formation, and rations. Feeding livestock under farm conditions. Consideration of experimental work and present practice. Practical feeding problems. Efficiency and economy in the feeding of rations. (5 cred.; jr., sr., adv.; prereq., Types and Market Classes of Livestock; 4 hrs. rec., 2 hrs. lab.) Mr. Kiser.
34. Dairy Production. Selection, care, and management of the dairy herd; selection of the sire; calf raising; principles of dairy cattle feeding; production and care of milk; milk testing; dairy herd records. (5 cred.; jr., sr., adv.; 4 hrs. rec., 2 hrs. lab.) Mr. Kiser.
35. Farm Meats. Slaughtering of hogs, sheep, and beeves. Judging a carcass. Study of meat cuts and meats. (3 cred.; jr., sr., adv.; 6 hrs. lab.) Mr. Kiser.
36. Judging Breed Types of Livestock. The origin, present day characteristics, and adaptability of the breeds of cattle, sheep, swine, and horses; practice in judging purebred animals. (2 cred.; jr., sr., adv.; prereq., Types and Market Classes of Livestock; 4 hrs. lab.) Mr. Kiser.
37. Animal Breeding. Theory and practice of animal breeding. Special attention is given to variation, heredity, and selection. The effect of purebred animals in livestock improvement. Study of pedigrees, herd books, and methods of registration. (3 cred.; sr., adv.; prereq., Livestock Feeding; 3 hrs. rec.) Mr. Kiser.
38. Advanced Stock Judging. Primarily for those interested in becoming more proficient in the art of livestock judging. (2 cred.; sr., adv.; prereq., Judging Breed Types of Livestock; 4 hrs. lab.) Mr. Kiser.
39. Livestock Management. The business side of livestock production, buying and selling market and purebred livestock. Buildings and equipment, keeping herd records, health problems and sanitary measures necessary to success. (5 cred.; sr., adv.; prereq., Types and Market Classes of Livestock, Dairy Breeds, Livestock Feeding, and Animal Breeding; 5 hr. rec.) Mr. Kiser.

40. Utilization of Meats (for girls). Demonstrations of cuts of beef, pork, and mutton carcass; laboratory practice in preparing meat cuts for cooking; identification of meat cuts; curing and storing of meats for summer use. This course is especially recommended for girls. (2 cred.; sr., adv.; 4 hrs. lab.) Mr. Kiser.

POULTRY HUSBANDRY

51. Poultry Principles. Culling of the laying flock. Principles of selection of the laying hen. Housing the laying and breeding hen. Principles of housing poultry. Feeding the laying and breeding stock. Principles of poultry feeding. (2 cred.; fr., jr., sr., adv.; 3 hrs. rec.) Mr. Pilkey.
52. Poultry Husbandry. Culling the farm flock; poultry house construction; feeds and feeding; the respiratory and digestive system of the fowl; artificial illumination of the poultry house; diagnosis and treatment of common diseases; sanitation program for poultry; preparing poultry and eggs for market; breeds and breeding of poultry; incubation and brooding of chicks; summer care of the growing stock; the production of turkeys, ducks, and geese. (5 cred.; required of all junior boys; srs., adv.; 5 hrs. rec.) Mr. Pilkey.
53. Poultry Management. Anatomy and physiology of the domestic fowl; use of artificial illumination on laying and breeding stock; mechanics of artificial illumination; keeping and studying of flock records; combating parasites, pests, and vices of fowl; selection and mating of breeders; principles of breeding poultry; eggs, their care and hatching; brooding and rearing of chicks; preventing and treating of chick diseases; capons and caponizing; summer egg production; fitting, exhibiting, and judging of poultry; classes, breeds, and varieties of poultry. (3 cred.; prereq., Poultry Husbandry; 3 hrs. rec.) Mr. Pilkey.
54. Poultry Culling and Housing (girls only). Culling the laying flock; principles of selection of the laying hen; housing the laying and breeding hen; principles of housing poultry. (2 cred.; fr., jr., sr., adv.; 2 hrs. rec.) Mr. Pilkey.
55. Poultry Sanitation and Feeding (girls only). Feeding the laying stock; principles of poultry feeding; a few of the common diseases of the fowl; maintaining sanitary conditions; preparing eggs for market; incubation and brooding of chicks. (2 cred.; jr., sr., adv.; prereq., Poultry Culling and Housing; 2 hrs. rec.) Mr. Pilkey.
56. Poultry Culture (girls only). Hatching the eggs; brooding the chicks; common chick diseases, parasites, and vices; summer care of the growing stock; classes, breeds, and varieties of fowl; the production of turkeys, ducks, and geese. (2 cred.; sr., adv.; prereq., Poultry Sanitation and Feeding; 2 hrs. rec.) Mr. Pilkey.

HORTICULTURE AND BEEKEEPING

61. Botany. Taught with special reference to plants of interest to the northern Minnesota farmer. Seeds and plants of the common weeds are studied, classified, and identified. Special emphasis is placed upon various methods of weed eradication. (5 cred.; fr., jr., sr., adv.; 4 hrs. rec., 2 hrs. lab.) Mr. McCall.
62. Fruits and Vegetable Crops. 1. *Fruit Growing*.—Importance of farm, orchard, and small-fruit gardens is emphasized. Field work consists of a study of orchard soils, planting and cultural methods, propagation, pruning, spraying, harvesting, marketing, selection of varieties of native and hardy fruits. 2. *Vegetable Gardening*.—The value of the home vegetable garden, preparation of the ground, and selection of plants and seeds are given attention. Includes tillage, rotation, transplanting, preparation and care of hotbeds, and insects dangerous to the garden. 3. *Potato Culture*.—The importance of the potato as a crop for Minnesota is recognized in this laboratory course. Includes the study of potato soils, seed selection, growing the crop, harvesting, storing, marketing, diseases and their control. (5 cred.; jr., sr., adv.; 5 hrs. rec.) Mr. McCall.
63. Farm Forestry. Why, how, when, and where to plant windbreaks and wood lots is taught; also characteristics and adaptability of the more common trees; methods of propagation and the conservation of planted and natural forests. (2½ cred.; jr., sr., adv.; 5 hrs. rec., 6 weeks.) Mr. McCall.
64. Beekeeping. Value and importance of bees as a source of income for the farm, study of different races of bees, practical exercises in handling of bees. Local apiaries furnish abundance of material for practical demonstrations. (3 cred.; jr., sr., adv.; 3 hrs. rec.) Mr. McCall.
65. Floriculture (for girls). Study of flowers, with special reference to planting, growing, and propagation. Considerable time spent on grouping and planting of ornamental flowers and shrubs, and making landscape planting plans. Station greenhouses supply material for laboratory work. (2 cred.; sr., adv.; 2 hrs. rec.) Mr. McCall.

HOME ECONOMICS

- 71a-b. Freshman Foods and Cookery. A course in elementary cooking, taking up the classification of foods, a study of the principles involved in their cooking, and the body needs. Laboratory work consists of the cooking of fruits, vegetables, cereals, batters, doughs, pastries, etc. Serving of simple breakfasts and luncheons is done. Table manners are discussed in relation to the serving of meals. A study of dishes and silver and kitchen utensils and equipment is also included in this course. (3 cred.; fr., jr., sr., adv.; 4 hrs. lab., 1 hr. rec.) Miss Bede.
- 72a-b. Junior Cooking. A continuation of freshman cooking, and study of foods. Laboratory work consists of work in canning and preserv-

- ing, a study of meats and their cooking. Invalid cookery and some work in fancy cooking will be done. Planning, cooking, and serving meals for various occasions with special attention to balanced diets and caloric values will be especially emphasized. (3 cred.; jr., sr., adv.; prereq., Freshman Foods and Cookery; 4 hrs. lab., 1 hr. rec.) Miss Bede.
73. Senior Cooking. Class work will be in connection with theory work given in the home management class. Special work on budgeting of foods and discussion of household accounts will be problems in this course. Table service and serving of meals in home management work and daily menus and costs for a group of six or eight people is part of this course. (1 cred.; sr., adv.; prereq., Freshman Foods and Cookery and Junior Cooking; 2 hrs. lab.) Miss Bede.
74. Household Science. A study of types of houses, construction, location, lighting, heating, water supply and drainage, special laboratory work in construction and furnishing of a farm home. (3 cred.; jr., sr., adv.; 2 hrs. lab., 1 hr. rec.) Miss Bede.
- 75a. Home Management. Problems of nutrition; balanced menus worked out for men, women, and children of different ages; the special needs of the young child. Planning of the family dietary. Corrective foods for the sick and convalescent. (2 cred.; sr., adv.; prereq., Junior Cooking; 2 hrs. rec.) Miss Lippitt.
- 75b. Home Management. Purchasing, care, and preparation of food for the family; organization and administration of the home; distribution of the family income. Budgeting of time, energy, and money. Actual practice in home management with household problems in the care of a home, purchasing supplies, preparation and serving of meals, and the entertaining of guests. (3 cred.; sr., adv.; prereq., Home Management 75a; 2 hrs. rec., lab.) Miss Lippitt.
76. Physiology, Hygiene, and Social Ethics. A study of the uses of the systems of the human body. Relation of food, air, rest, and exercise to individual health. Conventions of home, school, and public life. (3 cred.; fr., jr., sr., adv.; 3 hrs. rec.) Miss Bede, Miss Sheldon, Miss Kingston.
77. Public Health and Sanitation. Spread and prevention of contagious diseases; protection of food, water, and milk; community health. (2 cred.; fr., jr., sr., adv.; 2 hrs. rec.) Miss Sheldon.
78. Home Hygiene and Care of the Sick. Sick room furnishings and etiquette; bedside care of the sick adult; feeding patients; first aid in emergencies. (2 cred.; jr., sr., adv.; 2 hrs. rec. and dem.) Miss Sheldon.
79. Care and Training of Infants and Children. Consideration of the infant as to heredity and environment. Physical and mental training of the baby and the pre-school child. (2 cred.; jr., sr., adv.; 2 hrs. rec. and dem.) Miss Sheldon.

CLOTHING

- 81a-b. Freshman Sewing. Construction processes involved in the making of simple garments; use and care of sewing machines; study of cotton and linen fibers and fabrics for clothing and household use. Use of commercial patterns; study of children's clothing. (3 cred.; fr., jr., sr., adv.; 4 hrs. lab., 1 hr. rec.) Miss Kingston.
- 82a. Junior Sewing. Construction problems involved in the making of a woolen garment and selection of appropriate accessories. Study of woolen fabrics, selection and care. Pattern alterations and fitting. (3 cred.; jr., sr., adv.; prereq., Freshman Sewing; 4 hrs. lab., 1 hr. rec.) Miss Kingston.
- 82b. Junior Sewing. Construction problems involved in the making of a woolen garment and selection of appropriate accessories. Study of silk, and rayon fibers and fabrics; selection, use, and care. (3 cred.; jr., sr., adv.; prereq., Freshman Sewing; 4 hrs. lab., 1 hr. rec.) Miss Kingston.
83. Senior Sewing. Planning and construction of an economical wardrobe for graduation on a limited budget; the amount to be uniform as decided upon by the instructor and students. Problems involved in making over garments, construction of a made-over garment. (3 cred.; sr., adv.; prereq., Junior Sewing; 4 hrs. lab., 1 hr. rec.) Miss Kingston.
- 84a. Related Art. Principles of design as applied to dress design. Selection and planning of appropriate, becoming costumes for all types and all occasions. Special emphasis on a school-girl's wardrobe. (3 cred.; fr., jr., sr., adv.; 2 hrs. lab., 2 hrs. rec.) Miss Kingston.
- 84b. Related Art. Principles of design as applied to home furnishings, such as curtains, floor and wall coverings, furniture, pictures, household linens, dishes, and accessories. Special emphasis on dormitory room and various rooms in own home. (3 cred.; fr., jr., sr., adv.; prereq., Related Art 84a; 2 hrs. lab., 2 hrs. rec.) Miss Kingston.

ENGLISH

- 101a-b. English I. Oral and written composition; with particular attention to sentence structure, punctuation, and spelling. Letter writing. Drills for the purpose of eliminating errors. The reading of simple classics to create a love for literature. Silent reading to train for quick and accurate reading and thus speed up the thought getting process and develop the habit of concentration; grammar; intensive drill on parts of speech and sentence analysis. (4 cred.; 4 hrs. rec.) Mrs. Genung.

Speech I.—Reading aloud, drilling upon articulation and enunciation. Breathing and voice drills; short talks on familiar subjects, public programs to enable the students to speak clearly and easily before an audience. (1 cred.; 1 hr. rec.) Mrs. Genung.

- 102a-b. English II. Practical Business English. Paragraphing and methods of paragraph development. Narration, description, and exposition

in oral and written composition. Study of good literature as a basis for composition work and means of increasing student's vocabulary. (4 cred.; 4 hrs. rec.) Miss Warne.

Speech II.—Extemporaneous talks, interpretation, and a little dramatic work. (1 cred.; 1 hr. rec.) Miss Warne.

- 103a-b. English III. Study of sentence structure and principles of composition. Organization of longer themes. Reading of a few of the best English classics. Shakespeare. (4 cred.; 4 hrs. rec.) Miss Weinberger.

Speech III.—Special study of extemporaneous speech. Frequent participation in public programs. (1 cred.; 1 hr. rec.) Miss Weinberger.

- 104a-b. American Literature and Composition. The history and development of American literature with selected readings from each period. A careful study of composition with college entrance requirements in mind. (4 cred.; 4 hrs. rec.) Miss Weinberger.

Speech IV.—Analysis of various forms of literature. Interpretation based on study of action and voice. Study of the drama with practice in production. (1 cred.; 1 hr. rec.) Miss Weinberger.

- 105a-b. English Literature. A survey of literature with selected readings from each period. Frequent critical essays on outside readings. (5 cred.; 5 hrs. rec.) Miss Weinberger.
- 106a-b. Debate I. Principles of argumentation, briefs, debating in class, in public programs and debating societies. (1 cred.; required of all freshmen; 1 hr. rec.) Mr. Connery.
- 107a-b. Debate II. A development and continuation of the first year's work. (1 cred.; required of all juniors; 1 hr. rec.) Mr. Connery.
- 108a-b. Debate III. An advanced course in argumentation. Open to third and fourth year students. (1 cred.; prereq., Debate II; 1 hr. rec.) Mr. Connery.
- 109a-b. Modern Drama. A study of modern drama, especially one-act plays. Practice in production. Drama in the community, programs, etc. (2 cred.; open to third and fourth year students who have attained an average of "B" in English work; 2 hrs. rec.) Miss Weinberger.

MATHEMATICS

- III. Arithmetic. Fundamentals of arithmetic; fractions; decimals; G.C.M.; L.C.M.; linear measure; square measure; cubic measure; measurement of wood and lumber; liquid measure, dry measure; plastering; carpeting; paper hanging, building construction; silos; grain bins, water tanks, etc.; construction of concrete roads; walks and fences; interest; loans; percentage; insurance; buying and selling; discounts and commissions; commercial and trade discount; problems of profit and loss.

NOTE.—During the first semester, arithmetic will be required only of those who have not already been awarded a state board certificate in this subject. However, all freshmen will be given an arithmetic

- test at the end of the first semester and those not receiving a passing grade will be required to register for this subject during the second semester. (5 cred.; 5 hrs. rec.) Mr. Pilkey.
- 114a-b. Algebra. The work in this covers Hawkes-Luby-Touton *New First Course in Algebra* or equivalent text, omitting ratio and proportion, graphical representation, and imaginaries. (5 cred.; 5 hrs. rec.) Mr. Mlinar.
- 115a-b. Geometry. The course in geometry covers Avery's *Plane Geometry* from Book I to Book V, taking up the study of rectilinear figures, the circle, proportion, and measurement of similar figures; areas of polygons, regular polygons, and the measurement of the circle. (5 cred.; 5 hrs. rec.) Mr. Mlinar.

SOCIAL SCIENCES

121. Industrial Geography. Study of climate, rainfall, location, and other geographical conditions affecting the primary industries. (5 cred.; fr., jr., sr., adv.; 5 hrs. rec.) Mr. Connery.
122. Industrial History. A study of the growth of industry, commerce, labor, population, and agriculture in the United States. (5 cred.; fr., jr., sr., adv.; 5 hrs. rec.) Mr. Connery.
123. Ancient History. The emergence of mankind from savagery. The contributions of ancient Greece and Rome to modern civilization. The work in this course covers also the Middle Ages. (5 cred.; jr., sr., adv.; 5 hrs. rec.) Mr. Mlinar.
124. Modern History. The development of present European nations is traced from the sixteenth century to the present time. (5 cred.; jr., sr., adv.; 5 hrs. rec.) Mr. Mlinar.
- 125a-b. American History. A study of the early discovery and colonization of the continent leading to the formation of the Union, the growth of the nation, and recent problems. (5 cred.; sr., adv.; 5 hrs. rec.) Mr. Mlinar.
126. Civics. Legislative, judicial, and executive departments and their functions. School districts, township, county, state, and national government. (5 cred.; sr., adv.; 5 hrs. rec.) Mr. Clark.
127. Rural Sociology. The problems of rural communities, of rural health and sanitation, and of rural social institutions will receive attention. (3 cred.; sr., adv.; 3 hrs. rec.) Mr. Christgau.
128. Parliamentary Law. The essentials of parliamentary practices as necessary in conducting public meeting effectively. (1 cred.; jr., sr., adv.; 1 hr. rec.) Mr. Connery.
- 129a-b. Farm Marketing. Fundamentals in connection with the problems confronting the farmer today in disposing of his products. (2 cred.; sr., adv.; 2 hrs. rec.) Mr. Dowell.

MUSIC

140. Private Lessons. Pupils of any grade of advancement in piano, vocal, or violin study are admitted to this course. Advanced students are given an opportunity to appear in many programs during the year.

- 140a. Piano. An elementary course is given for beginners, an advancement to the intermediate grade depends on the accomplishment of the student. Intermediate and advanced students study technical exercises for development and control of fingers, and for rhythm. Classical and popular solo compositions are studied in detail and by memory. One-half hour instruction per week. One hour required for daily practice. Special fee. (2 cred.; fr., jr., sr., adv.) Miss Polski.
- 140b. Voice. The vocal student is taught breath control, placement of tone, resonance, correct pronunciation and enunciation in singing. The development of the voice in even scale singing and in range, intervals, and correct phrasing. Songs and ballads by standard composers. One half-hour lesson per week. Special fee. (2 cred.; fr., jr., sr., adv.) Miss Peterson.
- 140c. Violin. Technique, methods and studies adapted to the individual student. Solo with piano accompaniment according to the advancement of the student. One-half hour lesson per week under instruction. One hour daily practice required. Special fee. (2 cred.; fr., jr., sr., adv.) Miss Warne.
- 141a-b. Music I. Elementary music. Class work in note reading, ear training, sight reading, group singing. (1 cred. per term; jr., sr., adv.; required of all freshmen; 1 hr. per week.) Miss Peterson.
- 142a-b. Music II. Intermediate. Class singing; study of history and musical appreciation. (1 cred. per term; jr., sr., adv.; 1 hr. per week; prereq., Music I.) Miss Peterson.
- 143a-b. Music III. Advanced. Note reading and sight singing. Study of opera and classic composers. An acquaintance with the great music of the world through solos and records. (1 cred. per term; sr., adv.; prereq., Music II; 1 hr. per week.) Miss Peterson.
- 144a-b. Glee Club for Boys and Girls. Admittance by try-out. ($\frac{1}{2}$ cred. per term; 1 hr. per week.) Miss Peterson, Miss Polski.
- 145a-b. Mixed Chorus. Four-part singing. Admittance by try-out. This chorus group provides music for special occasions. ($\frac{1}{2}$ cred. per term; 1 hr. per week.) Miss Peterson, Miss Polski.
- 146a-b. Orchestra. Ensemble playing for all orchestral instruments. All players of instruments are urged to join this organization. (1 cred. per term; 2 hrs. per week.) Miss Peterson, Miss Polski, Miss Warne.

BUSINESS TRAINING

- 151a-b. Typewriting I. Proper use of the machine; accuracy in touch typing through finger drills, and writing of required exercises. (3 cred.; fr., sr., adv.; 5 hrs. lab. per week.) Miss Hughbanks.
- 152a-b. Typewriting II. Includes business letters and tabulating and executing legal documents. Forty to fifty words a minute required. (3 cred.; jr., sr., adv.; 5 hrs. lab. per week.) Miss Hughbanks.
- 153a-b. Shorthand I. During the first year, the student completes the *Manual of Gregg Shorthand* as well as many easy business letters. (5 cred.; fr., jr., sr., adv.; 5 hrs. rec.) Miss Hughbanks.

- 154a-b. Shorthand II. Reviews the *Manual*, gives much new dictation material, including *Gregg Speed Studies* and work from the *Gregg Writer*. The student's speed should be raised to 100 words a minute. (5 cred.; jr., sr., adv.; 5 hrs. rec.) Miss Hughbanks.
156. Bookkeeping. The principles of double entry bookkeeping are taught by means of class drills and the working out of model sets of books. In this course the student is made familiar with checks, notes, drafts, and other business papers. (5 cred.; jr., sr., adv.; 5 hrs. rec.) Miss Hughbanks.

PHYSICAL TRAINING

The aim of this department is to maintain the health of the students, to give outdoor exercise and deep breathing to stimulate functional activity, to give co-ordination and control, and to form right habits of living.

MEN

171. Hygiene and Social Ethics. Proper care of the human body. Special attention to food, clothing, and cleanliness. Importance of fresh air and exercise. First aid to the injured. Personal habits and social usage. To live most—live the best. Conventions of the home, school, and public life. (2 cred.; required of all freshmen; 2 hrs. rec.) Mr. Christgau, Miss Sheldon, and local doctors.
172. Physical Education. Gymnasium and Swimming. Required of all men not excused because of physical disability. Aims to inspire pupils with desire to reach and maintain physical efficiency. Gymnasium classes meet twice a week. Work consists of calisthenics with dumb-bells, Indian clubs, etc. Games or running follow light apparatus work. Swimming classes are held twice weekly. Individual attention given to those unable to swim. (1 cred.; required of all boy students; 4 hrs. per week.) Mr. Christgau, Mr. Connery, Mr. Ocock.

WOMEN

181. Physical Education I. Instruction and exercises tending to promote good health habits and making for physical fitness. Group games. (1 cred.; required of all freshmen, also all junior girls not registered in Phys. Ed. II.) Miss Kingston.
182. Physical Education II. All students are required to pass a swimming test in a satisfactory manner before graduation, unless otherwise excused. (1 cred.) Miss Kingston.
183. Physical Education III. (Sports.) Active games including kitten-ball, volley-ball, basket-ball, swimming, and track. Class teams will be organized for each sport. The swimming will be for those who passed their test and will meet for 1 period per week. Each of the other sports to be seasonal. (1 cred.) Miss Kingston.

SUMMER HOME PROJECTS

AGRICULTURAL PROJECTS

200. Students will register for the study of some definite farm problem to be studied each summer and report at stated intervals during the summer the progress made. (See courses listed below.)
201. Dairy Herd Management. Student assumes care of dairy herd on his home farm for at least six months, making regular reports in regard to feeding and management, and keeping accurate accounts of milk production, butter tests, feed consumed, etc. (5 cred.) Mr. Kiser.
202. Pork Production. Care and feeding of one or more litters for six months, with complete records of feeding and care, cost of production, and returns. (3 to 5 cred.) Mr. Kiser.
203. Sheep Raising. Care of farm flock for one season, with complete records of feeding and management. (2 to 5 cred.) Mr. Christgau.
204. Baby Beef Production. Care and feeding of baby beef with records of cost of production. (3 to 5 cred.) Mr. Christgau.
205. Livestock Judging. The organization and training of a livestock judging team among the young people of your community. (2 to 3 cred.) Mr. Kiser.
206. Hogging-Off Corn. The growing of corn for hogging-off, with records of cost of production and results. (2 to 3 cred.) Mr. Kiser.
207. Potato Production. Production of one or more acres of potatoes for seed, including tuber unit selection, seed treatment, spraying with Bordeaux mixture and poisonous insecticides, and proper cultural practices. Records of cost of production and financial returns are required. (5 cred.) Mr. McCall.
208. Garden and Truck Crops. Planning, planting, and culture of home vegetable garden, or growing one-fourth acre or more of truck crop for market. Field notes and cost records are required. (3 to 5 cred.) Mr. McCall.
209. Planting Windbreak. Practical application of principles taught in forestry course, in planting windbreak of at least one hundred trees on home farm. (3 to 5 cred.) Mr. McCall.
210. Plant Identification and Weed Eradication. Identification and selection of farm plants and weeds, including common injurious weeds. Field notes on habits of growth and methods of eradication are required. (5 cred.) Mr. McCall.
211. Beekeeping. Care of two or more colonies of bees, including approved methods of management, and marketing of honey. (1 to 3 cred.) Mr. McCall.
212. Home Beautification. Planning the improvement of home grounds through planting shrubs and flowers. Includes plans and lists of shrubs and plants to be used, and some preliminary planting. (2 to 5 cred.) Mr. McCall.
213. Corn Production. Production of one acre or more of a standard variety of corn for seed, following up-to-date methods of seed selec-

- tion, curing, testing, and cultural operations as taught in the classroom. (3 to 5 cred.) Mr. Clark.
214. Pure Seed Production. Production of one acre or more of a pure standard variety of wheat, oats, barley, or flax with special attention to preserving purity of seed and to producing high quality seed grains. (3 to 5 cred.) Mr. Clark.
215. Alfalfa Production. Growing of one acre or more of alfalfa, with records of labor and other production costs, yields, and notes on observations. (1 to 3 cred.) Mr. Dunham.
216. Farm Accounts. Includes the keeping of a complete system of financial accounts on the home farm for one season. (5 cred.) Mr. Clark.
217. Poultry Production. Hatching, brooding, feeding, and management of chicks, ducks, or geese, including records of production costs. (3 cred.) Mr. Pilkey.
218. Poultry Culling. Culling the farm flock. Project may be extended to include demonstrations in other flocks in the community. (1 to 5 cred.)
219. Turkey Production. Hatching and rearing turkeys within an enclosure. (3 to 5 cred.) Mr. Pilkey.
220. Building Construction. Planning, locating, and constructing a garage, machine shed, poultry house, or other farm buildings on the home farm. (1 to 3 cred.) Mr. Foker.
221. Tractor Operation. A study of the management and operation of the tractor on the home farm, including cost of fuel and oil, repairs, etc., and complete records of work done. (5 cred.) Mr. Anderson.
222. Community Service. The organization and promotion of 4-H clubs or other community, social, or religious organizations. (5 cred.) Mr. Pflughoeft.

HOME ECONOMICS PROJECTS

251. Canning Fruit and Vegetables. The canning of not less than twelve quarts of vegetables and not less than twelve quarts of fruit, with records of methods used and costs. (2 cred.) Miss Bede.
252. Canning Meat. The canning of not less than twelve quarts of meat by the "oven method," with notes and cost record. (1 cred.) Miss Bede.
253. Preserving. The making of not less than six quarts of sweet or sour pickles, at least twelve glasses of jelly, and not less than six pints of preserves, jam, or conserve. (1 cred.) Miss Bede.
254. Baking. Includes the baking of nine batches of yeast bread and six batches of quick bread, and reports on baking, time, and cost of materials. (2 cred.) Miss Bede.
255. House Dress. Making a washable house dress for self or other member of the family. (1 cred.) Miss Kingston.
256. Made-Over Dress. Making over a dress for self or other member of the family. (1 cred.) Miss Kingston.
257. Wool or Silk Dress. Making a wool or silk dress for self or other member of the family. (1 cred.) Miss Kingston.
258. Table Linen. Hemming a half dozen table napkins and a lunch cloth by hand with damask or French hem. (1 cred.) Miss Kingston.

259. Embroidery. Embroidering a lunch cloth or a three-piece dresser set, or a buffet set on linen or Indian head. The design should be original and conventional. (1 cred.) Miss Kingston.
260. Hemstitching. Hemstitching, either single or double, a half dozen handkerchiefs or a thirty-six inch square lunch cloth and four napkins. (1 cred.) Miss Kingston.
261. Cooking and Serving. Cooking and serving six vegetables three times each. (1 cred.) Miss Bede.
262. Cake Making. Making eight cakes—four sponge cakes and four butter cakes. (1 cred.) Miss Bede.
263. Baking Cookies. Making twelve bakings of cookies, six of which are drop cookies and six rolled out. (1 cred.) Miss Bede.
264. Desserts. Making and serving six hot desserts and six cold desserts. (1 cred.) Miss Bede.
265. Pie Baking. Making twelve pies, six of which are two-crust pies, and six one-crust pies. (1 cred.) Miss Bede.
266. Meal Preparation. Planning meals for one week, to meet the needs of your home family and following all principles for well-balanced meals. (1 cred.) Miss Bede.
267. Room Furnishing. Renovating some room in the home, to make it more efficient and comfortable, carrying out the principles taught in the House Planning courses. (1 cred.) Miss Bede.

SUMMARY OF ATTENDANCE

1930-31

	Men	Women	Total
Regular School Course:			
Advanced	25	13	38
Seniors	54	29	83
Juniors	64	21	85
Freshmen	70	13	83
Special	8	19	27
Total	221	95	316
Women's Camp, 1930.....	...	134	134
Junior Short Course, 1930.....	196	180	376
Total	417	409	826

STUDENTS

1930-31

ADVANCED

Anderson, Ivan, Greenbush	Holmes, Donald, Strathcona
Barry, Garrett, Bejou	Knutson, Wilfred, Clearbrook
Bjerken, Marie, Goodridge	Koppang, Evinda, Climax
Bryngelson, Vernon, Callaway	Krogstad, Emma, Fertile
Cane, Thomas, Ponemah	Letnes, Daniel, Crookston
Carroll, Harold, Mentor	Letnes, Isabelle, Crookston
Caudle, Johanna, Crookston	Lindquist, Clifford, Wylie
Chelstrom, Ernest, Perley	McDonald, Eugene, Underwood
Degerness, Alvin, Gary	Newhouse, Lawrence, Crookston
Degerness, Helen, Gary	Omundson, Lawrence, Radium
Elton, Lawrence, Hawley	Parduhn, Viola, Cedar Bend
Ferry, Ruby, Hendrum	Pederson, Effie, Clitherall
Fisher, Roy, Lockhart	Peterson, Lawrence, Gary
Flom, Kenneth, Twin Valley	Poetschat, Bertha, Bird Island
Hamre, Norah, Gary	Soderberg, Melvin, Kennedy
Hanson, Arnold, Thief River Falls	Tangjer, Lester, Bagley
Harris, Ethel, Crookston	Torkelson, Emmet, Crookston
Haugen, Glenn, Gary	Vik, Carl, Halma
Hetland, McLean, Halstad	Wollin, Luella, Eldred

SENIORS

Anderson, Edna S., Grygla	Bloomquist, Glenn, Drayton, N. D.
Anderson, Ingvald, Fisher	Boman, Roy, Syre
Anderson, John, Hallock	Brandli, Ann, Warroad
Arveson, Carl, Donaldson	Bruun, Alpha, Climax
Avery, Kenneth, Hallock	Burk, Arthur, Brooks
Beatty, George, Euclid	Canedy, Hazel, LaPorte
Bedard, Rishton, Northcote	Dahlgren, Hazel, Kennedy
Berger, Rudolph, Greenbush	Dallum, Harry, Hawley
Berray, Kenneth, Lockhart	DeMaster, Antoinette, Beaulieu

Donley, Clinton, Fergus Falls
 Eggen, Gladys, Fertile
 Erickson, Selvin, Ross
 Erickson, Vernon, Badger
 Filipi, Angela, Angus
 Filipi, Jesse, Angus
 Gilmet, Roland, Red Lake Falls
 Glass, Dorothy, Mentor
 Grove, Arthur, Roosevelt
 Haugen, Harry, Plummer
 Hedstrand, Selma, East Grand Forks
 Hendrickson, Arthur, Fosston
 Hill, Arlene, Brooks
 Hoff, Allan, Dalton
 Hviding, Silas, Hendrum
 Jacobson, Alma, Kennedy
 Karlin, Verner, Hawley
 KenKnight, Emory, Clearbrook
 Kroulik, Clifford, Donaldson
 Lee, Russell, Lockhart
 Lee, Weldon, Lockhart
 Leitch, Beatrice, Underwood
 Lundin, Agnes, Stephen
 McCall, Donald, Crookston
 McNow, Kenneth, St. Paul
 Maattala, Leo, Oklee
 Malme, Mildred, Nielsville
 Moen, Martin, Dalton
 Morienson, Carter, Underwood
 Muller, Clarence, Crookston
 Napier, Helen, Wylie
 Neegard, Emma, Gonvick
 Nornes, Bjarne, Winger
 Nornes, Helmer, Lockhart
 Noyes, Hazel, Brooks
 Noyes, Marvel, Erskine
 Olson, Harold, Beltrami
 Parduhn, Eva, Cedar Bend
 Paulson, Arthur, Detroit Lakes
 Pearson, John, Middle River
 Peterson, Clarence, Hawley
 Peterson, Raymond, East Grand Forks
 Philipp, Estelle, Mavie
 Prenevost, Clarence, Red Lake Falls
 Radke, Millard, Crookston
 Radway, Richard, Roosevelt
 Ross, Lloyd, Alvarado
 Sandal, Albert, Syre
 Schroeder, Herbert, Fergus Falls
 Schulz, George, Fergus Falls
 Sevald, Agnes, Winger
 Slette, Tumina, Twin Valley
 Smolak, Vernon, Lancaster
 Sorenson, Paul, Hallock
 Stenborg, Nils, Clearbrook
 Stenborg, Ruth, Clearbrook
 Sundrud, Arthur, Fosston
 Swanson, Hulda, Kennedy
 Swanson, Ingolf, Alvarado
 Thoreson, Ann, Littlefork
 Valor, Marion, Climax
 Weckwerth, Alta, Hazel
 Wolden, Arnold, Saum
 Woods, Dora, Radville, Sask., Canada
 Yergens, Chester, McIntosh

JUNIORS

Abbott, Wallace, Mentor
 Adkins, Douglas, Grygla
 Ardell, William, Twin Valley
 Beauchene, Ernest, Huot
 Buck, Paula, Grygla
 Burk, Alice, Brooks
 Chapman, Lloyd, Crookston
 Coulter, Robert F., East Grand Forks
 Dalager, Esther, Pelican Rapids
 Dorseth, Walter, Twin Valley
 Elseth, Gordon, Newfolden
 Engevik, Severt, Gatzke
 Erickson, Elizabeth, Marine on St. Croix
 Ewing, Urban, Crookston
 Ferris, Garth, Orr, N. D.
 Gault, Margaret, Minneapolis
 Gilbertson, Thor, Ada
 Gorden, Arvin, Badger
 Greenley, Kermit, Viking
 Grendahl, Clifford, Gary
 Gronner, Alvin, Underwood
 Gustafson, Delbert, Lancaster
 Hagen, Mervin, Underwood
 Hanson, Gerhart, Goodridge
 Hanson, Herbert, Fisher
 Harris, Beulah, Crookston
 Harris, Lucy, Crookston
 Harstad, Lawrence, Crookston
 Heegard, Olive, Hendrum
 Henry, Pearl, Crookston
 Hillestad, Melvin, Hawley
 Hoidahl, Conrad, Winger
 Holte, Christian, Baudette
 Hoppe, Emil, Warren
 Hovelson, Orville, Gary
 Johnson, Albert, Newfolden
 Johnson, Dale, Beaulieu
 Johnson, Elmer O., Newfolden
 Johnson, Melvin, Erskine
 Johnson, Orpha, Hawley
 Johnson, Reynold, Kennedy
 Karlson, Warren, Warroad
 Kroneman, Herbert, Fergus Falls
 Larson, Theodosia, Twin Valley
 Lundin, Clarence, Stephen
 Lunsetter, Walter, Gatzke

McUraith, John, Northcote
 McKibbin, Frances, Lancaster
 McWaters, Vernon, Crookston
 Mandt, Peter, Oklee
 Mason, Sidney, Graceton
 Melin, C. Leonard, Wylie
 Moen, Norman, Gary
 Naplin, Rose, Wylie
 Nelson, Clarence, Twin Valley
 Nelson, Searle, Fergus Falls
 Omdahl, Walter, Warren
 Parduhn, Melba, Cedar Bend
 Pearson, Irene, Hallock
 Price, Gordon, Nevis
 Raymond, Howard E., Crookston
 Refling, Orin, Fertile
 Roadfeldt, George, Salol
 Sargent, Edward, Crookston
 Schultz, Harold, Gary
 Scott, Arnold, Lengby

Shetterly, Harry, Oklee
 Simonson, Herman, McIntosh
 Simonson, Lawrence, McIntosh
 Smeby, Sidney, Winger
 Smith, Agnes, Drayton, N. D.
 Solmonson, Violet, Thief River Falls
 Stenerson, Vernon, Dalton
 Stoffel, Lewis, Orr, N. D.
 Strand, Arnold, Twin Valley
 Strand, Erling, Twin Valley
 Tangen, Harry, Menahga
 Theiling, Norman, Grygla
 Toomey, Donald, Thief River Falls
 Torgerson, Esther, Fosston
 Torkelson, Eleanor, Crookston
 Urbaniak, Lucille, Argyle
 Volker, William, Crookston
 Wang, Belle, Winger
 Widseth, Edwin, McIntosh

FRESHMEN

Amundson, Roald, Erskine
 Anderson, Arnold, Greenbush
 Anderson, Ethelyn, Fosston
 Anderson, Glendon, Lancaster
 Brandli, Charles, Warroad
 Brandli, Edward, Warroad
 Bursheim, Robert, Winger
 Bystrom, Wendell, Warren
 Carriere, Arthur, Red Lake Falls
 Carriere, Mark, Red Lake Falls
 Cassavant, Lawrence, Red Lake Falls
 Cordes, Melvin, Henning
 Coulter, Robert L., East Grand Forks
 Edeen, Olga, Clearbrook
 Eggen, Agnes, Fertile
 Eja, Alton, Beltrami
 Ellinger, Glenn, Crookston
 Erickson, Orville, Hawley
 Fisher, Glenn, Lockhart
 Fisher, Ralph, Lockhart
 Ford, William, Red Lake Falls
 Gilbertson, Melvin, Lake Park
 Grabowenski, Raymond, Warren
 Grabowenski, Richard, Warren
 Hanson, Clarence, Strandquist
 Hanson, Dayton, Gary
 Hanson, Elmer, Fertile
 Harris, Donald, Crookston
 Hesby, Everett, Halstad
 Hetland, Arnold, Climax
 Hetland, Francis, Halstad
 Hoglund, Walter, Mentor
 Holmgren, Richard, Carp
 Holte, Alf, Clearbrook
 Ingebretson, Paul, Ulen
 Johnson, Alice, Kennedy

Johnson, Bertrum, Hawley
 Johnson, Vincent, Hallock
 Karlsen, Kenneth, Warroad
 Kvalness, Olaf, Baudette
 Kveen, Gustav, Roseau
 Larson, Oscar, Crookston
 Letnes, Harold, Hillsboro, N. D.
 Lindstrom, Rodney, Lake Park
 Loken, Anna, Elizabeth
 Lundin, Floyd, Trail
 McVeety, Erdman, East Grand Forks
 Martinson, Elmer, Gary
 Mjelde, Nelda, Beltrami
 Mutchler, Vernon, Aneta, N. D.
 Nelson, Arne, Twin Valley
 Newhouse, Earl, Crookston
 Nisbet, Jean, East Grand Forks
 Olson, Ella, Goodridge
 O'Neill, Alfred, Cresbard, S. D.
 Parduhn, Riley, Cedar Bend
 Peterson, Philip, Buston, N. D.
 Philipp, James, Mavie
 Pugh, Lloyd, Plummer
 Reese, Llewelyn, Park Rapids
 Renfrew, Ernest, Halstad
 Renna, Arthur, Fertile
 Rybak, Milly, Blackduck
 Rynning, James, Kennedy
 Sanden, Arthur, Beaulieu
 Sevald, Helen, Winger
 Severson, Harriet, Clearbrook
 Sitko, William, Ada
 Skrutvold, Amos, Pencer
 Stave, Russell, Bagley
 Stromstad, John, Beltrami
 Strooft, Bernard, Euclid

Swanson, Edwin C., Dent	Weckwerth, Clarence, Hazel
Tommerdahl, Erven, Thief River Falls	Wermager, Jerome, Crookston
Torgerson, Ingeborg, Strandquist	Westling, Oscar, Roseau
Torkelson, Ethel, Crookston	Wiese, Arnold, Humboldt
Vilven, Stephen, Crookston	Williamson, Kermit, Gary
Wavra, Lenhart, Euclid	

SPECIAL

Cayler, Myrtle, Beltrami	Jackson, Roald, Crookston
Clark, Margaret, Crookston	Johnston, William, Detroit Lakes
DeMers, Rose, Crookston	Kitzrow, Raymond, Red Lake Falls
Dowell, Hannah, Crookston	LaRiviere, Lucille, Crookston
Dowell, Margaret, Crookston	Lindberg, Mabel, Argyle
Dowell, Ruth, Crookston	McCall, Barbara, Crookston
Dunham, Jean, Crookston	McCall, Robert, Crookston
Dunham, Margaret, Crookston	Miller, Julia, Erie
Dunn, Howard, Northcote	Olson, Alfred, Erie
Erickson, Constance, Ross	Rybak, Mary, Blackduck
Foker, Helen, Crookston	Sorenson, Olga, Lockhart
Fosmark, Elizabeth, Crookston	Ward, Lawrence, St. Vincent
French, Virginia, Drayton, N. D.	Wilder, Harvey, Crookston
Hanson, Sanna, Trail	

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THE UNIVERSITY OF MINNESOTA
NORTHWEST SCHOOL OF AGRICULTURE

Please read the bulletin carefully, noting the paragraphs headed Admission, Time of Opening, Rooms in Dormitories, What to Bring, and Expenses. If you plan to enter the school, fill out the application blank below and mail it to the registrar, Northwest School of Agriculture, Crookston, Minnesota. Send with this application \$2 made payable to the Northwest School for a room reservation in one of the dormitories. This \$2 will be applied on your first month's expenses on entering school. In case your application is received after all space has been assigned, you will be so notified. In case you cannot enter school after making application, you should notify the registrar as soon as possible. If this is done prior to fifteen days before the opening of school, the money will be returned, otherwise it will not. Students are strongly urged to reserve rooms in advance.

One hundred fifty dollars will pay the entire expenses for six months.
.....

Mail the following application to the registrar, Northwest School of Agriculture, Crookston, Minnesota:

To the Registrar:
Northwest School of Agriculture,
Crookston, Minnesota.

I am enclosing \$2 for a room reservation in one of the dormitories.

I wish to room with the following person.....

.....(State preference if any).

Name

Home address: R.F.D. Post-office.....

The Bulletin of the University of Minnesota

*West Central School and Station
Morris, Minnesota*

*Announcement for the Year
1931-1932*



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SCHOOL CALENDAR

1931-32

1931			
September	28	Monday	First term opens; registration
September	29	Tuesday	Organization of classes
October	17	Saturday	Home Coming Day
November	7	Saturday	Parents' Day
November	11	Tuesday	Armistice Day
November	28	Thursday	Thanksgiving Day; a holiday
December	19	Saturday	First term closes; Christmas vacation begins
1932			
January	4	Monday	Christmas vacation ends; second term opens; registration
January	5	Tuesday	Organization of classes
February	12	Friday	Lincoln's Birthday (special exercises)
February	22	Monday	Washington's Birthday (special exercises)
March	18	Friday	Annual Music Pupils' Recital
March	20	Sunday	Baccalaureate Service
March	21	Monday	Annual Concert Recital
March	22	Tuesday	Senior Class Play
March	24	Thursday	Junior-Senior Alumni Banquet
March	25	Friday	Commencement Exercises
June	7	Tuesday	Short Course for Farm Women opens
June	10	Friday	Short Course for Farm Women closes
June	13	Monday	Boys' and Girls' Club Short Course opens
June	16	Thursday	Boys' and Girls' Club Short Course closes
June	17	Friday	Annual Student Homecoming
July	22	Friday	Station Visitors' Day

FACULTY

Lotus D. Coffman, Ph.D., LL.D., President of the University
Walter C. Coffey, M.S., LL.D., Dean of the Department of Agriculture

AT MORRIS

ADMINISTRATION

Paul E. Miller, M.Agr., Superintendent
Edwin J. Volden, Registrar
Mildred Nealy, B.S., Librarian
Gladys E. Hinson, B.S., Director of Dining Hall
Martha Spannaus, R.N., School Nurse
Ina Agre, Accountant
Hazel Amelsberg, Secretary

AGRICULTURAL ENGINEERING

Albert C. Heine, Physics, Farm Mechanics
Alex B. Rolfe, Forge and Welding
Lloyd W. Benner, Motor Mechanics
Julius Felt, Carpentry and Farm Structures

AGRONOMY

Roy O. Bridgford, B.S., Farm Crops and Soils
Theodore Fenske, B.S., Farm Crops and Soils
Allen W. Edson, B.S., Farm Management
Nels Olmeim, Assistant in Agronomy

HORTICULTURE

John A. Anderson, B.S.A., Botany and Horticulture

ANIMAL HUSBANDRY

Philip S. Jordan, B.S., Animal and Dairy Husbandry
Allen W. Edson, B.S., Poultry
Walter Hokanson, Herdsman

HOME ECONOMICS

Gladys E. Hinson, B.S., Foods and Cookery
Emily L. Taylor, B.S., Foods and Home Management
Martha Spannaus, R.N., Nursing
Tone E. Halvorson, B.S., Dressmaking and Millinery
Leona V. Kilborn, B.S., Clothing and Applied Art

ASSOCIATED SUBJECTS

Theodore S. Long, B.A., English, Public Speaking
Nanna Jelstrup, B.A., English, Mathematics
Catherine Gaines, B.A., English, Physical Training
Edwin J. Volden, Mathematics
Glenn I. Prickett, B.A., History
Martin J. Sorflaten, B.A., Music
Selma J. Johnson, B.A., Business Training
Lulu Miles, Penmanship

GENERAL INFORMATION

PURPOSE

The West Central School of Agriculture was organized in 1910 as a division of the Department of Agriculture of the University of Minnesota. It was established primarily for the training of young men for the profession of farming and of young women for the profession of home making. It is a secondary school accepting students directly from the eighth grade and offers great opportunities to that large group of young people who desire intensive vocational training and who are limited as to the time they can give to the completion of their education. The work is planned and subjects are taught with the purpose of making the students efficient in their chosen vocations. The courses are sufficiently extended to give a fairly complete technical knowledge of the professions of farming and home making, and a working basis for the economic and sociological aspects of farm life. The technical courses are amply supplemented by cultural subjects designed to give the students a broad and liberal viewpoint and the necessary preparation for useful citizenship.

LOCATION

The school is admirably situated to serve the west central part of the state. It adjoins the city of Morris and is situated on a natural rise of ground overlooking the Pomme de Terre Valley. The campus, with its twenty buildings, beautiful lawns, and pleasant drives, is one of the beauty spots in this section.

ADMISSION

The school will admit any young man or woman of good moral character and who has completed the eighth grade who desires a technical training in agriculture and home economics. In special cases those who have not completed eighth grade work will be admitted, and opportunity will be given to complete this work. Mature young men and women who have been out of school for one or more years and desire special training in agriculture and home economics will be admitted. In certain courses, high school credits will be accepted. Students should correspond with the registrar, West Central School of Agriculture, Morris, before coming to the school, and make the necessary preliminary arrangements for registration.

TIME OF OPENING

The fall term of the West Central School of Agriculture will open Monday, September 28, and close Saturday, December 19. The winter term will open Monday, January 4, and close Friday, March 25. The school work covers a period of six months, at a time when the student can best be spared from home.

THREE-YEAR COURSE

The regular courses cover a period of three sessions of six months each, beginning September 28 and closing March 25. The long course for young men is so arranged as to make it possible for the student to select a large portion of his work in any one of the three lines: agronomy, animal husbandry, or agricultural engineering. The long course for young women permits of special training in home management, dressmaking, music, home nursing, public speaking, business training, etc. Both young men and young women may elect courses and receive credit in music in connection with any of the regular courses. They may also choose academic subjects in the third and fourth years, preparatory to college or normal school entrance. The main emphasis of the institution is given to its long course, and all are urged to complete the three sessions.

ADVANCED COURSES

It has been found that many students desire an advanced year after completing the regular three-year course. To meet this demand a fourth year of six months of work is offered. During this advanced year, graduates of the long course may elect to specialize in one of the lines of work listed below. They may at the same time choose from the elective lists subjects that they could not obtain during their first three sessions. The major lines of work suggested for boys are dairying, livestock production, farm engineering, advanced farm management, and academic subjects. The major lines for girls are home training, nursing, music, and business training.

COLLEGE PREPARATORY

Graduates of the West Central School of Agriculture who have completed two summers of supervised work on their home farms, one additional school year of six months, and one additional summer's work or the equivalent thereof, will be admitted to the University of Minnesota, to the state teachers colleges, and the high school teacher training departments.

DEPARTMENT OF MUSIC

For students desiring special courses in music, credit courses in both vocal and instrumental music are offered. Prospective students should refer to the description of the music courses on pages 25-26.

HOME PROJECT WORK

The purpose of this work is to promote and extend the technical work given in the classrooms and laboratories during the regular school sessions. The approved methods of home economics and agricultural practice are applied to some branch of the home or farm enterprise which the project is intended to cover. Reports are required throughout the season and the work is at all times in charge of supervisors who make the necessary visits to each student.

A description of all projects is given on pages 27 to 29.

ROOMS IN DORMITORY

Old or new students planning to attend the School of Agriculture should write early to the registrar asking him to reserve a room in one of the dormitories. Students should reserve rooms in advance. This may be done by paying a deposit fee of \$2 which will apply on the first month's room rent. If the student is unable to enter school, the deposit may be reclaimed before September 15, after which time it is forfeited. Each dormitory room is furnished with two single beds, a dresser, table, chairs, curtains, and pillows. Preference as to roommates should be stated early and will be considered as far as possible.

WHAT TO BRING

Each student should bring with him two comforts and blankets, towels, comb, brushes, one tumbler and teaspoon, bedroom slippers, and at least two nightgowns or pajama suits. Boys will also bring sheets and pillow cases for their beds.

Each girl should bring with her in addition to her regular supply of clothing, kimono, apron, and bedroom slippers, laundry bag, gymnasium suit, and tennis shoes. The kimono and bedroom slippers may be of any style and material; the laundry bag should be of washable material large enough to hold the soiled clothes of one person; the gymnasium suit should consist of a pair of black sateen bloomers and a white middie blouse. The following patterns are recommended: Butterick 3436, McCall 2514, Standard 9225. Three and one-half yards of material 36 inches wide are required for the average size.

EXPENSES

Necessary expenses for the year do not exceed \$150, including board and room. This amount does not include travel and personal expenses.

Students are required to pay for breakage of apparatus used in school work and for all damage done to school property. The unused portion of this fee is returned at the close of school.

Small fees to cover the cost of material used are charged for certain of the laboratory courses. The amount of the fee in each case will be found in the description of the course. These fees are subject to change.

Music fees for private lessons are \$7 for each term. Piano rental is \$2.50 per term.

It should be remembered that fees are for the entire term, and after the first month the only expenses are for board and room.

Board is payable the first of each month in advance. A surcharge of ten per cent is added to all bills delinquent more than ten days. No deduction is made for board for any absence from the campus of less than two weeks. No room rent refunds will be made for any period of less than one month. If students are compelled to be absent for that length of time they are allowed half rates provided they make arrangements with the manager of the dining hall before leaving. All students not residents of Morris are required to live in the dormitories and to board in the school dining hall.

GENERAL INFORMATION

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No increases will be made unless living costs necessitate an increase in the cost of board.

On entering the school each student should bring sufficient money to pay for one month's board and room, and to pay his fees. This will amount to from \$35 to \$45.

TABLE OF CHARGES

The following expenses are charged to all students. Fees are payable at the time of registration, and board and room on the first of each month.

Registration fee	\$5.00
Breakage fee	5.00
Post-office box per term .....	.20
Gymnasium fee per term	1.00
Health fee per term, required of all students except those living at home.....	2.00
Book rental per term	1.50
Board per week	4.00
Room per week	1.25
Student activity fee per term	2.25

HEALTH SERVICE

The health fee collected from all students is used to maintain the Students' Health Service. A fully equipped hospital is maintained and a full time nurse is engaged during the school year. The health fee provides for physical examinations for all students and care by the school nurse in case of illness. It does not provide for extra nurses in case of serious sickness, where such are necessary, or extra costs caused by epidemics; nor does it provide for physician's calls. These must be paid for by the student receiving the service.

REGISTRATION

No student will be allowed to register for less than 23 credit hours of work except by special permission.

All fees must be paid or arranged for at the time of registration.

No student will be allowed to register after the second week of the term except by special permission.

CANCELLATION OF REGISTRATION

No student may drop a subject for which he is registered without special permission.

If a student is below grade in a subject at the time of cancellation, his record in that subject will be entered as a failure.

For each change in registration after the second week of school a charge of 25 cents will be made. All such changes must be on the proper form, which the student may obtain at the registrar's office. All changes in registration must be approved by the superintendent.

No laboratory fees will be returned unless the registration is cancelled in the registrar's office within 7 days after the opening of school.

ABSENCES

No student will be admitted to class after an absence without a pass from the preceptor or preceptress. In case of sickness, passes will be obtained from the nurse.

All work lost through absence from class must be made up.

CLASSIFICATION

In order to be classified as a junior, a student must have not less than 42 credit hours of work.

In order to be classified as a senior, a student must have not less than 94 credit hours of work.

MARKING SYSTEM

The passing mark is 75 on the scale of 100.

All grades are submitted to the registrar's office at the end of each month, in percentage.

A grade of I (incomplete) at the end of any month represents that the required work of that month has not been completed and that the mark has not been determined. This incomplete must be removed during the following month.

A grade of C (condition) at the end of a term represents that the required work of the course has not been completed and that the final mark has not been determined. The condition must be removed during the first months of the following term, otherwise it automatically becomes a failure.

Extension of time for the removal of conditions may be granted in special cases.

Students who have not been absent more than three times and who have obtained a grade of 90 or above in any subject will be excused from final examination in that subject. Three tardinesses constitute an absence.

ELIGIBILITY

The following rules will govern eligibility for all interscholastic athletic contests:

- A. The student must be enrolled in the school not less than two weeks before the contest.
- B. He shall be making grade in at least four subjects for which he is enrolled. These four subjects must total 20 credit hours.

REQUIREMENTS FOR GRADUATION

Completion of the prescribed course of study, including all required work and enough electives to make a total of 160 credit hours.

One summer of supervised home project work. Of the 160 credits necessary for graduation 5 must be home project work, and 10 will be allowed.

An honorable standing in department.

Payment of all accounts.

For students transferring from other schools one full year of residence

is required. Under no circumstances will any student be permitted to participate in the graduation exercises who has not completed in full all of the requirements for graduation.

HOME LIFE IN THE DORMITORIES

The dormitory life of the students while attending the School of Agriculture is subject to supervision. Everything possible is done to promote a healthful, moral atmosphere.

The preceptors and preceptresses have charge of students in their dormitories, and regulations enforced are for the good of all.

From 8:00 a.m. to 4:00 p.m. students are busy with their school work. From 4:00 to 6:00 p.m. is a recreation period during which students' time is at their own disposal. After 7:30 p.m. students are expected to be in their rooms and to be quiet so that all may study undisturbed. Students may leave the campus in the evening only upon permission of the preceptors and preceptresses. No firearms of any kind will be permitted in dormitories.

The use of profanity and tobacco in dormitory rooms is strictly forbidden. Infraction of dormitory rules may be sufficient cause for dismissal from school. Any student found using intoxicating liquor will be immediately expelled from school.

DISCIPLINE

It is the aim of the administration to be firm, reasonable, and sympathetic. A student who becomes antagonistic to the spirit of the school will be dismissed whenever the general welfare requires. The school does not wish to undertake the problem of disciplining students who are not in sympathy with its purposes.

BUILDINGS AND EQUIPMENT

The physical plant now includes 12 modern brick and stone buildings which compose the educational group and 10 frame buildings which make up the farm group. The school group includes two girls' dormitories with facilities for 125 girls; 3 boys' dormitories with accommodations for 225 boys; Agricultural Hall, with stock judging pavilion, meat cutting, dairy, soils, chemistry, horticulture, botany, and farm crops laboratories, and classrooms for all agricultural work; Engineering Building with woodshop, forgeshop, farm mechanics laboratory, drafting room, and three lecture rooms; Music Hall, with two studios and numerous practice rooms. The Business Training Department is also located in this building and includes typewriting, shorthand, business training, and penmanship rooms; Dining Hall, with two large dining rooms and modern kitchens; Students' Hospital and Health Service Building equipped with 27 beds, dispensary, and nurses' quarters; Home Economics Building with 2 food laboratories, 2 sewing laboratories, laundering laboratory, home management room, classrooms, and departmental offices; Administration Building with auditorium, large library, business, registrar's, and administration offices; Home

Management Practice House to accommodate a unit of 10 people; and the new Physical Education Building which includes the gymnasium, swimming pool, locker rooms, and team training quarters.

The equipment in all shops and laboratories is ample and sufficient for the most practical and efficient instruction.

The ten farm buildings give ample housing facilities for the herds, flocks, and farm equipment which are available for student use.

ASSEMBLY PERIOD

An assembly period is held each morning except Thursday throughout the school year. Students are required to attend these assembly exercises. It is the purpose of the school to secure prominent speakers to address the student body at these morning exercises. The assembly period is also used as a forum for public discussion of the many questions and announcements of importance to the student body. The various societies and organizations also use this period for the promotion of their work. The Thursday morning period is used for conferences between instructors and students.

HOLIDAYS

Lincoln's and Washington's birthdays will be appropriately observed, but classes will be held as usual. On Thanksgiving Day no classes will be held, but school will continue as usual on the Friday and Saturday following.

PROFESSIONAL CLUBS

An engineering club for boys especially interested in agricultural engineering and a 4-H club for all students interested in club work are open to all students. Interesting and instructive programs are given by these societies twice each month.

RELIGIOUS WELFARE

In maintaining the highest moral and religious atmosphere and in fostering the development of complete Christian manhood and womanhood—physical, intellectual, social, and spiritual—the student body and faculty have developed a close relationship with all of the down town churches in Morris. Students affiliate with the churches of their preference and make them their church homes while attending school. In addition to this affiliation, religious services are held each Sunday on the school campus. These exercises are under the joint direction of the Faculty-Student Religious Welfare Committee. The Young Women's Christian Association is represented on the campus by a strong and active organization.

MUSICAL ORGANIZATIONS

The school musical organizations include a large chorus, a boys' glee club, a girls' glee club, and a school orchestra. Students especially interested in music are urged to join these organizations and receive the training which they afford. The musical clubs appear at various school functions. A public concert recital is given at the close of the school year.

THE MOCCASIN

The *Moccasin* is the annual class book published by the senior class of the school. The book gives an outline of all school and class activities, is fully illustrated, and contains, in addition to brief articles of student interest, a record of development and growth of the institution.

WEST CENTRAL SCHOOL NEWS

The *West Central School News* is a quarterly published by the faculty of the school. It serves as a community publication, and is a medium by which former students and alumni are kept in touch with one another and with the school. It is also published to disseminate useful information and results of station work among its readers.

STUDENT LOAN FUNDS

Students attending the West Central School of Agriculture are afforded the opportunity of participating in the student loan funds available to students who attend the University of Minnesota. This money is loaned to worthy and deserving students at the West Central School in amounts not to exceed \$75 to any one person in one year, at the rate of 5 per cent per annum. Students interested in securing a student loan should correspond with the superintendent of the West Central School of Agriculture.

CALEB DORR CASH SCHOLARSHIPS

By a decision made in April, 1922, by the Board of Regents of the University of Minnesota, a part of the income from a bequest made by the late Caleb Dorr, of Minneapolis, was made available to the Schools of Agriculture. At the West Central School this fund is awarded to worthy students for excellence in scholarship and for achievement in leadership in boys' and girls' club work. The scholarships awarded are used in helping to defray the students' expense while in school.

INTERSCHOLASTIC ACTIVITIES

Each year the school is represented by two debating teams, declamation contestants, stock and grain judging teams, which meet in interscholastic contests with similar institutions.

In athletics the school is represented by both football and basket-ball teams. These teams schedule games with colleges and the agricultural schools of this and neighboring states.

LIBRARY

The library is well equipped to supply the needs of the students. A large number of books have been selected to meet the requirements of the various departments. These, with the government and station reports, are available for use by instructors and students.

The librarian is always ready to give assistance in directing students in the selection of books they may need in the pursuit of their work.

BOYS' AND GIRLS' CLUB WEEK

During the third week of June will be held the annual Boys' and Girls' Club Week. This course is open to all boys and girls from twelve to twenty years of age. A charge of \$2.50 covers all expenses, including board and room for the entire week. Boys are given special training in all of the boys' club projects. The girls are given work in home economics with special reference to the club projects. At the close of the week two free trips to the 1932 Minnesota State Fair will be awarded to students who have done the best work during the week. Games, music, entertainments, and a special junior short course party will make the entire week one of special interest to all who attend. Moving picture entertainments are given each evening. A special circular describing this short course will be ready for distribution in April, 1932.

SHORT COURSE FOR FARM WOMEN

An annual short course for farm women is held during the second week in June. The main object of this course is to provide a few days of rest and recreation for the women of the farms in west central Minnesota. Talks, lectures, and demonstrations along lines of interest to farm women will fill in part of the day. The large dormitory and dining hall will provide ample living accommodations, and part of each day will be given to rest and recreation. The fee for the entire course, including room and board, is \$4.

EXPERIMENT STATION

The West Central School and Station is now conducting extensive experiments in crops, soils, horticulture, and animal husbandry. Special reports and bulletins are published from time to time giving the results of experimental work.

SCHOOL FARM

The farm comprises approximately 400 acres and furnishes an extensive laboratory for the work of the school. Information concerning the methods employed on the farm is always available to the students. The classroom work is supplemented with actual practice either in the field or with laboratory practice using the crops grown on the farm.

STATION FLOCKS AND HERDS

The school now maintains excellent livestock herds and flocks, all of which are used for student work in the Animal Husbandry Department. Purebred Holstein and Shorthorn cattle; Percheron horses; Shropshire sheep; Duroc Jersey hogs; White Leghorn and White Plymouth Rock chickens are maintained for station and school purposes. These furnish excellent opportunities for students to study intelligently the various courses in animal husbandry.

COURSES OF STUDY

Figures following the names of courses indicate the number of credit hours.

One credit hour is equivalent to one class period per week devoted to recitation or two such periods devoted to laboratory work.

A class period is forty-five minutes and a laboratory period is ninety minutes.

For description of the following courses see pages 18-29.

See pages 27-29 for description of home project work.

COURSES FOR BOYS

FRESHMAN YEAR

Required—first term	{ English I, 5 Farm Arithmetic, 3 Corn Growing, 5 Milk Testing, 1 Carpentry I, 2 Farm Shop, 2
Required—second term	{ English II, 5 Farm Accounts, 3 Types and Breeds, 5 Carpentry II, 2 Stock Judging I, 1 Penmanship, 3
Eight credit hours must be chosen from this group during freshman year	{ Spelling and Penmanship, 3 Social Training, 1 Elementary Beekeeping, 2 Poultry Production, 5 Cereal Crops, 5 Automotive Engineering, 6 Fruit and Vegetable Crops, 3 Automotive Electricity, 4 Blacksmithing I, 2 Piano, 2 Violin, 2 Chorus, 1 Orchestra, 1

JUNIOR YEAR

Required—first term	{	English III, 5		
		Chemistry, 4		
		Feeds and Feeding, 5		
Required—second term	{	English IV, 5		
		Physics I, 5		
		Farm Management, 5		
Subjects must be selected from this group or from electives not taken in freshman year to make a total of 25 credit hours with the required subjects for each term	{	Fruit and Vegetable Crops, 3	} First term only	
		Corn and Grain Judging, 2		
		Mechanical Drawing, 2		
		Farm Mechanics I, 5		
		Stock Judging II, 1		
		Livestock Production, 3		
			Elementary Beekeeping, 2	
		{	Public Speaking I, 3	} May be taken either term
			Piano, 2	
			Violin, 2	
			Orchestra, 1	
			Glee Club, ½	
		{	Forage Crops, 2	} Second term only
			Farm Structures I, 2	
			Stock Judging III, 1	
	Dairy Production, 3			
	Gas Welding, 2			
	Incubation and Brooding, 3			
		Advanced Shop Practice, 1		

COURSES OF STUDY

15

SENIOR YEAR

Required—first term	{	English V, 5 United States History, 5	
Required—second term	{	English VI, 5 Government, 5 Soils, 5	
Subjects must be selected from this group or from electives not taken in freshman or junior year to make a total of 25 credit hours with the required subjects for each term	{	<div style="display: flex; justify-content: space-between;"> <div style="width: 80%;"> Farm Structures II, 2 Pure Seed Production, 2 Agricultural Physics II, 5 Animal Breeding, 3 Bookkeeping I, 5 Farm Mechanics II, 5 Commercial Law I, 5 </div> <div style="width: 15%; text-align: center;">} First term only</div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 80%;"> Stock Judging IV, 2 Public Speaking I, 3 Meats, 2 Piano, 2 Violin, 2 Orchestra, 1 Glee Club, ½ </div> <div style="width: 15%; text-align: center;">} May be taken either term</div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 80%;"> Rural Sociology, 3 Bookkeeping II, 5 Advanced Electricity, 3 Farm Marketing, 3 Animal Diseases, 3 Incubation and Brooding, 3 Commercial Law II, 5 Advanced Shop Practice, 1 Special Problems in Farm Crops, 3 Public Speaking II, 2 </div> <div style="width: 15%; text-align: center;">} Second term only</div> </div>	

Two credits shall be allowed for participation in the senior class play. Two credits shall be allowed for participation in an interscholastic debate. One credit shall be allowed for membership in an interscholastic athletic team and such members will be excused from gymnasium classes. Not more than five special credits, including credits for play, debate, and musical organizations, shall count toward graduation.

COURSES FOR GIRLS

FRESHMAN YEAR

Required—first term	{	English I, 5 Garment Making I, 3 Foods and Cookery I, 3 Drawing and Design I, 1 Gymnasium, 1 Home Nursing I, 3 Social Training, 1	
Required—second term	{	English II, 5 Garment Making II, 3 Foods and Cookery II, 3 Drawing and Design II, 1 Home Nursing II, 3 Gymnasium, 1	

Eleven to 14 credit hours must be chosen from this group each term	{	Spelling and Penmanship, 3 General Science, 5	} First term only
	{	Home Arithmetic, 5 Business Spelling and Penmanship, 5 Incubation and Brooding, 3 Poultry Production, 2 Floriculture, 3	} Second term only
	{	Chorus, 1 Music (instrumental or vocal), 2 Typewriting, 1	} Either term

JUNIOR YEAR

Required—first term	{	Dressmaking I, 3 Elementary Dietetics I, 3 English III, 5 Gymnasium, 1	
Required—second term	{	Dressmaking II, 3 Elementary Dietetics II, 3 Child Care and Training, 3 English IV, 5 Gymnasium, 1	
Four to 9 credit hours must be chosen from this group each term or from electives not taken in freshman year	{	Home Furnishing, 3 Laundering, 2 Elementary Chemistry, 5 Shorthand I, 5	} First term only
	{	Nursing III, 3 Shorthand II, 5 Home Economics Chemistry, 5 Applied Art II, 2 Public Speaking II, 2 Beekeeping, 2 Incubation and Brooding, 3	} Second term only
	{	Applied Art I, 2 Public Speaking I, 3 Chorus, 1 Music (instrumental or vocal), 2 Typewriting, 1	} Either term

SENIOR YEAR

Required—first term	{	Dressmaking III, 4 Home Management, 3 English V, 5 U. S. History, 5 Gymnasium, 1	
Required—second term	{	Dressmaking IV, 4 English VI, 5 Government, 5 Gymnasium, 1	

Required—first or second term	{	Home Management House, 6	
Seven to 12 credit hours in this group or from electives not taken in junior year	{	Nursing IV, 3 Algebra I, 5 Bookkeeping I, 5 Dictation I, 5 Commercial Law I, 5 General History I, 5	} First term only
	{	Algebra II, 5 Art Appreciation, 3 Public Speaking II, 2 Dictation II, 5 Commercial Law II, 5 Bookkeeping II, 5 Incubation and Brooding, 3 General History II, 5 Applied Art II, 2	} Second term only
	{	Applied Art I, 2 Public Speaking I, 3 Chorus, 1 Music (instrumental or vocal), 2 Typewriting, 1	} Either term

Through their choice of electives, girls may prepare themselves for one of several lines of work. At the time of registration, students will be advised how to select their work so that it will prepare them for the vocation in which they are interested. They may prepare for business positions, for normal training work, for college entrance, or for nurses' training. A carefully planned course in home economics is the foundation of all the courses for girls.

COURSES FOR BOYS AND GIRLS

ADVANCED YEAR AND COLLEGE PREPARATORY COURSES

Required—first term	{	Plane Geometry I, 5 Elementary Algebra I, 5 English VII, 5 General History I, 5
Required—second term	{	Plane Geometry II, 5 Elementary Algebra II, 5 English VIII, 5 General History II, 5 Botany, 5
Electives	{	Solid Geometry, 5 Advanced Algebra, 5 Rural Sociology, 3 Physics II, 5 Physics I, 5 Secretarial Studies I, 5 Secretarial Studies II, 5

DESCRIPTION OF COURSES

AGRONOMY AND FARM MANAGEMENT

- Corn Growing. A study of the corn plant; its botanical structure, relation to soil and climate; selection and testing; soil preparation; harvesting; disease, silage, varieties, and corn judging. Rec. 5 hrs.; 5 credits; fee, 50 cents.
- Cereal Crops. A study of the principal cereal crops. Seed selection; soil and cultural requirements; harvesting. Rec. 5 hrs.; 5 credits; fee, 50 cents.
- Corn and Grain Judging. Score card practice, commercial grading and judging work, with the object in view of making the student proficient in the selection and growing of purebred seed. Lab. 2, 2 hrs.; 2 credits; fee, 50 cents.
- Forage Crops. A study of the leguminous crops, clover, alfalfa, etc., pastures and meadows, and the annual forage crops. Cultural requirements of forage crops and their importance to the farm. Lab. 2, 2 hrs.; 2 credits.
- Pure Seed Production. Methods of breeding and growing purebred seed corn and grain on the farm. The course includes a study of certification and seed registration. Lab. 2, 2 hrs.; 2 credits; fee, 50 cents.
- Soils. This course is applied to the needs of western Minnesota. Soil formation; soil types, soil physics, soil chemistry, soil tillage, and the use of fertilizers are given chief attention. Rec. 3 hrs.; lab. 2, 2 hrs.; 5 credits; fee, \$1.
- Farm Management. A study of farm organization as related to types of farming, combinations of enterprises, crop rotation, soil management, field and farmstead arrangement, and the efficient use of labor and equipment. Rec. 5 hrs.; 5 credits.
- Farm Records and Accounts. A study of farm accounts. The student keeps a practical set of books on the year's work, from the taking of the inventory to closing the accounts at the end of the year. Rec. 5 hrs.; 3 credits.
- Special Problems in Farm Crops. A course for seniors and advanced students. Takes up problems of a practical nature in farm crops and farm management and covers them more fully than do the elementary courses. Prerequisites: Corn Growing, Cereal Crops, and Forage Crops, or their equivalent. 3 hrs.; 3 credits.

MARKETING

- Farm Marketing. A study of the present systems of distributing farm products. Special study is made of co-operative laws and co-operative marketing institutions. Rec. 3 hrs.; 3 credits.

ANIMAL AND DAIRY HUSBANDRY

- Types and Breeds. Study of the history, development, characteristics, and adaptability of the various breeds of horses, cattle, sheep, and swine. Rec. 5 hrs.; 5 credits.
- Milk Testing. Principles of milk testing. The students are given a practical working knowledge of herd testing and record work. Lab. 1, 2 hrs.; 1 credit; fee, 50 cents.
- Stock Judging I. Study and practice in the use of score cards, showing the relation of the body structure to economical production, covering all classes of livestock. Lab. 1, 2 hrs.; 1 credit.
- Stock Judging II. Comparative judging of beef cattle, swine, and sheep. Lab. 1, 2 hrs.; 1 credit.
- Stock Judging III. Comparative judging of dairy cattle and horses. Lab. 1, 2 hrs.; 1 credit.
- Stock Judging IV. This course is given over to market classes of beef cattle, hogs, and sheep, and is combined with the meats course, many of the animals going directly from the judging ring to the killing room. Lab. 1, 4 hrs.; 2 credits.
- Meats. Practice in killing, cutting, and curing of meats, with lectures and demonstrations. This course is combined with Stock Judging IV. Lab. 1, 4 hrs.; 2 credits.
- Feeds and Feeding. General composition of the animal body; composition and digestibility of feeds; feeding standards; methods of feeding. Rec. 5 hrs.; 5 credits.
- Animal Breeding. Theory and practice of animal breeding, including variation, heredity, selection, effect of purebred animals in improving types of stock and pedigrees. Rec. 3 hrs.; 3 credits.
- Animal Diseases. Causes, prevention, and cure of animal diseases, including emergency treatment. Rec. 3 hrs.; 3 credits.
- Livestock Production. Production of beef cattle, sheep, and swine, both purebred and market stock, including from a practical standpoint, feeding and management of the herd or flock, selection of breeding stock, and arrangement of buildings and yards. Rec. 3 hrs.; 3 credits.
- Dairy Production. An advanced course designed to fit a student for the successful management of a dairy herd. Rec. 3 hrs.; 3 credits.

POULTRY HUSBANDRY

- Poultry Production. Principles of general management, house construction, important commercial breeds and types, feeding and culling for egg production; common ailments and simple treatments. Rec. 4 hrs.; lab. 2 hrs.; 5 credits.
- Incubation and Brooding. A study of the best methods of incubation and brooding, natural and artificial, includes selection of breeds, eggs for incubation, feeding and care of chicks, how to avoid losses. Rec. 3 hrs.; 3 credits.

Poultry Production (Girls). A brief course for girls desiring some poultry instruction. Work includes principles of management, feeding, culling, etc. Rec. 2 hrs.; 2 credits.

BEE CULTURE

Elementary Beekeeping. Fundamentals of bee behavior throughout the cycle of the year. Fundamentals of beekeeping practice through the year. Modern equipment for beekeeping practice. Starting with bees, increase, moving, uniting, feeding. Rec. 2 hrs.; 2 credits.

AGRICULTURAL ENGINEERING

- Carpentry I. Carpentry: care, use, and sharpening of tools; laying-off work; making of joints and framing, and work designed to be especially helpful in planning, framing, and construction of farm buildings. Lab. 2, 2 hrs.; 2 credits; fee, \$1.50.
- Carpentry II. Continuation of Course I. Lab. 2, 2 hrs.; 2 credits; fee, \$1.75.
- Blacksmithing I. Blacksmithing; forging and welding of iron and steel, making and tempering of hand tools. Work designed to be especially helpful in the repair and operation of machinery. Lab. 2, 2 hrs.; 2 credits; fee, \$2.
- Farm Shop. A course designed to be of help in repairing general farm machinery and equipment. Work is offered in soldering, rope splicing, knots, belt lacing, use of taps and dies, tool sharpening and adjustment, harness repair work, etc. Lab. 2, 2 hrs.; 2 credits; fee, \$2.
- Farm Structures I. Design, location, and erection of farm buildings. A study is made of roofs, pitches, trusses, etc. Exercises in building framing, window and door frame construction. Part of the time is devoted to mechanical drawing and plan reading. Lab. 2, 2 hrs.; 2 credits; fee, \$1.
- Farm Structures II. A continuation of Farm Structures I. The student draws plans and makes up the material list for a farm building. Lab. 2, 2 hrs.; 2 credits; fee, \$1.
- Automotive Engineering. A study of internal combustion engines with emphasis placed on tractor, truck, and automobile engines. A careful study of carburetion, ignition, lubrication, and cooling systems. Practice is given in the repair and adjustment of all automotive equipment. Rec. 2 hrs.; lab. 8 hrs.; 6 credits; fee, \$1.50.
- Automotive Electricity. An elementary course in electricity, with its application to starting, lighting, and ignition systems for automotive engines. Part of the time is devoted to a study of farm lighting equipment. Rec. 3 hrs.; lab. 2 hrs.; 4 credits; fee, 50 cents.
- Advanced Electricity. Prerequisites: Automotive Electricity, Physics I and II. The course is designed for students who care to go a little deeper into the study of electricity than is permissible under Automotive Electricity. Rec. 2 hrs.; lab. 2 hrs.; 3 credits; fee, 50 cents.

- Mechanical Drawing. Principles of drafting, lines, lettering, views of objects, making of working drawings, interpretation of drawings. Lab. 4 hrs.; 2 credits; fee, 25 cents.
- Oxyacetylene Welding. A study of the properties of the various metals, treatment of metals, preheating, annealing, practice with torch on actual problems. Rec. 1 hr.; lab. 2 hrs.; 2 credits; fee, \$2.
- Farm Mechanics I. Use of farm level—simple exercises in running levels and laying out tile lines. A systematic study is made of all types of farm machinery, their adjustment and care. Rec. 3 hrs.; lab. 2, 2 hrs.; 5 credits; fee, \$1.
- Farm Mechanics II. A study is made of properties of sand and gravel with practice in mixing and placing concrete. Farm lighting, heating, plumbing, ventilating, and sewerage disposal systems. Rec. 3 hrs.; lab. 2, 2 hrs.; 5 credits; fee, 50 cents.
- Advanced Shop Practice. Laying out exercises, micrometer reading, working to scale, setting up lathe, adjusting chucks, lathe practice, including thread cutting, bench work supplementary to lathe work, use of reamers, etc. Lab. 2 hrs.; 1 credit.

HORTICULTURE AND BOTANY

- Agricultural Botany. A study of flowering plants, molds, mushrooms, rots or decays, and yeast. Rec. 3 hrs.; lab. 2, 2 hrs.; 5 credits; fee, 50 cents.
- Fruit and Vegetable Crops. Planning, planting, culture, value, and management of the orchard and garden on the general farm. Rec. 5 hrs.; 5 credits.
- Floriculture. A general course including the growing of fruits, flowers, and ornamental plantings. The work is taught with special emphasis upon application of the principles to the student's home conditions. Rec. 3 hrs.; 3 credits.

ENGLISH

- English I. Reading, spelling, and a brief review of the principles of grammar. Considerable time is devoted to oral reports. Short written theme required. Rec. 5 hrs.; 5 credits.
- English II. Continuation of English I. Letter writing in connection with simple sentence and paragraph structure. Several selections are memorized. Rec. 5 hrs.; 5 credits.
- English III. Letter writing and spelling continued. Standard books and selections of interest are read. The outline is used exclusively in oral and written work. Rec. 5 hrs.; 5 credits.
- English IV. A continuation of English III. Rec. 5 hrs.; 5 credits.
- English V. Advanced work in written composition of a narrative type. An appreciation of good literature is cultivated by extensive reading. Rec. 5 hrs.; 5 credits.
- English VI. Reading and advanced composition of descriptive and argumentative types continued. Rec. 5 hrs.; 5 credits.

- English VII. English literature. History of English literature with readings from masterpieces. Rec. 5 hrs.; 5 credits.
- English VIII. English literature. Continuation of English VII. Rec. 5 hrs.; 5 credits.
- Public Speaking I. Drill in voice exercise, platform deportment, and memorized selections for expression; extemporaneous speaking. Rec. 3 hrs.; 3 credits.
- Public Speaking II. Continuation of preceding course. Rec. 2 hrs.; 2 credits.

MATHEMATICS

- Farm Arithmetic. Training in simple mathematical processes, applications of principles to problems requiring measurements of material, extension, capacity. Practical applications to farm work. Assists in the mathematics of the technical school course. Rec. 5 hrs.; 3 credits.
- Home Arithmetic I. For girls. Similar to Farm Arithmetic for boys except that application is made to home instead of farm work. Rec. 5 hrs.; 5 credits.
- Algebra I. Designed to cover the usual first year academic credit work in elementary algebra. Rec. 5 hrs.; 5 credits.
- Algebra II. Continuation of Course I. Rec. 5 hrs.; 5 credits.
- Algebra III. Continuation of Course II. Rec. 5 hrs.; 5 credits.
- Plane Geometry I. Planned to cover usual academic course in plane geometry. Rec. 5 hrs.; 5 credits.
- Plane Geometry II. Completion of Plane Geometry I. Rec. 5 hrs.; 5 credits.
- Solid Geometry. Planned to cover the usual course in this subject. Rec. 5 hrs.; 5 credits.

PHYSICAL TRAINING

- Gymnasium (Girls). All students will be required to take gymnasium work during their entire residence at the school. Girls will be organized into classes for exercise, calisthenics, swimming, and games. 1 credit.
- Gymnasium (Boys). Gymnasium is offered to all boys who live in school dormitories. The gymnasium and swimming pool with their facilities are kept open every afternoon and evening for the use of students. A \$1 fee is charged all students for maintaining the gymnasium.

SOCIAL SCIENCE

- General History I. A study of world history during the ancient and medieval periods to the French Revolution, and designed to show the social and political development of men and nations during these periods. Rec. 5 hrs.; 5 credits.
- General History II. A continuation of Course I from the French Revolution to the present time, with special emphasis on the growth and development of nationalism and democratic and liberal reforms during this period. Rec. 5 hrs.; 5 credits.

- United States History. A course intended to present a clear account of the colonial backgrounds of the United States with greater emphasis on the recent industrial, economic, and social development of our nation. Rec. 5 hrs.; 5 credits.
- United States Government. A limited study of the departmental organization and function of the national, state, and local government. Rec. 5 hrs.; 5 credits.
- Rural Sociology. A limited study of the backgrounds of sociology. Rural social institutions, and existing rural problems. Rec. 3 hrs.; 3 credits.

PHYSICS

- Agricultural Physics. A simple and practical course in physics. The work includes the mechanics of solids, fluids, heat, and sound with a few assignments from the subjects of light and electricity. Rec. 5 hrs.; 5 credits.
- Physics II. A continuation of Physics I. Rec. 5 hrs.; 5 credits.

CHEMISTRY

- Elementary Chemistry (Boys). A general introductory course in chemistry treating of the fundamental principles necessary for an understanding of chemistry in its relation to agriculture. Rec. 2 hrs.; lab. 2, 2 hrs.; 4 credits; fee, \$1.
- Elementary Chemistry (Girls). A general introductory course in chemistry treating of the fundamental principles necessary for an understanding of chemistry in its relation to home economics. Rec. and lab. 3, 2 hrs.; 5 credits; fee, \$1.
- Home Economics Chemistry. Application of general principles of chemistry to activities of the home, including study of food chemistry and digestion of food; chemistry of textiles; dyeing; soaps and other cleansing agents. Rec. and lab. 3, 2 hrs.; 5 credits; fee, \$1.

HOME ECONOMICS

FOODS AND HOME MANAGEMENT

- Foods and Cookery I. The purpose of this course is to give experience in meal preparation, to develop scientific principles of cookery, general proportions, practical skill, and standards for finished products. Lab. 2, 3 hrs.; 3 credits; fee, \$1.50.
- Foods and Cookery II. A continuation of Course I, including the study of batters and doughs, quick breads, cakes, cookies, pies, bread, and salads. Lab. 2, 3 hrs.; 3 credits; fee, \$1.50.
- Elementary Dietetics I. A study of the needs of the body, planning of dietaries, menus, serving, meal planning, and the actual serving of meals to small groups. Lab. 2, 3 hrs.; 3 credits; fee, \$2.
- Elementary Dietetics II. A continuation of Course I, and also including a detailed study of meats. Lab. 2, 3 hrs.; 3 credits; fee, \$2.

- Home Management. Study of the problems of management in the home including discussion of family and community relationships. Rec. 3 hrs.; 3 credits.
- Home Management House. Senior students will spend six weeks in residence in the practice house. Experience is given in actual management of a home including care of child. 6 credits.
- Child Care and Training. The purpose of this course is to give an understanding of the place of the child in the home through the study of the physical care and mental training of the infant and pre-school child. Rec. 3 hrs.; 3 credits.
- Laundering. Includes care of laundry room and utensils, study of water, soap, starch, removal of stains, washing of woolen and silk garments, ironing; also the principles of dry cleaning. Rec. 1 hr.; lab. 1, 2 hrs.; 2 credits; fee, 25 cents.
- Social Training (Girls). Subject-matter includes proper speech, table etiquette, dress, relationship of boys and girls, conversation, and social correspondence. Rec. 1 hr.; 1 credit.
- Social Training (Boys). Subject-matter includes introductions, social poise, relationship of boys and girls, duties of host, table etiquette, and dress. Rec. 1 hr.; 1 credit.

CLOTHING AND RELATED ART

All materials for the clothing courses must be selected in consultation with the instructor. Students are requested not to bring material from home unless arrangements have been made with the instructor.

- Garment Making I. Two aprons, a holder, and a bloomer set are made in this course. Problems in darning and patching are required. A study of cotton materials is made including wearing qualities and prices. Simple decorations, trimmings, and costs of finished garments are discussed. Lab. 2, 3 hrs.; 3 credits; fee, 25 cents.
- Garment Making II. A study of cotton and linen dress fabrics; making a wash dress, slip, and pajamas; simple problems in decorative needlework, and a discussion of the clothing budget. Lab. 2, 3 hrs.; 3 credits; fee, 25 cents.
- Drawing and Design I. Principles of design and color harmony with emphasis upon design as expressed in clothing, house furnishing, and articles in common use. Lab. 1, 3 hrs.; 1 credit; fee, 25 cents.
- Drawing and Design II. Application of principles to costume design. Lab. 1, 3 hrs.; 1 credit; fee, 25 cents.
- Elementary Dressmaking I. Includes the planning and making of a wool dress. Lab. 2, 3 hrs.; 3 credits; fee, 25 cents.
- Elementary Dressmaking II. A child's dress and an informal party dress are made. The use of sewing machine attachments is studied. Lab. 2, 3 hrs.; 3 credits; fee, 25 cents.
- Advanced Dressmaking I. A course in make-over. Each student in conference with instructor decides on problems. A brief study of millinery is also included. Lecture 1 hr.; lab. 2, 3 hrs.; 4 credits; fee, 50 cents.

- Advanced Dressmaking II. Includes the making over of garments selected by the student which include further construction problems. A graduation dress is also made. Rec. 1 hr.; lab. 2, 3 hrs.; 4 credits; fee, 25 cents.
- Home Furnishing. Location of farm buildings, types of farm dwellings, study of house plans, choice of site, exposure, plumbing, heating, interior finish, walls, floors, furniture, curtains, pictures. Rec. and lab. 3, 2 hrs.; 3 credits.
- Applied Art I. Application of the principles of design to the making and decorating of useful household furnishings. Lab. 2, 2 hrs.; 2 credits; fee, 50 cents.
- Applied Art II. Continuation of Course I with more advanced work. Lab. 2, 2 hrs.; 2 credits; fee, 50 cents.
- Art Appreciation. The aim of this course is to develop a sense of taste in the appreciation of art through the study of various forms of art, including paintings, ceramics, decorative objects, costume, etc. Rec. 3 hrs.; 3 credits.; fee, 25 cents.

HOME NURSING

- Home Nursing I. Structure and functions of the human body and personal hygiene. Rec. 3 hrs.; 3 credits.
- Home Nursing II. Communicable diseases and first aid. Rec. 3 hrs.; 3 credits.
- Home Nursing III. Hygiene in the home including care of the sick and preparation and serving of food for the sick. Rec. 3 hrs.; 3 credits.
- Home Nursing IV. Hygiene of maternity, prenatal care; infant nutrition and care. Rec. 3 hrs.; 3 credits.

MUSIC

All courses in music except group organizations include a group of twelve private lessons and daily supervised practice periods. Music Hall is equipped with several private practice rooms and all students registered for music courses are assigned the use of the practice rooms. The fees charged in connection with the various courses pay for the private lessons and the use of piano for practice purposes.

- Piano I. Exercises for hand position and rhythm; two-, three-, and five-finger exercises; major scales. Studies: Gurlitt, *Technic and Melody*; Tapper, *First Piano Book*, or *Graded Studies*, Grade I. Solos: Tapper, Sartorio, etc. 2 credits; fee, \$9.50.
- Piano II. Exercises for hand and arm control; thumb exercises, major scales; transpositions of five-finger exercises, two- and three-finger exercises. Studies: Streabbog's *Twelve Very Easy Studies*, Czerny's *Anthology* Vol. I. Solos: *Graded Pieces*, Grade II. 2 credits; fee, \$9.50.
- Piano III. Scale with different rhythms, one and two notes, 80 mm., broken chords. Studies: Concone's *Twenty-four Melodious Studies*; Tapper's *Graded Studies*, Grade III; Czerny's *Anthology*, Vol. II. Solos: Beethoven, Heller, etc. 2 credits; fee, \$9.50.

- Piano IV. Scales with different touches, one, two, three, and four notes, 80 mm.; Herz exercises, arpeggios; bloc chords with pressure and drop arm. Foote; first-year Bach; Czerny; wrist and forearm studies. Solos: Grade III; Mozart; Sonatinas. 2 credits; fee, \$9.50.
- Piano V. Lynne's *Key Circle Exercises*, Book I. Heller, *Opus 47*; first-year Bach. Solos: easy sonatas by Haydn and Mozart. *Graded Pieces*, Grades III and IV; Tapper, *Graded Pieces*, Grade III. 2 credits; fee, \$9.50.
- Piano VI. Studies: Schmitt finger exercises; major and minor scales, hands separate, legato and staccato in varied rhythms; octave studies. Solos: pieces by Schumann, Mendelssohn, Jenson, etc. Easier Beethoven works. 2 credits; fee, \$9.50.
- Vocal Course. Graded course in voice culture and art of singing by Frederic Haywood is the basis for this with selections from the following studies: Marzò, Sieber, Concone, Marchesi, Panofka, Spicker, with suitable solos in each grade. Fee, \$7.
- Violin Course. Methods and studies by Grun, Fischel, Sevcik, Dancla, Kayser, Kreutzer, Rode, Fiorillo, and solos adapted to each grade. Fee, \$7.
- Cornet Course. School and studies by Herbert Clark. Also Arban, Shoenbrück, international method with solos. Fee, \$7.
- Clarinet Course. Methods by Klose or Lazarua. Also solos. Fee, \$7.
- Other Band and Orchestral Instruments. Carefully arranged courses in each instrument. Cello, trombone, saxophone, snare drum, etc.
- Harmony and Counterpoint. Part of each lesson period devoted to playing and correcting exercises from suitable text, as Shepard, Chadwick, Foote and Spalding, Clark; or an intensive course in harmony and composition may be taken through private lessons.
- Chorus. A large assembly chorus will be organized at the first of the year, rehearsing daily. This chorus will furnish music for the morning exercises and special occasions, and will give concerts during the year.
- Music Analysis. For piano students. Pupils will analyze a large amount of standard music material, giving the student a clear insight into the structural features of great compositions.
- Musical Theory and Appreciation. Purpose is to study history, form, and beauty of musical composition. An acquaintance with the great music of the orchestra and its individual instruments through solos and records.
- Orchestra. Two orchestras, one for beginners and one for advanced students, are organized at the beginning of the school year. Credit is given for membership in these organizations.

BUSINESS

- Spelling and Penmanship I (General). Five hours drill per week in spelling and penmanship. This course is open to all students. Rec. 5 hrs.; 3 credits.

- Business Spelling and Penmanship (Business training students). A continuation of preceding course for students taking business training electives. Rec. 5 hrs.; 5 credits.
- Typewriting. Taught throughout the course. Provides individual instruction in the use of the machine. Memorization of the keyboard and graded lessons are used. Each lesson must be done correctly before the student is advanced. 1 to 3 credits; fee, \$2.50.
- Shorthand I. Gregg system supplemented with speed studies is used. Rec. 5 hrs.; 5 credits.
- Shorthand II. Continuation of Course I. Rec. 5 hrs.; 5 credits.
- Dictation I. When students are capable of taking ordinary dictation and transcribing their notes on the typewriter, they are given office work to do and thus gain experience while still at school. 5 hrs.; 5 credits.
- Dictation II. Continuation of Course I. 5 hrs.; 5 credits.
- Secretarial Training I. Course includes training in office routine, advanced dictation, business correspondence, billing, invoices, statements, filing and indexing, stencilling, office appliances, and business ethics. Rec. 5 hrs.; 5 credits.
- Secretarial Training II. A continuation course. Rec. 5 hrs.; 5 credits.
- Bookkeeping I. Preparation and interpretation of balance sheets; purpose of accounts and principles of account classification; profit and loss statements. Rec. 5 hrs.; 5 credits.
- Bookkeeping II. Source of ledger entries; cash receipts and disbursements; general journal; purchase and sales records. Practice set. Rec. 5 hrs.; 5 credits.
- Commercial Law I. A thoro study is made of contracts, sales, agency, and negotiable instruments. Rec. 5 hrs.; 5 credits.
- Commercial Law II. Continuation of Course I and further study includes guaranty, bailment, insurance, real property, fixtures, partnership, corporations, and bankruptcy. Rec. 5 hrs.; 5 credits.

SUMMER HOME PROJECTS

AGRICULTURAL PROJECTS

- Dairy Herd Management. Student assumes care of dairy herd on his home farm for at least six months, making regular reports in regard to feeding and management and keeping accurate accounts of milk production, butterfat tests, feed consumed, etc. 3 credits.
- Swine Management. Management and feeding of the home herd. Farrowing records, feed records, and cost of production figures are made a part of this project. Opening and closing inventories are required and a financial statement showing total costs and receipts. 3 credits.
- Lamb Production. Ten or more ewes are required for this project. Lambing records are kept, the lambs are earmarked and date of birth recorded. Feed records are kept and the lambs weighed up when averaging 150 days old. The student is required to show a pen of at least three lambs at his county fair. 3 credits.

Management of the Laying Flock. The student takes full charge of the laying flock of 50 hens or more for egg production. A balanced ration is fed and feed and production records are made a part of the project. 3 credits.

Incubation and Brooding. In this project 100 or more chicks are brooded, fed, and raised by the student. A definite ration is fed throughout the project and accurate records are kept. 3 credits.

Beekeeping. In this project the student takes charge of an apiary of not less than ten hives. Care and management of the bees and production records are included as a part of the project. 3 credits.

Corn Production. Growing not less than five acres of a standard variety of corn. The course includes the selection of seed, testing, preparation of ground, planting, cultivating, harvesting, and the keeping of accurate records of labor and other expense. 3 credits.

Potato Production. Growing one or more acres of potatoes for seed. The work includes seed selection and treatment, control of diseases, cultural practices, cost of production, and financial returns. 3 credits.

Fruit Growing. Management of the home orchard for one season. The work will consist of pruning, cultivation, spraying, harvesting, and preparing the orchard for winter. Cost records are kept. 3 credits.

Home Beautification. Planning and planting foundation shrubs and plants around the farm home and other buildings, caring for the same during the growing season and preparing for winter. The student makes a planting plan which is approved before the work is undertaken. 3 credits.

Farm Accounts. Required work consists of taking inventories as of April 1 and September 30, in the meantime keeping a classified record of receipts and disbursements, and from this record preparing operating statement, showing financial results of operation. 3 credits.

Tractor Operation. A study of the management and operation of the tractor on the home farm, including cost of fuel and oil, repairs, etc., and complete records of work done. 3 credits.

Farm Shop. Equip a farm shop, making an inventory of all tools, keeping a record of all repair work done about the farm during the season, showing cost of material and labor. 3 credits.

A fee of 50 cents is charged all students who register for home project work, to cover cost of record books and supplies.

HOME ECONOMICS PROJECTS

Canning Fruits and Vegetables. The student will can not less than 12 quarts of vegetables, including two or more kinds, and not less than 12 quarts of fruit, including two or more kinds, and not less than 6 glasses of jelly. Records of methods, time, and costs are made a part of this project. 2 credits.

Baking. Includes the baking of not less than seven bakings of yeast bread and rolls and not less than seven bakings of quick breads with a record of time, costs, and materials. 2 credits.

- Foods and Cookery. Includes the preparing of salads, salad dressings, cakes, pies, cookies, puddings, and other simple desserts. Each product is made and scored at least three times. 2 credits.
- Home Management. Includes the planning and preparation of all meals in the home for a period of two weeks. 2 credits.
- Garment Making. Making of a washable dress for self or other member of the family. A record is kept of time and cost. 2 credits.
- Clothing Repair. Not less than 15 articles of clothing and household linen are to be repaired. A record is kept of time and expenses, and money saved. 2 credits.
- Laundering. This project includes doing the family laundering for four weeks, dry cleaning, stain removal, etc. 2 credits.
- Children's Clothing. Consists of making of a layette for a baby, or two suits or dresses for a small child. 2 credits.
- Make-Over. In consultation with instructor the student will arrange to make over some garment before leaving school. After the work is completed it is to be approved by the instructor before credit is given. 2 credits.
- Home Furnishing. Includes the redecorating of a room including walls, woodwork, and furniture, making of curtains, etc. 2 credits.

UNIVERSITY OF MINNESOTA

WEST CENTRAL SCHOOL OF AGRICULTURE

Please read the bulletin carefully, noting the paragraphs headed Admission, Time of Opening, Rooms in Dormitories, What to Bring, and Expenses. If you plan to enter the school, fill out the application blank below and mail it to the registrar, West Central School of Agriculture, Morris, Minnesota. Send with this application \$2 made payable to the West Central School for a room reservation in one of the dormitories. This \$2 will be applied on your first month's expenses on entering school. In case your application is received after all space has been assigned, you will be so notified. In case you cannot enter school after making application, you should notify the registrar as soon as possible. If this is done prior to fifteen days before the opening of school, the money will be returned, otherwise it will not. Students are strongly urged to reserve rooms in advance.

One hundred fifty dollars will pay the entire expenses for six months.

.....

Mail the following application to the registrar, West Central School of Agriculture, Morris, Minnesota:

To the Registrar:
West Central School of Agriculture,
Morris, Minnesota.

I am enclosing \$2 for a room reservation in one of the dormitories.

I wish to room with the following person.....

.....(state preference if any). I expect

to enter school about.....

Name

Home address: R. F. D.....Post-office.....

THE LAW SCHOOL

ANNOUNCEMENTS FOR THE YEARS 1930-32

See bound bulletin for year 1930-31

Vol. XXXIII

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The Bulletin
of the University of
Minnesota

The Medical School
Announcement for the Years
1931-1933



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THE MEDICAL SCHOOL
ADMINISTRATIVE OFFICERS

Lotus D. Coffman, Ph.D., LL.D., President

Richard E. Scammon, Ph.D., Dean of Medical Sciences

Elias P. Lyon, Ph.D., M.D., LL.D., Dean of the Medical School

Katharine J. Densford, M.A., R.N., Director of School of Nursing

Paul Fesler, Superintendent of University Hospital

GENERAL INFORMATION

The Medical School is conducted on the four-quarter system. Beginning freshmen are received at the opening of the fall and winter quarters. Students with advanced standing may be received at the beginning of any quarter for work for which they are prepared, provided there is a vacancy.

REQUIREMENTS FOR ADMISSION

At least ninety quarter credits¹ of college work, including rhetoric, 9 credits; chemistry, 20 credits; physics, 12 credits; and zoology, 12 credits; a reading knowledge of German; subject to detailed requirements and rules governing limited registration. A candidate's record must show a total number of honor points at least equal to the total number of credits; also a number of honor points in rhetoric, chemistry, physics, and biology at least equal to the total number of credits in these subjects taken collectively.

1. *Rhetoric*.—Nine credits. At Minnesota this requirement is met by Rhetoric 4-5-6 (9 credits) or by English-Rhetoric A-B-C (15 credits).

2. *Chemistry*.—Twenty credits, including general chemistry, qualitative and quantitative analysis, and organic chemistry with laboratory work. At Minnesota, Inorg. Chem. 4-5 (or 1, 2, 3) and 11, Anal. Chem. 7 and Org. Chem. 1-2 are necessary. Students are advised to take chemistry in high school.

3. *Physics*.²—Twelve credits, covering mechanics, sound, heat, light, electricity, and magnetism. At Minnesota Courses 3, 13, 23, 33, and 43 (a total of 15 credits)³ meet the requirement. See bulletin of the College of Science, Literature, and the Arts for description of these courses and statement of prerequisites. Laboratory courses 4, 24, 34, and 44 are recommended.

4. *Zoology*.—Twelve credits, including proper laboratory work. At Minnesota, Zoology 5-6-7, meets this requirement; Zoology 1-2, 10 credits, will be accepted.

5. *German*.—Sufficient high school or college training to insure a reading knowledge of German medical literature. This requirement is fulfilled:

(a) By passing in Course 31-32, Department of German, in this University or by acceptable credits covering similar work done elsewhere; or

¹ By "credit" is meant quarter credits. Three quarter credits equal two semester credits.

² Students at the University of Minnesota of good ability as shown by their records and who have had high school physics may petition the Students' Work Committee of the Medical School to substitute other college work for part of the physics set forth in the above requirement. The petition must indicate the subject desired to be substituted for part of the physics and the reasons why such substitution for part of the physics seems advantageous to the student's educational plan.

³ A combined course in Heat and Acoustics, 3 credits, has been requested for pre-medical students. If arranged by the Department of Physics, such course may be substituted for 13 and 23 in meeting the Medical School requirements.

(b) By passing an examination in Scientific German conducted by the Department of German. The usual requirement for admission to this examination is two college years of German, or satisfactory equivalent.

6. *Military drill and Gymnasium*, if part of the requirement of the college in which pre-medical studies were made, must have been satisfactorily completed.

7. *Aptitude test*.—The taking of an aptitude test is required of all candidates for admission to the Medical School. The results of such tests are used in advising students and as a factor in their acceptance into the school.

QUALITY CREDITS

The total number of credits required for admission to the Medical School may be diminished, in the case of superior students, under the quality credit rule of the College of Science, Literature, and the Arts. The omitted work may not be from the required courses unless special permission is obtained from the Students' Work Committee of the Medical School.

Advised Subjects

Pre-medical students are advised to secure preparation in some or all of the following: Latin (high school or college), mathematics, psychology, sociology, drawing, comparative anatomy, additional work in biology and chemistry. A broader cultural background is advisable if the student can devote time and money to longer pre-professional study. See the combined B.A.-M.D. course in the bulletin of the College of Science, Literature, and the Arts.

MODIFIED ADMISSION REQUIREMENTS

The foregoing regulations governing the quality and amount of pre-medical training required for admission to the Medical School will be enforced in all cases upon those who present the minimum amount of work. In cases of mature and superior students, especially such as have taken degrees and have made special progress along some line (even tho it may not have been closely related to medicine), concessions may be made. Cases under this paragraph will be considered individually and upon petition to the Students' Work Committee of the Medical School.

It should be borne in mind that no student can pursue the medical course without knowledge of biology, chemistry, and physics.

REGISTRATION LIMITED

The incoming (third year or freshman) class in the fall quarter will be limited to one hundred. Application blanks may be obtained from the dean's office.

The last day for receiving applications to begin the freshman year in the fall quarter will be June 15. If college work was done elsewhere than at the University of Minnesota, detailed credentials, showing subjects, credits, and marks, must be presented by July 1.

Subject to recommendations as to character, ability, and personal qualities, candidates will be accepted in the order of their scholastic rating as indicated by the records of their previous work and aptitude tests. The entire one hundred candidates will be accepted as soon after July 1 as possible. Candidates will be notified of their acceptance or rejection by July 15.

Accepted applicants will receive a bill for a preliminary fee of \$10. This must be paid within ten days, in order to hold a place in the limited registration. The above fee will not be returnable should the student fail to enter.

In the winter quarter not to exceed 40 students may be accepted into the freshman year. These students are usually such as were nearly, but not quite, prepared for the fall class. They must take the courses in gross anatomy in summer. They are advised to take them the summer preceding their intended entrance to the Medical School. If not taken then, they must be taken the summer after admission.

Students desiring to enter the winter quarter freshman class should make applications early and consult the Students' Work Committee in regard to their programs of studies. In the fall quarter they should register in the Arts College and take as part of their program Physical Chemistry and Physiologic Chemistry for Medical School credit. If their work is satisfactory and pre-medical requirements complete, they may be admitted to the Medical School in the winter quarter; and their freshman legal year will consist of the winter, spring, and summer quarters. If successful in these quarters, these students become regular sophomores the next year.

Winter quarter freshmen who have not had Gross Anatomy must present Comparative Anatomy as a Medical School admission subject and prerequisite for Histology.

Other qualifications being equal, residents of Minnesota will be given preference in selecting students for the Medical School.

The fifth and sixth (junior and senior) years are limited to such numbers as can be provided with good training in the clinics connected with the school.

The junior work is taught in the fall, winter, and spring quarters. Senior work is taught all four quarters with three divisions of the class in continuous attendance as follows: Divisions A, B, and D in summer; Divisions A, B, C in fall, Divisions A, C, D in winter, Divisions B, C, D in spring. Division A graduates in March; the other divisions in June.

UNCLASSED STUDENTS

Superior students prepared for particular courses in departments of the Medical School may be admitted as unclassified students. Such students receive subject credit for courses satisfactorily completed but are not entitled to time credit toward the bachelor or doctor of medicine degree.

SPECIAL STUDENTS

The term "special student" is applied to a medical graduate who desires to register for a time in the Medical School but who does not wish to work toward an advanced degree.

IRREGULAR STUDENTS

The term "irregular student" indicates one who is not following the regular schedule but who is not deficient and is entitled to time credit toward a medical degree.

ADMISSION WITH ADVANCED STANDING

Honorably dismissed students of Class A medical schools may be received into advanced classes provided vacancies occur. Such students must present credentials covering pre-medical work and such part of the medical course as they have successfully completed, and must pass the comprehensive examination of the class preceding the one they desire to enter. These examinations are given at Minneapolis in June and September.

As an alternative candidates for admission to the junior class may present evidence of having passed Part I of the National Board of Medical Examiners.

For six- and seven-year combined courses in Science or Arts and Medicine, see the bulletin of the College of Science, Literature, and the Arts.

FEES

The quarterly fee for the medical course is \$75 for residents of Minnesota and \$100 for non-residents, payable at the beginning of each quarter. No fee is charged in the Medical School for the final hospital or advanced laboratory year.

In addition to tuition, each student is charged an incidental fee of \$6 each quarter.

A matriculation deposit of \$15 (\$5 for women students) is required, payable with the tuition of the first quarter in residence, as a guarantee for the return and protection of university materials and equipment, the balance to be refunded automatically at graduation, upon the student's withdrawal, or failure to return for any succeeding quarter.

Students who take less than the regular course of study may arrange their fees at the rate of \$3.25 (non-residents \$4.50) for each weekly clock hour per quarter.

Repetition of work in course demands the repetitional payment of fees.

A graduation fee of \$10 is charged for each degree conferred.

Registration penalties.—A penalty fee for late registration, late change of registration, or late payment of fees shall be \$2 prior to the day classes begin, on and after which the penalty increases at the rate of \$1 per day, provided that no student shall pay more than \$10 of penalty in any given quarter.

Certain changes in fees have been recommended and, when approved, will be enforced without further notice.

MICROSCOPES AND OTHER PROFESSIONAL EQUIPMENT

Each student must be provided throughout the entire four-year course, with a microscope of approved quality and equipment.

In the fifth and sixth years each student is required to provide himself with a hemacytometer, a head mirror, a stethoscope of approved form.

THE SUMMER QUARTER

A full summer quarter is conducted in the Medical School. Courses offered in summer include senior schedules, and also a repetition of most of the freshman and sophomore courses given in the regular year.

For courses of instruction offered and schedule of fees for special courses see bulletin of the summer quarter.

PHYSICAL EXAMINATIONS AND PROPHYLACTIC INOCULATION

Registration in the Medical School in particular quarters is not complete until the student has undergone certain physical examinations, tests, and vaccinations. See bulletin boards for rules on this subject.

CLINICAL OPPORTUNITIES

THE UNIVERSITY HOSPITAL AND DISPENSARY

The University Hospital includes the Elliot Memorial Building, the Cancer Institute, the Todd Memorial Hospital, the Eustis Children's Hospital, the Out-Patient Building, and the Students' Health Service Building, and has a capacity of 450 beds.

AFFILIATED HOSPITALS

The Minneapolis General Hospital is closely affiliated with the Medical School, the principal services being under direction of full time members of the faculty. This hospital has about 700 beds.

The Ancker Hospital of St. Paul city and county is used for important bedside teaching and operates about 700 beds.

The Gillette State Hospital for Crippled Children, of 250 beds, at Phalen Park, St. Paul, and the Hennepin County Tuberculosis Sanatorium at Glen Lake, an institution of 700 beds, are used for clinical instruction.

The Wilder Dispensary, St. Paul, is used for elective section clinics.

Certain elective section clinics are held in other institutions, as Pillsbury House, Margaret Barry House, Wells Memorial House, Emanuel Cohen Community Center, the South Town Clinic, the Salvation Army Rescue Home, and the Shriners' Hospital.

MILITARY SCIENCE AND TACTICS

There is a Medical Reserve Officers' Training Corps in connection with the Medical School to which the surgeon general of the army details an officer to serve as professor. See the statement of this department.

THE GRADUATE SCHOOL IN MEDICINE

The Graduate School includes the opportunities for study and research offered by the Medical School in Minneapolis and by the Mayo Foundation for Medical Education and Research, at Rochester, Minnesota.

Further information may be found in the announcement of the Graduate School or in the circular of information on graduate work in medicine.

Fellowships in the pre-clinical sciences pay \$900 the first year, \$1,200 the second year, and \$1,500 the third year. A Bachelor's degree is prerequisite to these fellowships. In the clinical departments the stipends are \$800 the first year, \$900 the second year, and \$1,000 the third year, with a deduction of \$300 if the fellow is a resident of a hospital. The M.D. degree and a year of interneship are prerequisite to clinical fellowships. About 200 fellowships are available each year at Rochester and Minneapolis.

OTHER COURSES

The School of Nursing and courses in public health, including work for public health nurses, are conducted in the Medical School. Short courses for physicians both at Minneapolis and at various points in the state, and a course for embalmers are conducted through the Extension Division by the Medical School. A course in medical technology is conducted jointly by the College of Science, Literature, and the Arts and the Medical School. A course for dietitians is conducted in the University Hospital. Circulars descriptive of any of these courses will be sent on request. Courses in hospital social service are conducted by the Department of Sociology, the practical work being in the University Hospital. Two nurse anesthetists can be trained each year at the University Hospital.

CURRICULUM

THE CURRICULUM FOR THE M.B. DEGREE

OPTIONAL COURSES OF STUDY

Candidates for the M.B. degree may:

- a. Pursue the regular curriculum outlined below, or
- b. Follow the regular curriculum with modifications in the direction of special work in some particular department. Such students may register, if desired, during certain quarters in the Graduate School; and such registration, if major work is done in a Medical School department, may be transferred later to the Medical School to count toward a medical degree. Such students may qualify for advanced degrees such as M.S. and Ph.D. See paragraph on irregular course students. Substitutions in the regular curriculum are made on petition.

REGULAR CURRICULUM

DEPARTMENTAL HOURS

	Clock hours		Clock hours
Physical Chemistry	33	Medicine	940
Anatomy, gross and microscopic..	693	Surgery	457
Bacteriology	176	Obstetrics	411
Physiology, including Physiologic		Pediatrics	350
Chemistry and Biophysics.....	429	Ophthalmology and Oto-Laryngology	118
Pathology	363	Roentgenology	33
Preventive Medicine and Public			---
Health	54	Total	4,233
Pharmacology	176		

COMPREHENSIVE EXAMINATIONS

Progress in the Medical School and graduation therefrom are determined by annual comprehensive examinations. For seniors such examinations are held quarterly; for other classes, in June and September. Dr. A. T. Rasmussen is chief examiner, and the examination of each class is set and read by a committee of the faculty. Students should make themselves familiar with the examination rules which will be found posted on bulletin boards.

PLAN OF CLINICAL CURRICULUM: SENIOR YEAR

In order to utilize the clinical facilities of the school throughout the year the senior class is divided into four divisions of not more than 32 students each, known as A, B, C, and D.

Divisions A, B, and D begin senior work in the summer quarter after the junior year. Division A attends continuously the summer, fall, and winter quarters and graduates in March. Division B attends the summer,

fall, and spring quarters; Division C, the fall, winter, and spring quarters; Division D, the summer, winter, and spring quarters. Divisions B, C, and D graduate in June.

The membership of divisions of the senior class is fixed during the spring quarter of the junior year, by student choice in the order of scholarship at the end of the sophomore year. This choice of divisions is subject to the right of the Students' Work Committee, for sufficient reason, to place a given student in such division as will best foster his educational interests. A student may change from one division to another only on petition approved by the Students' Work Committee.

In the senior year the course consists of clerkships and dispensary work, together with certain clinical lectures. Students interested in investigative problems in medical science or in public health may by petition approved by the proper department head and the Students' Work Committee substitute such other work as may be agreed upon.

In the senior year each student will have seven weeks' clerkship in obstetrics and gynecology, six weeks' clerkship in pediatrics, thirteen weeks' clerkship in medicine and medical specialties, and eleven weeks' clerkship in surgery and surgical specialties. The clerks are responsible for histories and physical examinations at the hospitals and for dispensary attendance during vacations between quarters. See special schedule of clerkships published each quarter.

IRREGULAR COURSE STUDENTS

While the course of studies in this school is arranged on the traditional four-year plan, it is believed by the faculty that a rigid class system is not desirable and that some students will find it wise to extend their medical education over a longer period. Students who are obliged to work for self-support during school attendance are especially advised to spread their medical course over a longer time than the minimum of twelve quarters.

It is to be understood that the required courses set forth only the minimum fundamental information in the various branches of medical science and only the minimum of clinical experience with which a graduate may begin to practice. Attention is directed to the elective courses scheduled in the various departments and to the opportunities offered by the Graduate School. Able students are urged to undertake advanced work and research in some chosen field, to the end alike of advancing medical knowledge and of preparing themselves to fill teaching positions or to carry the investigative spirit into their medical practice. Their attention is called to the Honors Course described below. The dean and department heads will advise with such students on the progress of their studies, and will assist ambitious students to lay out programs suitable to their needs. Petitions for reasonable substitutions in the required curriculum will be approved.

HONORS COURSE

By honors course is meant a mechanism under which gifted students may pursue their studies with greater freedom than that granted by the regular curriculum.

The honors course applies only to the last two years of the medical curriculum, all students being required to take the comprehensive examinations at the end of the first and second years, if candidates for the M.B. degree.

Students having a "B" average or better in the sophomore comprehensive examination and who are candidates for a graduate degree may petition the Honors Course Committee to become "honors" students.

Students whose petitions are approved shall be known as "honors students" and may pursue medical studies in such order and manner as may be determined by the Honors Course Committee. Each year a program of work, approved by the committee, shall be made out and filed with the Committee on Honors Students.

When an honors student is prepared in the work of any department in accord with such program of studies he may, with written permission of the Honors Course Committee, take an examination on the work of said department. The nature of such examination is determined by the department concerned.

Satisfactory completion of the examination in any department shall entitle an honors student to tentative credit on the registrar's books for a number of hours equivalent to those assigned to such department in the regular curriculum.

Should an honors student fail to qualify for the Master's or Ph.D. degree all previously taken departmental examinations shall be cancelled and the student held for the junior and senior comprehensive examinations under the usual rules.

When an honors course student has fulfilled the legal time requirement, has attained his graduate degree, and has passed the respective department examinations, the Honors Course Committee shall consider his case; and as a result of his general work, his various examinations and his research achievements, and by vote of the Administrative Committee on recommendation of the Committee on Honors Students, the M.B. degree may be granted with any of the usual distinctions.

At any time during his course of study, by vote of the Administrative Committee, on recommendation of the Committee on Honors Students, an honors student may be required to return to the regular curriculum and previously taken departmental examinations shall be cancelled.

REQUIREMENTS FOR THE B.S. DEGREE

a. Completion of the pre-medical college work in accordance with the requirements for admission to the Medical School and regulations of the Junior College.

b. Completion of the required courses of the first two years of the medical course and Physiology 105.

c. The passing of the comprehensive examinations of the freshman and sophomore medical years.

d. Fulfillment of Arts College requirements for B.S. degree, such as drill and gymnasium.

REQUIREMENTS FOR THE M.B. DEGREE

Good moral character; compliance with the admission requirements; the attainment of the degree of bachelor of arts or bachelor of science, to which one year in medicine for the Arts degree, and two years in medicine for the Science degree, may contribute; the completion of a full four-year period (12 quarters) of work in the Medical School in compliance with the scholarship rules are the essentials for the bachelor of medicine degree.

M.B. DEGREE WITH DISTINCTION

Students who have received the Master's degree or Ph.D. degree in the medical sciences or who, while registered in the Medical School, have produced an acceptable thesis may be recognized as candidates for the M.B. degree with distinction. The granting of the M.B. degree "with distinction," "with high distinction," or "with highest distinction" shall be determined by the Committee on Honors Course and Degrees with Distinction during the senior year of their medical course on the basis of scholastic record in their medical courses, thesis, and general attainments.

Such degrees with distinction, in the respective qualifications, shall count respectively 20, 40, and 60 honor points on the record of a student used in ranking his class for choice of internships (except in hospitals where appointments are made earlier), recommendations for fellowships and honors, or other purpose for which a ranking of students may be employed.

CURRICULUM FOR THE M.D. DEGREE

Students who have attained the M.B. degree may qualify for the M.D. degree:

a. By completion of one year (12 months) of internship in a hospital approved by the Internship Committee, or

b. By completion of one year's work of advanced character in an approved laboratory, or

c. By an approved year of advanced study or work in public health.

M.D. WITH DISTINCTION

The degree M.D. "with distinction" is granted to a student who in addition to the above requirement presents an acceptable thesis and stands high in his studies.

COURSES FOR PHYSICIANS

Physicians who desire to attend medical lectures and clinics for a limited period of time may obtain a visitor's ticket from the dean. They may enter for regular lecture and clinical courses in the Medical School upon payment of the usual Medical School fees. They may arrange for special courses of study in anatomy, physiology, experimental surgery, cadaver surgery, pathology, bacteriology, pharmacology, etc., as the facilities of the respective departments will permit.

LIBRARY

The medical library is among the best university medical libraries in this country. It is housed in the General Library Building.

GIFTS AND MEMORIALS

The Elliot Memorial Hospital was built through gifts of \$120,000 from the heirs of Dr. Adolphus F. Elliot and part state funds toward the building, and \$42,000 from various Minneapolis citizens for the site.

The Memorial Cancer Institute was erected through a gift of \$250,000 from the Citizens' Aid Society of Minneapolis as a memorial to the late Mr. George Chase Christian.

The Todd Memorial pavilion for eye, ear, nose, and throat diseases, was erected in part by gifts from Mrs. F. C. Todd, Mrs. E. C. Gale, and Mrs. Emery Mapes and in part by state funds. This building is a memorial to Dr. Frank C. Todd, professor of ophthalmology and otolaryngology in the Medical School, who died while in the army medical service in 1918.

The sum of \$2,250,000 has been donated to the Medical School by the late William Henry Eustis, of Minneapolis, for the erection and endowment of a hospital and convalescent home for disabled children. The hospital proper is part of the University Hospital group on the campus. The convalescent home will be built on a site donated by Mr. Eustis on the West River Drive.

The Medical School is in need of other facilities such as a nurses' dormitory, women's hospital, urologic hospital, psychopathic hospital, and endowment funds for research and the maintenance of hospital beds.

LOAN FUNDS

The University has loan funds available for medical students. Consult the bulletin of general information.

PRIZES

THE ROLLIN E. CUTTS PRIZE IN SURGERY

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

MINNEAPOLIS SURGICAL SOCIETY PRIZES

The Minneapolis Surgical Society offers a first prize of \$75 and a second prize of \$25 to those members of the senior class or those serving the first year of their internships in Minneapolis hospitals who write the best papers in some field of clinical surgery. Papers are due to be in the hands of the secretary of the Minneapolis Surgical Society usually in March. For more definite information inquire at the office of the Department of Surgery.

CHARLES LYMAN GREENE PRIZE IN PHYSIOLOGY

A certificate of merit and a prize of \$100 from the Minnesota Society of Internal Medicine are offered to an undergraduate medical student for the most meritorious thesis upon a subject in physiology which is closely related to clinical medicine.

DESCRIPTION OF COURSES¹

ANATOMY

Departmental Office, Institute of Anatomy

Professors Clarence M. Jackson, M.S., M.D., LL.D., Head; Edward A. Boyden, Ph.D., Hal Downey, Ph.D., Andrew T. Rasmussen, Ph.D., Richard E. Scammon, Ph.D.; Associate Professor Charles A. Erdmann, Phm.G., M.D.; Assistant Professor Shirley P. Miller, Ph.D.; Instructor Raymond F. Blount, Ph.D.; Assistant Charles M. Blumenfeld, M.A.; Teaching Fellows Oliver P. Jones, B.A., Raphael J. Koff, Joseph J. Lawless, M.A., Charles E. McLennan, B.A., Grant L. Rasmussen, B.A., Sam I. Stein, M.S.

REQUIRED COURSES

- 1w-2s. Anatomy for Embalmers. 120 hours; 8 credits.² Dr. Erdmann and assistants.
- 3f,s. Elementary Anatomy. School of Nursing. 44 hours; 3 credits. Dr. Blount.
- 4w. Elementary Anatomy. For dental hygienists. 33 hours; 3 credits. Dr. Blount.
- 5s. Human Anatomy. For students in physical education. 66 hours; 4 credits. Dr. Erdmann.
- 6f,su-7w,su. Gross Human Anatomy. Dissection, including osteology. Third year medical students. Prerequisite, Zoology 5-6-7; 330 hours; 18 credits. Enrolment limited to 100 students in the fall and winter, and to 60 students in the summer. Dr. Jackson, Dr. Erdmann, and assistants.
- 9f,su. Systematic Anatomy. Pre-junior dental students. Prerequisite, Zoology 5-6-7; 99 hours; 5 credits. Enrolment limited to 90 students in the fall quarter. Dr. Miller and assistants.
- 10s,su. Anatomy of the Head and Neck. Pre-junior dental students. Prerequisite, Course 9; 99 hours; 5 credits. Enrolment limited to 90 students in the spring quarter and 30 in the summer. Dr. Miller and assistants.
- 14w,su. Histology and Embryology. Pre-junior dental students. Prerequisite, Course 9; 132 hours; 6 credits. Enrolment limited to 90 students in the winter quarter. Dr. A. T. Rasmussen and assistants.

¹ The letters f, w, s, and su indicate that the corresponding courses are offered in the fall, winter, spring, and summer quarters, respectively. Numbers joined by hyphens indicate that the course is continued through more than one quarter. Letters separated by commas indicate the repetition of the course in corresponding quarters.

² Credits, as stated in this bulletin, are on the quarter system; they are comparable with semester credits upon a ratio of three to two.

- 103s,su. Human Histology. Microscopic study in the various tissues and organs. Third year medical students. Prerequisite, Course 6-7; 165 hours; 9 credits. Enrolment limited to 140 students in the spring quarter. Dr. Downey and assistants.
- 107s. Human Embryology. Development of the human body. Third year medical students. Prerequisite, Course 6-7; 99 hours; 6 credits. Enrolment limited to 140 students in the spring quarter. Dr. Boyden and assistants.
- 111f,su. Human Neurology. A study of the central nervous system and sense organs. Fourth year medical students. Prerequisites, Courses 103, 107; 99 hours; 6 credits. Enrolment limited to 132 students in the fall quarter. Dr. A. T. Rasmussen and assistants.

ELECTIVE COURSES

In general, the elective courses are for small groups of 6 to 16 students. For registration in these courses, permission by the instructor is required, excepting Courses 43s, 45f-46w, 115w, 126f,w, and 129f-130w-131s.

- 43s. Applied Anatomy. Relationships, with reference to clinical applications. Medical students. Prerequisite, Course 6-7; 33 hours; 1½ credits. Dr. Erdmann.
- 45f-46w.¹ Special Dissections. Dissections of special regions, including preparation of museum specimens. Prerequisite, Course 6-7. 33 hours; 1 credit. Dr. Erdmann.
- 115w,s. History of Anatomy. Medical bibliography is included. Lectures, 22 hours; 2 credits. Dr. Miller.
- 129f-130w-131s.¹ Topographic Anatomy. Based upon a study of serial cross sections of the human body. Prerequisite, Course 6-7. 33 hours (or more); 2 credits (or more). Dr. Jackson
- 134f,w. Anatomy of the New-Born. A detailed laboratory study of the anatomy of the new-born. Prerequisite, Course 133, or equivalent. 66 hours; 3 credits. Dr. Scammon.
- 148s.¹ X-Ray Anatomy. Same as Radiology 87. Lectures and demonstrations. Prerequisite, Course 6-7; 11 hours; 1 credit. Dr. Rigler.
- 149w. Experimental Neurology. A study of the morphology of the central nervous system as determined by experimental methods. Prerequisite, Course 111; 66 hours; 3 credits. Dr. A. T. Rasmussen.
- 150f,w. Seminar in Neurology. Study of the literature on selected phases of human neurology. Prerequisite, Course 111; hours and credits arranged. Dr. A. T. Rasmussen.
- 152f,w. Prosection. Preparation of special dissections to be used for demonstrations in human gross anatomy. Prerequisite, Course 6-7; hours and credits arranged. Dr. Jackson, Dr. Miller.

¹ These courses may be taken continuously through three or four quarters or in any one quarter.

- 153f-154w-155s-156su.¹ Advanced Anatomy. Advanced work, largely individual in character, in gross anatomy, histology, embryology, or neurology. Hours and credits arranged. Dr. Jackson, Dr. Boyden, Dr. Downey, Dr. A. T. Rasmussen, Dr. Miller.
- 157s. Developmental Anatomy of the Head. Prerequisites, Courses 103, 107; 66 hours; 3 credits. Dr. Boyden.
- 158s. Special Histology and Neurology of the Head Region. Prerequisites, Courses 103, 111; 66 hours; 3 credits. Dr. A. T. Rasmussen.
- 160f-161w.¹ Seminar in Human Growth. A study with graphic analysis of data on human physical development. Prerequisite, Course 135, or equivalent; hours and credits arranged. Dr. Boyd.
- 165f-166w. Hematology. Primarily for medical students, but open to others with proper qualifications. Normal and pathologic morphology of the blood and blood forming organs, with special emphasis on the study of the blood from the standpoint of diagnosis and prognosis. 3 credits each quarter. TTh VII, VIII, IX. Dr. Downey.
- 201f-202w-203s-204su.¹ Research in Anatomy. Research work in gross or microscopic anatomy, neurology, histology, or embryology. Hours and credits arranged. Dr. Jackson, Dr. Boyden, Dr. Downey, Dr. A. T. Rasmussen, Dr. Scammon.
- 205f-206w-207s. Anatomical Seminar. Presentation and discussion of research work in progress in the department, together with reviews of current anatomical literature. 11 hours; 1 credit. Dr. Jackson.

BACTERIOLOGY AND IMMUNOLOGY

Departmental Office, Millard Hall

Professors Winford P. Larson, M.D., Head; Robert G. Green, M.A., M.D., Arthur T. Henrici, M.D.; Associate Professor H. Orin Halvorson, Ch.E., Ph.D.; Instructors Beryl S. Green, M.A., Charles E. Skinner, Ph.D.; Teaching Fellows Byron Olson, M.S., Millard Gunderson, M.S.

REQUIRED COURSES

- 1f,w,s. Elementary Bacteriology. Nursing students and others. 66 hours; 4 credits. Mrs. Green.
- 41su,f,w,s. General Bacteriology. Culture media; methods of staining and identification; principles of sterilization and disinfection; examination of air, water, milk; relation of bacteriology to the industries. Prerequisites, 10 credits in chemistry and 10 credits in biology; 99 hours; 5 credits. For medical students, winter, MWF I, II, III; for Agri-

¹ These courses may be taken continuously through three or four quarters or in any one quarter.

- culture and Home Economics, fall, winter, spring, MWF VI, VII, VIII. Dr. Green, Dr. Henrici, Dr. Halvorson, Mrs. Green, Dr. Skinner.
- 52w. General and Special Bacteriology for Dental Students. Pre-junior year. 66 hours; 4½ credits. Dr. Green and assistants.
- 101s,su. Special Bacteriology. The pathogenic bacteria, especially in relation to definite diseases; principles of infection and immunity. Medical students and others. Prerequisite, general bacteriology; 77 hours; 4 credits. Dr. Larson and assistants.

ELECTIVE COURSES

- 103w. Soil Microbiology. Studies of the microscopic inhabitants of the soil. MWF I, II, III; 5 credits. Dr. Skinner.
- 114s. The Higher Bacteria. Actinomycetes, yeasts, and molds. Prerequisites: general and special bacteriology; 66 hours; 3 credits. Dr. Henrici.
- 116w. Immunity. Laws of hemolysis. Quantitative relationship between antigen and antibody. Wasserman reaction. Opsonins. Vaccines. Toxin. Antitoxin. Precipitin reactions. Blood grouping. Atopy. Anaphylaxis. Prerequisite, 101; 66 hours; 3 credits. Dr. Larson.
- 117s. Pathogenic Protozoa. Prerequisites, general and special bacteriology; Zoology 144-145-146; 66 hours; 3 credits. Dr. Larson.
- 118w. Morphology and Taxonomy of Bacteria. Cytology of bacteria; consideration of morphological, biochemical, and immunological characters as data for classification. Prerequisites, general and special bacteriology; 66 hours; 3 credits. Dr. Henrici.
- 119w. Bacteriological Chemistry. Microphysics. Chemical constituents. Permeability. Bacterial enzymes. Toxins. Bacteriolysants. Suspension stability. Chemistry of immune reactions. Prerequisites, general and special bacteriology, Physiology 100, 101, or Agricultural Biochemistry 111, 112. 66 hours; 4 credits. Dr. Green and assistant.
- 120s. Bacterial and Virus Diseases Common to Man and Animals. Prerequisites, general and special bacteriology. T VI, VII; Th VI; 3 credits. Dr. Green.
- 121w-122s. Industrial Bacteriology. Lecture and laboratory. 3 credits each quarter; TTh I-II. Dr. Halvorson.
- 150f-151w or 150w-151s. Advanced Bacteriology. Opportunity of working out special problems. Prerequisites, general and special bacteriology; credits arranged. Limited to ten students. Dr. Larson, Dr. Henrici, Dr. Green, Dr. Halvorson, Dr. Skinner.
201. Research in Bacteriology. Graduate students of the necessary preliminary training may elect research, either as majors or minors, in bacteriology. Hours and credits arranged. Dr. Larson, Dr. Henrici, Dr. Green, Dr. Halvorson, Dr. Skinner.
- 203f,w,s. Seminar in Bacteriology. 1 credit. Staff.

PATHOLOGY

Departmental Office, 110 Institute of Anatomy

Professors Elexious T. Bell, B.S., M.D., Head; Benjamin J. Clawson, M.D., Ph.D.; Associate Professors James S. McCartney, Jr., B.A., M.D., William A. O'Brien, M.D., John F. Noble, M.D.; Assistant Professor Kano Ikeda, M.D.; Instructors Nathaniel H. Lufkin, B.S., M.D., Charlotte C. Van Winkle, B.A., M.D., D.P.H.; Assistant Louis E. Nolan, B.S., M.D.; Teaching Fellows Edith L. Potter, B.S., M.D., Charles E. Rea, B.S., M.D.

REQUIRED COURSES

- 4f. Pathology for Students in Dentistry. 110 hours; 6 credits. Dr. Clawson and teaching fellows.
- 101w. Pathology. Part I. General Pathology. Sophomore medical students. Prerequisites, histology, embryology, and special bacteriology. 165 hours; 9 credit. Dr. Bell, Dr. Clawson; Dr. McCartney, and teaching fellows.
- 102s. Pathology. Part II. Special Pathology. Sophomore medical students. Prerequisites, Pathology, Part I. 165 hours; 9 credits. Dr. Bell, Dr. Clawson, Dr. McCartney, and teaching fellows.
- 109su,f,w,s. Clinical Pathological Conference. Presentation of clinical data and pathologic specimens from selected cases with discussion of diagnosis. 11 hours in each quarter. Required in three quarters, senior year. Elective for others. Dr. Bell and staff.

ELECTIVE COURSES

- 104su,f,w,s. Autopsies. Fifth and sixth year medical students. Dr. Bell and staff.
- 107f,w,s. Advanced Pathology. Prerequisite, Pathology 102. 107f. Surgical Pathology. Dr. Bell, Dr. McCartney. 33 hours. 107w. Diseases of the Heart. Dr. Clawson. 22 hours. 107s. Diseases of the Kidneys. Dr. Bell. 22 hours.
- 110f,w,s. Seminar in Pathology. Prerequisite, Pathology 102. Dr. Bell.
- 111su,f,w,s. Conference on Autopsies. Prerequisite, Pathology 102. Dr. Bell and staff.
- 20r. Research. Graduate students of the necessary preliminary training may elect research either as major or minor in pathology. Hours and credits arranged. Dr. Bell and staff.

PHARMACOLOGY

Departmental Office, Millard Hall

Professors Arthur D. Hirschfelder, B.S., M.D., Head; Frederick J. Wulling, Phm.G., Phm.D., LL.M., Ph.M. *causa honoris*, D.Sc. *causa honoris*, Dean, College of Pharmacy; Associate Professors Raymond N. Bieter, M.D., Ph.D., Edgar D. Brown, Phm.D., M.D.; Assistant Professor Harold N. G. Wright, M.S., Ph.D.

REQUIRED COURSES

- 2s. Therapeutics and Toxicology for Students in Pharmacy. 33 hours; 3 credits. Dr. Brown.
- 4w. Dental Pharmacology. 44 hours; 4 credits. Dr. Bieter, Dr. Brown.
- 6w. Experimental Pharmacology. For dental students. 22 hours; 1 credit. Dr. Bieter, Dr. Brown.
- 7w,su. Metrology. For student nurses. Systems of weights and measures; equivalents; preparation of percentage solutions; dosage; together with appropriate laboratory exercises and problems. 22 hours; 1½ credits. Dr. Wright, Miss Gordon, and others.
- 8w,su. Elementary Pharmacology. For student nurses. A study of the history, uses, classification, and preparation of drugs; methods of administration; principles of dosage, etc., together with appropriate laboratory exercises. 33 hours; 2½ credits. Dr. Brown, Dr. Wright, and others.
- 101w. Introduction to Pharmacology. Fourth year medical students. 22 hours; 2 credits. Prerequisites, Physiology 100, 101, 103. Dr. Hirschfelder, Dr. Bieter, Dr. Wright.
- 102s. General and Experimental Pharmacology. Part I. A detailed study of drugs important in medical practice. Fourth year medical students. Prerequisite, 101; lect. 33 hours, lab. 66 hours; 6 credits. Dr. Hirschfelder, Dr. Bieter, Dr. Brown, Dr. Wright.
- 105su,w. General Pharmacology. Part II. Same as Course 102 in continuation. Fifth year medical students. Prerequisite, 102; 22 hours; 2 credits. Dr. Hirschfelder, Dr. Bieter, Dr. Brown, Dr. Wright.
- 106f. General Pharmacology. Part III. Same as Course 102 in continuation. Fifth year medical students. 22 hours; 2 credits. Dr. Hirschfelder, Dr. Bieter, Dr. Brown, Dr. Wright.
- 108su,f. Prescription Writing. Fifth year. Prerequisite, 102; 11 hours; 1 credit. Dr. Brown.

ELECTIVE COURSES

- 109f,w,su. Pharmacological Problems. Experimental study of special topics in pharmacology, with a review of the literature. Hours and credits arranged. Dr. Hirschfelder, Dr. Bieter, Dr. Brown, Dr. Wright.

- 110f,su. Detection of Poisons. Hours and credits arranged. Dr. Brown.
- 201f,w,s.¹ Seminar in Physiology and Pharmacology. Reviews of recent literature. 11 hours; 1 credit. Dr. Hirschfelder.
- 203su,f,w,s.¹ Research in Pharmacology. Open to graduate and advanced students. Hours and credits arranged. Dr. Hirschfelder, Dr. Bieter, Dr. Brown, Dr. Wright.
- 204w.¹ Advanced Pharmacology. Limited to 4 graduate students. 11 hours; 1 credit. Hours and registration arranged. Dr. Hirschfelder, Dr. Bieter, Dr. Brown, Dr. Wright.
- 205w.¹ General Discussions in Pharmacology. With collateral readings. Limited to 6 advanced students. 11 hours; 1 credit. Time to be arranged. Dr. Hirschfelder, Dr. Bieter, Dr. Brown, Dr. Wright.

PHYSIOLOGY

Departmental Office, Millard Hall

Professors Elias P. Lyon, Ph.D., M.D., LL.D., Head; Jesse F. McClendon, Ph.D., Frederick H. Scott, Ph.D., M.B., D.Sc.; Professor Emeritus Richard O. Beard, M.D.; Associate Professors Karl W. Stenstrom, Ph.D., Esther M. Greisheimer, Ph.D., M.D.; Assistant Professors Allan Hemingway, Ph.D., Joseph T. King, M.D., Ph.D.; Instructors Jesse Cavett, Ph.D., Dean A. Collins, Ph.D., Robert H. Hamilton, Jr., M.A.; Assistants Wallace D. Armstrong, M.S., L. Earle Arnow, B.S., Carl E. Nurnberger, M.A., Harold R. Street, B.A., M.S.; Teaching Fellows Carroll J. Bellis, B.S., Lawrence B. Winkelstein, B.A.

REQUIRED COURSES

- 1f,s. Physiologic Chemistry for Nurses. 40 hours; 2 credits. Dr. Greisheimer and others.
- 2f,s. Physiology for Nurses. 70 hours; 5 credits. Dr. Greisheimer and others.
- 4f,w,s,su. Human Physiology. For academic, home economics, and pharmacy students. 4 credits; lect., rec., and dem.; MWF III, IV. Dr. King or Dr. Collins and assistants.
- 56f. Physiologic Chemistry. For physical education students and others. Lectures and demonstrations. Prerequisite, general chemistry; 33 hours; 3 credits; TThS I. Dr. McClendon.
- 57s,su.² Physiologic Chemistry. For academic, dentistry, physical education students, and others. Lectures and demonstrations. Prerequisites, zoology and organic chemistry; 44 hours; 4 credits. Dr. Hemingway and assistants.

¹ Written permission required.

² Courses 57 and 58 are intermediate courses intended for those who desire a less detailed consideration than that given in 100, 101, 103, 104. Students may not receive credit for both sequences, nor for Course 4 in addition to either of these sequences.

- 58s,su.¹ Human Physiology. For dental students and others. Prerequisites, 57 or zoology and organic chemistry; 99 hours; 6 credits. Dr. Lyon, Dr. King, Dr. Collins, and assistants.
- 60s. Physiology of Physical Exercise. For physical education students and others. Lectures and laboratory. Prerequisite, Course 4; 66 hours; 4 credits. Dr. Collins.
- 100f,su. Physiologic Chemistry. Metabolism of proteins, fats, carbohydrates. Third year medical students and others. Prerequisites, physics and organic chemistry; 99 hours; 5 credits; lect. MWF IV; lab. A, TTh I, II, III; lab. B, FS I, II, III; lab. C (non-medics) TTh VI, VII, VIII. Dr. McClendon, Dr. Hemingway, Dr. Cavett, and assistants.
- 101w,su. Physiologic Chemistry. Application of inorganic and physical chemistry to physiology. Prerequisite, Course 100 and physical chemistry; 5 credits. Schedule and staff same as 100.
- 103f,su. Physiology of Cells, Muscle, Nerve, Blood, Circulation, Respiration, Digestion. Fourth year medical students and others. Prerequisites, organic chemistry and zoology; 132 hours; 8 credits; lect. MTWThF II; lab. A, M VI, VII, VIII, F III, IV; lab. B, W III, IV, F VI, VII, VIII; rec. A, TTh III; rec. B, T IV, S II. Dr. Lyon, Dr. Scott, Dr. Greisheimer, and assistants.
- 104w,su. Physiology of the Nervous System and Special Senses, Metabolism, Nutrition, and Excretion. Fourth year medical students and others. Prerequisite, Course 103, or organic chemistry and neurology; 88 hours; 7 credits; lect. MWF IV, S III; lab. A, F, II, III, S I, II; lab. B, MW II, III; rec. A, M VI; rec. B, T II. Dr. Lyon, Dr. Scott, Dr. Greisheimer, and assistants.
- 105f. Roentgen Rays, Light, and Radium. The physical and physiological basis of physical therapy. Prerequisites, 103, 104. Fifth year medical students. 11 hours; 1 credit. Dr. Stenstrom.

ELECTIVE COURSES

108. Seminar in Physiologic Optics. For graduate and medical students. Prerequisite, Course 104 or equivalent; 18 hours; 1½ credits. Dr. Lyon.
109. Seminar in Physiology of the Senses. For graduate and medical students. Prerequisite, Course 104 or equivalent; 18 hours; 1½ credits. Dr. Lyon.
- 113su,f,w,s. Problems in Physiology. Arranged with qualified students. Each student will be assigned a topic for special laboratory study. Conferences and reading. May be taken one or more quarters. Prerequisites, Courses 103, 104, or equivalent; 66 hours; 3 credits each quarter or arranged. Dr. Scott, Dr. Greisheimer, Dr. King.

¹ Courses 57 and 58 are intermediate courses intended for those who desire a less detailed consideration than that given in 100, 101, 103, 104. Students may not receive credit for both sequences, nor for Course 4 in addition to either of these sequences.

- 114w-115s. Applied Physiology. The interpretation of symptoms and signs of abnormal function. Prerequisites, Courses 103, 104, or equivalent; 3 credits each quarter. Dr. Greisheimer.
- 116f. Tissue Culture Theory. Two lectures. 2 credits; hours arranged. Dr. King.
- 117w. Tissue Culture Laboratory. Limit 4 students. Prerequisite, 116f. 3 credits; hours arranged. Dr. King.
- 135f,w,s. Conference on Physio'ogy, with qualified students. 11 hours; 1 credit. Dr. Scott.
- 153f,w,s,su. Problems in Physiologic Chemistry. Special work arranged with qualified students. May be taken one or more quarters. Prerequisite, Course 100-101; hours and credits arranged. Dr. McClendon, Dr. Hemingway, Dr. Cavett.
- 154f. Seminar in Physiological Chemistry. 11 hours; 1 credit. Dr. McClendon.
- 155f,156w,157s. Pathological Chemistry. Blood chemistry of diabetes and nephritis. Basal metabolism, deficiency diseases. Prerequisite, Course 100-101; 66 hours; 3 credits each quarter. Dr. Cavett.
- 163w,s. Physical Chemistry and Biophysics in Biology and Medicine. Prerequisite, Course 100-101 or Biochemistry 112; 3 credits per quarter. Dr. Hemingway.
- 164w,s. Laboratory Work Related to Course 163. Credits arranged. Dr. Hemingway.
- 201f,w,s. Seminar in Physiology and Pharmacology. For instructors and advanced students. Same as Pharmacology 201. 11 hours; 1 credit. Dr. Lyon, Dr. Scott, Dr. Hirschfelder, and staff.
- 202f,w,s,su. Advanced Experimental Physiology. Prerequisites, Physiology 103 and 104; hours and credits arranged. Dr. Scott.
- 203f,w,s,su. Research in Physiology. Hours and credits arranged. Dr. Scott. Dr. Greisheimer, Dr. King.
- 204f,w,s,su. Research in the Physics and Physiology of Radiation. Hours and credits arranged. Dr. Stenstrom.

For electives in the practical aspects of radiology and allied subjects offered by Dr. Stenstrom, see Hospital Department, Division of Radiology.

- 205f,w,s,su. Research in Physiologic Chemistry. Hours and credits arranged. Dr. McClendon, Dr. Hemingway, Dr. Cavett.
- 206s. Seminar in History of Physiology and Related Sciences. 11 hours; 1 credit. Dr. Lyon.

PREVENTIVE MEDICINE AND PUBLIC HEALTH

UNIVERSITY STAFF

Professors Harold S. Diehl, M.A., M.D., Head; J. Arthur Myers, Ph.D., M.D.; Associate Professors Ruth E. Boynton, M.S., M.D., William A. O'Brien, M.D.; Assistant Professors Eula B. Butzerin, R.N., M.A., Ellett M. deBerry, B.A., M.D., Ralph V. Ellis, M.A., M.D.; Instruc-

tors Arnold S. Anderson, B.S., M.D., Dalmon V. Boardman, M.D., Hally J. Fisher, R.N., Meredith Hesdorsfer, B.S., M.D., Robert G. Hinckley, M.D., Ruth Houlton, B.A., R.N., Helen C. Peck, R.N., Robert B. Radl, B.S., M.D., Jean Taylor, B.S., R.N., Bernard A. Watson, B.S., M.D.

STATE BOARD OF HEALTH STAFF

Professor Albert J. Chesley, M.D.; Assistant Professors Orianna McDaniel, M.D., Harold A. Whittaker, B.A.; Professorial Lecturer Lucy Heathman, Ph.D.

REQUIRED COURSES

- 2w. First Aid. (See bulletin of Education.)
 3f,w,s. Personal Hygiene and Elementary Sanitation. (See Science, Literature, and the Arts bulletin.)
 5f. Elementary Preventive Medicine for Nurses. (See Nursing bulletin.)
 12s. Hygiene and First Aid to the Sick and Injured. (See Engineering bulletin.)
 52f,w,s. Health Care of the Family. (See Home Economics bulletin.)
 53f,su. Elements of Preventive Medicine. (See Education bulletin.)
 57f. Health of Infant and Pre-school Child. (See Science, Literature, and the Arts bulletin.)
 58w,su. Maternal and Child Hygiene. (See Education bulletin.)
 59w. Social Hygiene. (See Education bulletin.)
 60w. Tuberculosis and Its Control. (See Education bulletin.)
 61w. Mental Hygiene. (See Education bulletin.)
 62f,su. Principles of Public Health Nursing. (See Education bulletin.)
 63w. Special Fields in Public Health Nursing. (See Education bulletin.)
 64f,w,s,stu. Field Practice in Infant Welfare Nursing. (See Education bulletin.)
 65f,w,s,su. Field Practice in School Nursing. (See Education bulletin.)
 66f,w,s,su. Field Practice in County Nursing. (See Education bulletin.)
 67f,w,s,su. Field Practice in a Tuberculosis Sanatorium. (See Education bulletin.)
 68f,w,s,su. Field Practice in Visiting Nursing. (See Education bulletin.)
 69s. School Nursing Procedures. (See Education bulletin.)
 70f,w,su. Home Nursing and Child Care. (See Education bulletin.)
 74su. Health Instruction Methods and Materials. (See Education bulletin.)
 100f. Preventive Medicine and General Hygiene. Medical students. Prerequisites, bacteriology, physiology; 36 hours; 3 credits. Dr. Diehl, Dr. Myers, Dr. O'Brien.
 101f,w,s,su. Public Health Administrative and Field Work. Demonstrations of health agencies at work. Groups of 10 to 18 medical students for 6 weeks. Prerequisite, 100; 18 hours; 2 credits. Staff.

ELECTIVE COURSES

- 50f,w,su. Public and Personal Health. (See Science, Literature, and the Arts bulletin.)
 73w. Occupational Hygiene and Disease. (See Education bulletin.)

- 80w,su. Health Supervision of the School Child. (See Education bulletin.)
- 102w. Sanitation. Medical and graduate students. (See Graduate bulletin.)
- 103s. Public Health Bacteriology. Medical and graduate students. (See Graduate bulletin.)
- 104f,w,s,su. Epidemiology. Medical and graduate students. (See Graduate bulletin.)
- 106f,w,s. Public Health Administration. Medical and graduate students. (See Graduate bulletin.)
- 107s. Sanitary Surveys. For medical students. Conferences, practical field work, and report on a specified survey. Of particular value to practitioners who may be called upon to serve as local health officers. Prerequisite, 53 or 100; 48 hours; 2 credits. Medical and graduate students. Dr. Diehl.
200. Research. (See Graduate bulletin.)
210. Seminar in Preventive Medicine and Public Health. (See Graduate bulletin.)

MEDICINE

Departmental Office, University Hospital

DIVISION OF GENERAL MEDICINE

Professors Hilding Berglund, M.D., Head; George E. Fahr, B.S., M.D., J. Arthur Myers, Ph.D., M.D., Henry L. Ulrich, B.S., M.D., F.A.C.P., S. Marx White, B.S., M.D., F.A.C.P.; Professor Emeritus John Wesley Bell, M.D.; Associate Professors Moses Barron, B.S., M.D., Edwin L. Gardner, B.S., M.D., James S. Gilfillan, M.D., Hobart A. Reimann, M.D., Ernest T. F. Richards, M.D., C.M., Frederick H. K. Schaaf, M.D., John P. Schneider, M.D., Charles B. Wright, B.A., M.D.; Assistant Professors Karl W. Anderson, B.S., M.D., Archibald H. Beard, B.A., M.D., F.A.C.P., Alexander R. Hall, M.D., C.M., M.R.C.S., L.R.C.P., Edgar T. Herrmann, B.S., M.D., Reuben E. Johnson, B.S., M.D., John A. Lepak, B.S., M.D., Chauncey A. McKinley, B.A., M.D., Ernest S. Mariette, B.S., M.D., Grace Medes, Ph.D., Morris N. Nathanson, B.S., M.D., Harry Oerting, M.D., Thomas A. Peppard, M.D., Robert I. Rizer, M.D., F.A.C.P., Thomas Ziskin, M.D.; Lecturers Henry Wireman Cook, B.A., M.D., Thomas B. Hartzell, D.D.M., M.D.; Instructors Harold S. Boquist, B.A., B.S., M.D., James B. Carey, B.S., M.D., Jay C. Davis, B.S., M.D., Carl B. Drake, B.A., M.D., Charles R. Drake, M.D., Everett K. Geer, B.S., M.D., DeForest Hastings, B.S., M.D., Max H. Hoffman, B.S., M.D., Frank L. Jennings, M.D., Richard H. Lindquist, B.S., M.D., Donald McCarthy, B.S., M.D., Morse J. Shapiro, B.S., M.D., Adam M. Smith, B.S., M.D., Samuel A. Weisman, B.S., M.D., Macnider Wetherby, B.S., M.D., Arthur A. Wohlrahe, M.D.; Assistants Joseph F. Borg, B.S., M.D., Dorothy Hutchinson Brown, M.A., M.D., Sumner

S. Cohen, B.S., M.D., Clara J. Conklin, B.A., Benjamin A. Dvorak, B.S., M.D., Ejvind P. K. Fenger, B.S., M.D., Arthur C. Fortney, M.D., Victor K. Funk, B.A., M.D., H. Paul Johnson, B.S., B.A., M.D., Emmett B. Kennefick, M.D., Arthur C. Kerkhof, B.S., Rudolph C. Logefeil, B.S., M.D., Peter M. Mattill, M.S., M.D., Charles E. Merkert, B.S., M.D., Harold E. Richardson, B.S., M.D.; Teaching Fellows El'is K. Giere, B.S., M.D., Philip Hallock, B.S., M.D., Johannes K. Moen, B.S., M.D., Howard A. Vogel, B.S., M.D.

DIVISION OF NERVOUS AND MENTAL DISEASES

Professors Arthur S. Hamilton, B.S., M.D., Director; Ernest M. Hammes, M.D., J. Charnley McKinley, M.D., Ph.D.; Associate Professor Angus W. Morrison, B.A., M.D.; Assistant Professor Joseph C. Michael, B.S., M.D.; Instructors Richard S. Ahrens, B.S., M.D., Walter P. Gardner, B.S., M.D., Royal C. Gray, M.D., M.S., Hewitt B. Hannah, B.A., M.D., William H. Hengstler, M.D., Charles J. Hutchinson, B.A., M.D., Gordon R. Kamman, B.S., M.D., George N. Ruhberg, B.S., M.D., Frank W. Whitmore, M.D.; Assistant Nathan J. Berkwitz, B.S., M.D.; Teaching Fellow Alexander Blumstein, B.S., M.D.

DIVISION OF DERMATOLOGY

Professors Henry E. Michelson, B.S., M.D., Director; Samuel E. Sweitzer, M.D.; Associate Professors John Butler, M.D., Harry G. Irvine, M.D.; Assistant Professor Charles D. Freeman, M.D.; Instructors Clifton A. Boreen, B.S., M.D., Edward C. Gager, M.D., Henry N. Klein, M.D., John F. Madden, B.S., M.D., Dale D. Turna-cliff, B.S., M.D.; Assistant Elmer M. Rusten, B.A., M.D.

DIVISION OF GENERAL MEDICINE

REQUIRED COURSES

1. Courses for Nurses. (See Nursing School bulletin.)
19. Clinical Medicine for Dentists. (See Dental College bulletin.)
- 20w-21s. Introductory Physical Diagnosis. Lectures and practical work on the examination of the normal body. This is followed during the second quarter by lectures on the pathological variations and signs. Students are assigned to hospital wards for the examination of selected cases. Fourth year. Prerequisites, gross anatomy, Physiology 103; 66 hours; 6 credits. Dr. Berglund, Dr. Fahr, Dr. Myers, and others.
- 22f,w.s. Clinics in Medicine. Half divisions at Ancker Hospital, St. Paul. Fifth year. 17 hours for each student. Dr. Hall, Dr. Herrmann, Dr. Lepak, Dr. Oerting, Dr. C. B. Drake.
- 23f,w.s. Systematic studies in the field of internal medicine exclusive of neurology, guided and supervised by tutors. Osler's *Practice of Medicine* is the textbook. Other literature is assigned. Fifth year.

- Prerequisite, Med. 20-21; 11 hours a quarter; 33 hours total. Dr. M. Nathanson, Dr. Carey, Dr. McCarthy, Dr. Weisman, Dr. Borg, Dr. Logefeil.
- 24f,w,s. Divisional Clinic in Medicine. Fifth year, each division one quarter. Prerequisite, Med. 20-21; 17 hours per student. Classroom of Minneapolis General Hospital. Dr. Fahr and staff.
- 25f,w,s. Physical Diagnosis and Case Taking. Individual work, a junior and a senior work together; histories, physical examinations, and provisional diagnoses on assigned dispensary patients under supervision of instructors. In sections at University Dispensary. Fifth year. Prerequisite, Med. 20-21; 66 hours. Dr. Wetherby and others.
- 26f. Clinical Chemistry and Microscopy. Methods of laboratory examination for diagnostic purposes. Fourth year. Prerequisites, general pathology, physiologic chemistry; 66 hours. Dr. Medes.
- 27s. Mouth Infections. The typical infections of the oral cavity and their causal relations to disease. 6 hours. Dr. Hartzell.
- 28f,w,s. Dispensary Clinics. Conducted in the University Dispensary. Fifth year. Prerequisite, Med. 20-21; MWF 2:00-2:50; 80 hours per student. Dispensary staff.
- 29f,w,s. Class Clinic in Medicine. Conducted in the University Hospital. Fifth year. Prerequisite, Med. 20-21; 11 hours each quarter; 33 hours total per student. T 11:00-11:50. Dr. Berglund and others.
- 30f,w,s. Class Clinic in Medicine. University Hospital and Minneapolis General Hospital. Students on clerkship at University Hospital at any given date will attend this clinic at University Hospital; vice versa for students taking clerkship at the General Hospital. Sixth year. Prerequisite, fifth year courses in medicine; 22 hours for two quarters, 11 hours for one quarter; total per student, 55 hours; TTh 8:00-8:50. Hospital staffs.
- 35su,f,w,s. Clinical Clerkship in Medicine. Individual work in the medical wards of the University Hospital, taking and recording of case histories, making of physical examinations and of provisional diagnoses. Clerks are held responsible for history and course of disease as well as a detailed knowledge of the treatment given to patients assigned them. Sixth year. Prerequisite, clear record in all prior subjects; 400 hours. Dr. Berglund, Dr. Ulrich, Dr. Reimann, and staff.
- 35w. Admission Clerkship. Assignment to admission service, University Hospital. Part of medical clerkship. Dr. Wetherby.
- 35xsu,f,w,s. Same as 35 at the Minneapolis General Hospital. Dr. Fahr and staff.
- 35su,f,w,s. Physical Diagnosis and Therapy. Conducted with sections in the following dispensary clinics: (1) general medicine; (2) heart clinic; (3) chest clinic; (4) metabolism; (5) gastrointestinal clinic. Sixth year. Part of Medical Clerkship, Course 35.
- 35z. Clerkship in Tuberculosis. Two-week periods resident at Glen Lake Sanatorium. Seniors in medical clerkship quarter. Dr. Mariette and staff.

ELECTIVE COURSES

50. Physical Signs in Pulmonary Tuberculosis. Fifth year. 17 hours per student. Tuberculosis Pavilion, Ancker Hospital, St. Paul. Dr. Geer.
53. Advanced Physical Diagnosis. Minneapolis General Hospital. Not less than 3 nor more than 6 students. Dr. Peppard.
54. Graphic Recording and Functional Diagnosis of Cardiovascular Diseases. Not less than 3 nor more than 6 students. Dr. Ziskin.
56. Clinical Studies in Metabolism. Limited to 6 students. Dr. McKinlay.
57. Advanced Physical Diagnosis of the Chest. Practical dispensary work on tuberculous patients. Not less than 3 nor more than 6 students. Dr. Weisman.
- 58s. Diagnosis and Treatment of Diseases of the Lungs. Three lectures per week. Two periods per week (hospital wards and dispensary). Lectures with or without hospital work. Sophomores, juniors, and seniors. Hours and credits arranged. Dr. Myers.
59. Physical Signs in Pulmonary Tuberculosis. Tuberculosis Pavilion, Ancker Hospital, St. Paul. 4 to 6 students. Dr. Geer.
102. The Respiratory Organs in Health and Disease. Designed for students desiring training in preparation of scientific and clinical papers for publication. One or more quarters. Limited to 6 students. Dr. Myers.
103. Chemical Problems of Disease. For specially prepared students. Sophomores, juniors, or seniors. Hours, problems, and credits arranged. Dr. Berglund.
- 105w. Problems in Pathological Physiology. Experimental work in physiology of the cardiovascular system, gastrointestinal system, respiratory and the renal systems as affected by experimental procedures simulating the common processes of disease in those organs. Laboratory of Pathological Physiology, Millard Hall. Sophomores. Hours, problems, and credits arranged. One to four students. Dr. Fahr, Dr. Davis.
- 106w. Problems in Clinical Physiology. Experimental and clinical investigations of the pathological functions in cardiovascular, renal, gastrointestinal, and respiratory diseases in the Laboratory of Pathological Physiology, Millard Hall, and in the Minneapolis General Hospital, and the University Dispensary. Juniors and seniors. Hours, problems, and credits to be arranged. One to four students. Dr. Fahr and staff.
200. Seminar in Internal Medicine. Dr. Berglund and staff.
201. Research in Clinical Medicine. Dr. Berglund, Dr. Fahr, and others.

For other courses see Graduate School bulletin.

DIVISION OF NERVOUS AND MENTAL DISEASES

REQUIRED COURSES

- 40w. Neurology and Neurologic Diagnosis. Lectures on methods of examination and the diseases of the nervous system. Fifth year. Prerequisite, Med. 20-21; 33 hours. Dr. Hamilton, Dr. Hammes, Dr. McKinley, Dr. Morrison.

- 41s. Psychiatry. Methods of modern psychiatry; lectures on the mental disorders. Fifth year. Prerequisite, Med. 40; 22 hours. Dr. Hamilton, Dr. Hannah, Dr. Hengstler.
- 42f,w,s. Clinical Neurology and Psychiatry. Half divisions in nervous and mental diseases at the Ancker Hospital. St. Paul. Fifth year. 17 hours. Dr. Hammes, Dr. Hengstler, Dr. Kamman, Dr. Ruhberg, Dr. Whitmore.
- 42x. Same as 42, at the Minneapolis General Hospital. Dr. Michael, Dr. Ahrens.
- 43s. Medical Jurisprudence. Principles of law, rules of evidence, and duties of physicians in medico-legal cases. 16 hours. Dr. Hamilton, Dr. Ruhberg.
- 44su,f,w,s. Clerkship Physical Diagnosis and Case Taking. Sections of the class for two-week periods in the University Hospital, Minneapolis General Hospital, and dispensaries. Part of Medical Clerkship, Course 35. Dr. Hamilton, Dr. McKinley, Dr. Michael, Dr. Ahrens, Dr. Gray, Dr. Hannah.

ELECTIVE COURSES

81. Treatment in Nervous Diseases. Referring particularly to dementia paralytica and tabes dorsalis. Limited to six students. Dr. Hammes.
123. Pathology of the Nervous System. Not less than 5 students. Same as Pathology 111. Carries sophomore honor point credit. Dr. McKinley.
124. Advanced Neuropathology. Limited to two students. Prerequisites, Pathology 101 and 102. Dr. McKinley.
125. Problems in Neuropathology. The student will be assigned a topic for special study. Limited to 2 students. Prerequisite, Pathology 102. Dr. McKinley.

For other courses see Graduate School bulletin.

DIVISION OF DERMATOLOGY

REQUIRED COURSES

- 46w. Course in Dermatology. Clinical lectures upon the common skin diseases and syphilis, including diagnosis and treatment. Fifth year. Prerequisites, Med. 20, 21; 33 hours. Dr. Michelson.
- 47su,f,w,s. Physical Diagnosis and Therapy. Section of the senior class in dermatology and syphilis, in the Dispensary at the University and at the Minneapolis General Hospital. Part of Medical Clerkship, Course 35. Dr. Michelson, Dr. Sweitzer, Dr. Irvine, Dr. Boreen, Dr. Gager, Dr. Turnacliff.

ELECTIVE COURSES

- 90f,w,s. Ward Clinics in Dermatology. Fifth year. 17 hours. Conducted in City and County Hospital, St. Paul. Dr. Freeman, Dr. Gager.

91. Night Clinics in Dermatology and Syphilis in the Out-Patient Department. Open to six students in clerkship division in each quarter. Dr. Turnacliff.
92. Clinic in Dermatology. Th 1:30-2:30. Wilder Dispensary.
93. Assistantship, Dermatology and Syphilis. Prerequisite, medical clerkship. 1 student. WS 1:00-3:00. Minneapolis General Hospital. Dr. Sweitzer.
94. Assistantship and Conference in Dermatology. Prerequisite, medical clerkship. 1 student. Daily 1:00-3:00; University Hospital and University Dispensary. Dr. Michelson and staff.
150. Histopathology of the Skin. Clinical and pathologic phases will be exemplified. Prerequisite, Pathology 102. Same as Pathology 110. Dr. Michelson, Dr. Gager.
153. Seminar in Dermatology. Hours to be arranged. Dr. Michelson and others.

OBSTETRICS AND GYNECOLOGY

Departmental Office, University Hospital

Professor Jennings C. Litzenberg, B.S., M.D., F.A.C.S., Head; Associate Professor John L. Rothrock, M.A., M.D., F.A.C.S.; Assistant Professors Lee W. Barry, M.D., Ph.D., F.A.C.S., Arthur E. Benjamin, M.D., William H. Condit, B.S., M.D., F.A.C.S., George E. Hudson, B.A., M.D., Rae T. LaVake, B.A., M.D., F.A.C.S., Clarence O. Maland, B.S., M.D., F.A.C.S., Jalmar H. Simons, B.S., M.D., F.A.C.S., Samuel B. Solhaug, B.A., B.S., M.D., Ph.D., F.A.C.S., Roy E. Swanson, B.S., M.D., Ph.D., F.A.C.S., John A. Urner, B.S., M.D., Ph.D., Herbert M. N. Wynne, B.S., M.D., F.A.C.S.; Instructors Duma C. Arnold, B.S., M.D., Joseph F. Bicek, B.S., M.D., James F. Hammond, M.D., C.M., Everett C. Hartley, B.A., M.D., Seymour R. Lee, M.D., Louise M. Paul, B.A., M.D., Albert G. Schu'ze, M.D., Thurston W. Weum, B.S., M.D.; Assistants E. Cornelius Andreassen, B.S., M.D., Melvin P. Baken, B.A., M.D., Claude J. Ehrenberg, B.S., M.D., Arnold Gruenhagen, B.S., M.D., Jacob A. Polzak, B.S., M.D., Charles E. Proshok, B.S., M.D., William P. Sadler, B.A., M.D., Julius R. Sturre, B.S., M.D., James J. Swendson, B.S., M.D., Nora A. Winther, B.S., M.D., Teaching Fell'ows Milton Abramson, B.S., M.D., Leonard A. Lang, B.S., M.D., Alvin J. Meyer, B.S., M.D., Edward C. Maeder, B.S., M.D., Raymond A. Schwegler, B.A., M.D.

REQUIRED COURSES

1. Obstetric Nursing. See Nursing School bulletin. Dr. Litzenberg and others.
2. Gynecologic Nursing. See Nursing School bulletin. Dr. Litzenberg and others.

- 20f. Obstetrics. The physiology of pregnancy, labor, and the puerperium. Fifth year medical students. Prerequisites, anatomy, embryology, physiology; 33 hours. Dr. Litzenberg and others.
- 21w. Obstetrics. The pathology of pregnancy, labor, and the puerperium. Fifth year medical students. Prerequisite, Course 20; 33 hours. Dr. Litzenberg and others.
- 22su,f,w,s. Division Clinic. Fifth year. 17 hrs. credit per student; Minneapolis General Hospital. Dr. Urner and staff.
- 23s. Gynecology. A study of diagnostic methods in diseases of women. Fifth year medical students. Prerequisite, Pathology; 33 hours. Dr. Litzenberg, Dr. Barry, Dr. Urner.
- 30su,f,w,s. Obstetrics and Gynecology Clinic. The pathology of pregnancy, labor, and the puerperium, and of diseases of women. Prerequisites, Courses 20, 21, 22, 23, 24. Required of seniors during three quarters; elective for others. 55 hours. Dr. Litzenberg and staff.
- 35su,f,w,s. Clinical Clerkship in Obstetrics and Gynecology. Study of assigned patients in University Hospital and out-patient service in "The District" and Salvation Army Home; case histories; physical examinations, laboratory examinations; parturition clinics; operations; manikin demonstrations and bedside clinics. Includes clinics in obstetrics and gynecology in the University Dispensary. 240 hours. Dr. Litzenberg, Dr. LaVake and staff.
- 35xsu,f,w,s. Part of 35 at Minneapolis General Hospital. Dr. Urner and staff.
- 35ysu,f,w,s. Part of 35. One week residence at the Ancker Hospital. Dr. Barry and staff.

ELECTIVE COURSES¹

50. Gynecologic Clinic. Diagnosis and treatment of diseases of women. Wilder Dispensary, St. Paul. Four students. Dr. Barry, Dr. Bicek, Dr. Hartley.
51. Venereal Diseases. Night clinic. Minneapolis General Hospital Dispensary T 7:00-9:00 p.m. Dr. Urner, Dr. Proshek.
- 51a. Venereal Diseases. Night Clinic. Same as 51. F 7:00-9:00 p.m. Dr. Urner, Dr. Proshek.
52. Obstetrics and Gynecology Clinic. (See 30 above.) Dr. Litzenberg and others.
54. Applied Anatomy of the Pelvis. The anatomy of the female generative organs using anatomical specimens, models, and the patient for demonstration. University Dispensary. Dr. LaVake.
55. Prenatal Clinics. Antepartum care of pregnant women at the various prenatal stations; limited to one student at each station. Dr. Maland, Dr. Simons, and others.
201. Advanced Obstetrics and Gynecology. Required of first year fellows. Dr. Litzenberg, Dr. Barry, Dr. Urner, and associates.

¹ Elective courses in this department are usually repeated each quarter. See quarterly programs for hours and credits.

202. More Advanced Subjects. Required of second year fellows. Dr. Litzenberg, Dr. Barry, Dr. Urner, and associates.
203. Still More Advanced. Third year fellows. Dr. Litzenberg, Dr. Barry, Dr. Urner, and associates.
204. Seminar. A staff conference. Dr. Litzenberg and staff.
205. Research. Clinical and laboratory research upon problems in obstetrics and gynecology. Required of third year fellows, who must complete a satisfactory thesis during the year. Staff.

OPHTHALMOLOGY AND OTO-LARYNGOLOGY

Departmental Office, Todd Hospital

Professors Frank E. Burch, M.D., F.A.C.S., Head; Horace Newhart, B.A., M.D., F.A.C.S., Director of Division of Oto-Laryngology; Professor Emeritus John Farquhar Fulton, M.D., Ph.D.; Assistant Professors Walter E. Camp, M.A., M.D., F.A.C.S., Howard S. Clark, B.S., M.D., F.A.C.S., Charles E. Connor, M.A., M.D., F.A.C.S., C. Alford Fjeldstad, M.S., M.D., Erling W. Hansen, B.S., M.D., F.A.C.S., Laura A. Lane, B.A., M.D., John S. Macnie, B.A., M.D., F.A.C.S., Kenneth A. Phelps, M.D., F.A.C.S., Fred J. Pratt Jr., M.D., F.A.C.S., John A. Pratt, M.D., F.A.C.S., G. Elmer Strout, M.D., F.A.C.S.; Instructors Paul D. Berrisford, M.D., Lawrence R. Boies, M.A., M.D., John C. Brown, B.S., M.D., Walter Fink, M.D., M.S., F.A.C.S., Hendrie W. Grant, M.D., M.S., F.A.C.S., Albert J. Herbolzheimer, M.D., M.S., Charles Hymes, M.D., M.S., F.A.C.S., Henry P. Rosenberger, M.D., Charles W. Rucker, M.D., M.S., Virgil J. Schwartz, B.S., M.D.; Assistant Frank T. Cavanor, B.A., M.D.; Teaching Fellows Stanley S. Chunn, B.S., M.D., Nelson Young, B.S., M.D.

REQUIRED COURSES

- 20f. Ophthalmology. Lectures and demonstrations. Fifth year. Prerequisites, anatomy, physiology, pathology; 18 hours. Dr. Burch.
- 21w. Laryngology and Rhinology. Lectures and demonstrations. Fifth year. Prerequisites, anatomy, physiology, pathology; 15 hours. Dr. Phelps, Dr. F. J. Pratt.
- 22w. Otology. Lectures and demonstrations. Fifth year. Prerequisites, anatomy, physiology, pathology; 15 hours. Dr. Newhart.
- 36su,f,w,s. Clinic in Diseases of the Eye. Diagnosis and treatment of cases. University Dispensary. Part of required section clinics, surgical clerkship period. 35 hours. Dr. Camp, Dr. Clark, Dr. Hansen, Dr. Macnie, Dr. Hymes.
- 37su,f,w,s. Clinic in Diseases of the Ear. Diagnosis and treatment of cases. University Dispensary. Part of required section clinics, surgical clerkship period. 18 hours. Dr. Newhart, Dr. Fjeldstad, Dr. Rosenberger, Dr. Rucker.

- 38su,f,w,s. Clinic in Diseases of the Nose and Throat. Diagnosis and treatment of cases. University Dispensary. Part of required section clinics, surgical clerkship period. 18 hours. Dr. Boies, Dr. Rosenberger, Dr. Cavanor.

ELECTIVE COURSES

52. Clinic in Diseases of the Eye. 50 hours credit. TThS 1:00-2:30; Wilder Dispensary, St. Paul. Dr. Fulton.
53. Clinic in Diseases of the Ear, Nose, and Throat. 50 hours credit. TThS 1:00-2:30; Wilder Dispensary, St. Paul. Dr. Connor.
54. Didactic and Practical Instruction in Refraction. Credits arranged. MTThF 8:00-9:30; University Dispensary. Dr. Herbolsheimer, Dr. Hymes.
- 121a. Operative Clinic in Eye. 13 hours credit. Limited to six students. Th 3:00-4:30. University Hospital. Dr. Burch, Dr. Camp, Dr. Clark, Dr. Hansen, Dr. Macnie, Dr. Hymes.
- 121b. Operative Clinic in Ear, Nose, and Throat. 13 hours credit. Limited to six students. F 3:00-4:30. University Hospital. Dr. Newhart, Dr. Phelps, Dr. Rosenberger.
122. Medical and Neurologic Ophthalmoscopy. 22 hours credit. Limited to 12 students. Th 3:00-4:00. Todd Memorial Room. Dr. Berrisford, Dr. Rucker.

PEDIATRICS

Departmental Office, 202 Eustis Hospital

Professor Irvine McQuarrie, Ph.D., M.D., Head; Associate Professors James T. Christison, M.D., Edgar J. Huenekens, B.A., M.D., Walter R. Ramsey, M.D., Frederick C. Rodda, M.D., Max Seham, M.D., Chester A. Stewart, Ph.D., M.D., Rood Taylor, M.D., Ph.D.; Assistant Professors Tobias L. Birnberg, M.D., Naboth O. Pearce, M.D., Erling S. Platou, B.S., M.D., Lawrence F. Richdorf, M.D., Ph.D., W. Ray Shannon, M.S., M.D., Mildred R. Ziegler, Ph.D.; Lecturers Herbert E. Chamberlain, B.A., M.D., Hyman S. Lippman, M.D., Ph.D.; Instructors Edward D. Anderson, B.A., M.D., Woodard L. Colby, B.S., M.D., Lyman R. Critchfield, B.S., M.D., George K. Haganman, M.D., Arild E. Hansen, B.S., M.D., Frank G. Hedenstrom, B.S., M.D., Cecile R. Moriarty, B.S., M.D., Lillian L. Nye, M.A., M.D., Edwin F. Robb, B.A., M.D., Robert Rosenthal, M.D., David M. Siperstein, M.A., M.D., Alexander R. Stewart, M.D., C.M., Albert V. Stoesser, B.S., M.D., Ph.D., Robert L. Wilder, B.S., M.D.; Assistants Aaron Friedell, B.A., B.S., M.D., Hermina Hartig, B.S., M.D., Hursel G. Manaugh, B.A., M.D., Glenn R. Matchan, M.D., Thomas Myers, B.S., M.D., Daniel F. Noonan, B.A., Willis H. Thompson, B.S., M.D., Isabelle M. Zanger, B.S., M.D.; Teaching Fellows

Philip H. Bray, B.A., B.S., M.D., Rafael C. Harris, M.D., Edward L. Tuoy, M.D., Ross W. Weisiger, M.D., Honorary Research Fellow Rudolf Engel, M.D.

REQUIRED COURSES

Junior Year

- 21af. Clinical Diagnosis in Infancy and Childhood. Eleven informal amphitheater lectures with demonstrations of the special methods used in pediatrics for differential diagnosis and for the appraisal of the general status of the child's physical and mental health. Supplemented by bedside observation and practice in the hospital. Junior medical students; TTh 8:00-9:00 a.m.; Eustis Amphitheater. Dr. McQuarrie and staff.
- 21bf. The Normal Child and His Care. The characteristics of normal infants and children are considered from the viewpoint of growth and development in a series of eleven informal class discussions. Prevention of diseases of childhood and the feeding and general care of both infants and older children are included. Illustrative cases are presented. Follows Course 21a. TTh 8:00-9:00 a.m.; Eustis Amphitheater. 21a,b, 22 hours credit. Dr. McQuarrie and staff.
- 22w.s. The Diseases of Infancy and Childhood. The various congenital abnormalities and the diseases peculiar to infancy and childhood receive special attention. 44 hours credit. Amphitheater lectures, supplemented by Courses 23 and 24; TTh 8:00-9:00 a.m. Eustis Amphitheater. Dr. McQuarrie and staff.
- 23f,w,s. Divisional Demonstration Clinic on Non-Contagious Diseases. Junior medical students. One quarter, 17 hours, for each student. Ancker and Minneapolis General Hospitals.
- 24f,w,s. Divisional Demonstration Clinic on Contagious Diseases. Junior medical students. One quarter, 17 hours, for each student. Ancker and Minneapolis General Hospitals.

Senior Year

- 30f,w,s,su. Amphitheater Clinic. Detailed consideration of diagnosis, prognosis, prophylaxis, and treatment in individual clinical cases representing all phases of pediatric practice. S 8:00-9:00 a.m. Eustis Amphitheater. Dr. McQuarrie and senior staff.
- 35f,w,s,su. Clinical Clerkship in Pediatrics. Patients in the pediatric wards, dispensaries, and well-baby clinics are assigned to individual students for history taking, complete examination, treatment, and "follow-up" observation under supervision. Bedside clinics for one hour daily. One sixth of class on pediatric clerkship at one time, part of work at the University Hospital, the other part at the Minneapolis General Hospital. Required time, daily from 9:00 a.m. to 5:00 p.m. for 6 weeks. 200 hours credit. Dr. McQuarrie, Dr. Huenekens, Dr. Platou, and staffs.

ELECTIVE COURSES¹

- 101f,w,s. Advanced Study of Contagious Diseases. Group conferences and demonstrations of special diagnostic and therapeutic procedures.
- 102f,w,s. Advanced Study of Nutritional or Other Non-Contagious Diseases. Both clinical and experimental subject-matter included.
- 103f,w,s. Weekly Seminar for Detailed Discussion of Fundamental Subjects Related to Pediatrics.
- 104f,w,s. Common Behavior Disturbances in Childhood—Their Recognition and Management.
- 205f,w,s,su.¹ Pediatric Research. Special problems in the various subdivisions of the pediatric field may be selected for study. Students may collaborate with members of the staff or with other students where suitable arrangements can be made.

For other courses see Graduate School Medical bulletin.

RADIOLOGY

Departmental Office, University Hospital

Professor Leo G. Rigler, B.S., M.D., Head; Associate Professor Karl W. Stenstrom, Ph.D. (Dept. of Physiology); Assistant Professor Robert G. Allison, M.D.; Instructors Malcolm B. Hanson, M.D., Cyrus O. Hansen, B.A., B.S., M.D., Walter H. Ude, B.S., M.D.; Assistants J. Richard Aurelius, B.S., M.D., Oscar Lipschultz B.S., M.D.; Teaching Fellows John B. Enchoe, B.S., M.D., Lester G. Erickson, B.S., M.D., Frederick B. Exner, B.A., M.D.

REQUIRED COURSES

- 21f. Roentgenology and Radiation Therapy. Lectures and demonstrations. Fifth year medical students. Prerequisites, anatomy, physiology, pathology; 22 hours. Dr. Rigler, Dr. Stenstrom.
- 30f,w. Roentgen Diagnostic Clinics. Sixth year. 11 hours credit. Prerequisite, Radiology 79. Dr. Rigler.
- 35su,f,w,s. Radiation Therapy for Surgical Clerks. Part of Surgery 35. Dr. Stenstrom.
- 35xsu,f,w,s. Medical-Roentgenologic Conference for Medical Clerks. Part of Medicine 35. Dr. Rigler.
- 35ysu,f,w,s. Surgical-Roentgenologic Conference for Surgical Clerks. Part of Surgery 35. Dr. Rigler.
- 35zsu,f,w,s. Pediatric-Roentgenologic Conference for Pediatric Clerks. Part of Pediatrics 35. Dr. Rigler.

ELECTIVE COURSES

- 85f,w,s,su. Plate Reading. Fifth or sixth year. 11 hours credit. Prerequisite, Radiology 79. Dr. Rigler.

¹ To be arranged for with Dr. McQuarrie and staff.

- 86f,w,s. X-Ray Technique. Fifth or sixth year. 22 hours credit. Dr. Rigler.
- 87a,f,s,su. X-Ray Anatomy of Bones and Joints. 11 hours credit. Prerequisites, Anatomy 6 and 7. Same as Anatomy 148. Dr. Lipschultz.
- 87bf,s. X-Ray Anatomy of Viscera. 11 hours credit. Prerequisites, Anatomy 6 and 7. Dr. C. O. Hansen.
- 88af,w,s,su. X-Ray Diagnosis of Diseases of Bones and Joints. 11 hours credit. Prerequisite, Radiology 79. Dr. C. O. Hansen.
- 88bf,w,s,su. X-Ray Diagnosis of Diseases of the Thorax. 11 hours credit. Prerequisite, Radiology 79. Dr. M. B. Hanson.
- 88cf,w,s. X-Ray Diagnosis of Diseases of Abdominal Viscera. 11 hours credit. Prerequisite, Radiology 79. Dr. Aurelius.
- 89af,w,s. Clinic in X-Ray Diagnosis. 11 hours credit. Prerequisite, Radiology 79. University Hospital. Dr. Rigler.
- 89bf,w,s,su. Clinic in X-Ray Diagnosis. 11 hours credit. Prerequisite, Radiology 79. Minneapolis General Hospital. Dr. Ude.
- 90f. Fundamentals of Radiology. Same as Physiology 105. 11 hours credit. Dr. Stenstrom.
- 95f,w,s,su. Clinic in X-Ray Therapy. Fifth or sixth year. 11 hours; 1 credit. Dr. Stenstrom.
- 101f,w,s,su. Surgical-Roentgenologic Conference. Same as Radiology 81. Fifth and sixth year and graduates; 11 hours credit. Prerequisite, Radiology 79. Dr. Rigler.
- 102f,w,s. X-Ray Conference. Fifth and sixth year and graduates. 11 hours credit. Prerequisite, Radiology 79. Dr. Rigler, Dr. Ude.
- 103f,w,s,su. Physical Therapy Treatment Clinic. Fifth and sixth year and graduates. 22 hours; 1 credit. Dr. Stenstrom.
- 104w. Roentgen and Radium Therapy. Fifth and sixth year and graduates. 11 hours credit. Dr. Stenstrom.
- 106s. Physical Therapy Lectures. 11 hours credit. Dr. Stenstrom.
- 107f,w,s,su. Medical-Roentgenologic Conference. Same as Radiology 22. Fifth and sixth year and graduates. Prerequisite, Radiology 79. Dr. Rigler.
- 108f,w,s,su. Pediatric-Roentgenologic Conference. Same as Radiology 25. Fifth and sixth year and graduates. Prerequisite, Radiology 79. Dr. Rigler.
- 200f,w,s,su.¹ Research in Roentgenology. Hours and credits arranged. Dr. Rigler.
- 201f,w.¹ X-Ray Diagnosis of Diseases of the Skull and Upper Respiratory Tract. 11 hours; 1 credit. Dr. Rigler.
- 202f.¹ X-Ray Diagnosis in Pediatrics. 11 hours; 1 credit. Dr. Rigler.
- 205f,w,s,su.¹ Research Related to Radiation Therapy. Hours and credits arranged. Dr. Stenstrom.
- 208f,w,s.¹ Radiology Seminar (Bimonthly). Hours and credits arranged. Dr. Rigler, Dr. Stenstrom.

¹ Written permission for registration required.

SURGERY

Departmental Office, University Hospital

DIVISION OF GENERAL SURGERY

Professors Owen H. Wangensteen, M.D., Ph.D., F.A.C.S., Head; Charles H. Mayo, M.D., M.A., LL.D., F.A.C.S., D.Sc., Arthur C. Strachauer, M.D., F.A.C.S.; Associate Professors Alexander R. Colvin, M.D., F.A.C.S., J. Frank Corbett, M.D., F.A.C.S., James A. Johnson, M.D., F.A.C.S., Arthur T. Mann, B.S., M.D., F.A.C.S., Harry P. Ritchie, Ph.B., M.D., F.A.C.S., John T. Rogers, M.D., F.A.C.S., Arthur A. Zierold, M.D., Ph.D.; Assistant Professors John S. Abbott, B.A., M.D., Louis E. Daugherty, M.D., F.A.C.S., George R. Dunn, Ph.B., M.D., F.A.C.S., Walter A. Fansler, M.A., M.D., F.A.C.S., James M. Hayes, M.D., M.S., F.A.C.S., E. Mendelssohn Jones, M.D., F.A.C.S., Ralph T. Knight, B.A., M.D., F.A.C.S., Frank S. McKinney, B.A., M.D., Stanley R. Maxeiner, M.D., F.A.C.S., Edward Moren, M.D., William T. Peyton, M.D., Ph.D., Emil C. Robitshek, M.D., F.A.C.S., Roscoe C. Webb, B.A., M.D., F.A.C.S., Archa E. Wilcox, M.D., F.A.C.S., Harry Zimmerman, M.D., F.A.C.S.; Professorial Lecturer Arnold Schwyzer, M.D., F.A.C.S.; Instructors Arthur F. Bratrud, B.S., M.D., F.A.C.S., Orwood J. Campbell, B.S., M.D., Richard R. Cranmer, M.D., F.A.C.S., C. Donald Creevy, M.D., M.S., Philip F. Donohue, B.S., M.D., L. Haynes Fowler, B.A., M.D., William A. Hanson, B.S., M.D., Victor P. Hauser, B.A., B.S., M.D., Harold E. Hullsiek, B.S., M.D., Thomas J. Kinsella, B.S., M.D., F.A.C.S., Frederick A. Olson, M.D., M.S., F.A.C.S., Olof A. Olson, M.D., Edward A. Regnier, B.S., M.D., Willard D. White, B.S., M.D., Oswald S. Wyatt, B.S., M.D.; Research Assistant Rudolph W. Koucky, B.S., M.D.; Assistants James Kerr Anderson, B.A., M.D., John M. Culligan, Litt.B., M.D., M.S., F.A.C.S., D. Greth Gardiner, B.A., B.S., M.D., Leo T. Murphy, B.S., M.D., Warner Ogden, B.A., M.D.; Teaching Fellows Herbert A. Carlson, B.S., M.D., Harold J. Dvorak, M.S., M.D., Earl C. Henrikson, B.S., B.A., M.D.; N. Logan Leven, B.A., B.S., M.D.; Melville H. Manson, B.S., M.D., Charles H. Mead, M.A., M.D., Carl O. Rice, M.D., Horace G. Scott, B.A., B.S., M.D.

DIVISION OF ORTHOPEDIC SURGERY

Associate Professors Wallace H. Cole, M.D., F.A.C.S., Director; Emil S. Geist, M.D., F.A.C.S., Charles A. Reed, B.S., M.D., F.A.C.S.; Assistant Professors Carl C. Chatterton, M.D., F.A.C.S., Edward T. Evans, B.S., M.D., F.A.C.S., Paul W. Giessler, B.S., M.D.; Instructors Myron O. Henry, B.S., M.D., F.A.C.S.; Assistants Albert E. Flagstad, B.S., M.D., William H. von der Weyer, M.D., George A. Williamson, M.D.

DIVISION OF UROLOGY

Associate Professor Franklin R. Wright, D.D.S., M.D., F.A.C.S., Director; Assistant Professors Frederic E. B. Foley, Ph.B., M.D., Oscar Owre, M.D., C.M., F.A.C.S., Gilbert J. Thomas, M.D., F.A.C.S., Anton G. Wethall, B.S., M.D.; Instructor William P. Herbst, Sr., M.D., M.S., F.A.C.S.

DIVISION OF ANESTHESIA

Assistant Professor Ralph T. Knight, M.A., M.D., Director.

DIVISION OF GENERAL SURGERY

REQUIRED COURSES

- 21f. Principles of Surgery. A study of the basic principles of surgery, including anesthesia, antiseptics, asepsis, hemostasis, inflammations, and the process of the repair in tissues. Lectures and demonstrations. Fifth year.¹ 33 hours. Dr. Peyton, Dr. Creevy.
- 22f,w,s. Fracture Divisional Clinic. Fifth year. 17 hours per student. Dr. Zierold, Dr. Robitshek, Dr. Campbell, Dr. Regnier, Dr. White.
- 26f,w. Orientation Course in General Surgery. A series of clinical lectures on regional surgery (exclusive of urologic and orthopedic surgery), emphasizing pathology, diagnosis, and essentials of treatment. These lectures attempt to orient the student in his study and reading. Fifth year. 44 hours. Surgical staff.
- 28f,w,s. Diagnostic and Operative Clinic. Fifth year. 17 hours for each student. Ancker Hospital. Dr. Colvin and associates.
- 29f,w,s. Surgery Clinic for Juniors. Amphitheater clinic demonstrating surgical conditions in hospital patients. Fifth year. 33 hours. Required three quarters. Dr. Wangensteen and others.
- 30su,f,w,s. Surgery Clinic for Seniors. Amphitheater clinic demonstrating surgical conditions in hospital patients. Sixth year. 55 hours required of each student. Dr. Wangensteen and others.
- 35su,f,w,s. Clinical Clerkship. The personal study of assigned patients; case histories, laboratory examinations, provisional diagnoses with suggestions as to therapy; attendance at operation of such studied cases and observation of postoperative management. Participation in operations of assigned classes as third assistant. Sixth year, 300 hours. University Hospital. Surgical staff.
- 35usu,f,w,s. Reading Course. A weekly recitation during the clerkship period on assigned surgical reading, with a standard textbook of surgery as a guide. Quiz and lecture. Part of Course 35. Surgical staff.
- 35vsu,f,w,s. Anesthetics and Dressings. Administration of anesthetics under supervision and dressing of wounds of hospital patients under

¹ Fourth year, beginning 1932-33.

- supervision of hospital staff. Part of Course 35. University Hospital. Dr. Knight, and others.
- 35wsu,f,w,s. Minor Surgery Clinic, Including Proctology. Sections daily in the Out-Patient Department; a part of Course 35. Sixth year. Dr. Hayes, Dr. McKinney, Dr. Bratrud, Dr. J. K. Anderson.
- 35xsu,f,w,s. Clinical Clerkship. The personal study of assigned patients; case histories, laboratory examinations, provisional diagnoses with suggestions as to therapy; attendance at operation of such studied cases and observation of postoperative management. Participation in operations of assigned cases as third assistant. Part of Course 35. Minneapolis General Hospital. Surgical staff.
- 35ysu,f,w,s. Clerkship on Fractures. Under the supervision of the hospital staff the student participates in the care of fractures. Part of Course 35. General Hospital. Staff.
- 35zsu,f,w,s. Tumor Clinic. Diagnosis and demonstration of malignancies removed at operation and autopsy. Sixth year. One division each quarter. Part of Course 35. Staffs of the Departments of Surgery and Pathology.

ELECTIVE COURSES

(Fifth or Sixth Year)

- 52su,f,w,s. Tumor Diagnosis. Personal study of patients who come to the Out-Patient Department. 22 hours. Dr. Peyton and others.
- 53su,f,w,s.¹ Problems in Clinical Investigation. A study of special case records correlated with literature study. Hours and credits arranged. Dr. Wangensteen, Dr. Peyton, Dr. Creevy.
- 56f,w,s. Bedside Clinic. 11 hours. General Hospital. Dr. Robitshek.
- 59s. Traumatic Surgery Clinic. 11 hours. General Hospital. Dr. Zierod.
- 67su,f,w,s.¹ Problems in Experimental Surgery. Students under supervision will investigate problems assigned them. As their experience increases they are permitted to do a major portion of the operations incident to their problems. Prerequisite, Surgery 53. Hours and credits arranged. Dr. Wangensteen, Dr. Peyton, Dr. Creevy.
- 68s. Applied Surgical Anatomy. Application of anatomy to diagnosis; operative procedures done on cadavers. Dr. Peyton, Dr. Evans, Dr. Fowler.

For other courses see Graduate School Medical bulletin.

DIVISION OF ORTHOPEDIC SURGERY

REQUIRED COURSES

- 40f,w,s. Orthopedic Surgery. A course of clinical lectures, demonstrations, and operations conducted in each quarter. Fifth year. 22 hours. Gillette State Hospital, Phalen Park. Dr. Cole, Dr. Chatterton, and others.
- 41su,f,w,s. Orthopedic Clinic. Conducted in the Out-Patient Department; a

¹ Student must obtain permission of department before registering.

part of required section clinics. Sixth year. Part of Course 35.
Dr. Evans.

- 42s. Orthopedic Surgery. A course of lectures covering orthopedic conditions in the adult; lantern slides and demonstrations. Fifth or sixth year. 11 hours. Dr. Cole, Dr. Geist, Dr. Reed, Dr. Evans.

DIVISION OF UROLOGY

REQUIRED COURSES

- 46w. Genitourinary Diseases. The etiology, diagnosis, and treatment of this group of diseases. A course of lectures. Fifth year. 18 hours. Dr. Wright.
- 47su,f,w,s. Urologic Diagnosis and Cystoscopy. Half division clinic. Fifth year. 17 hours. Ancker Hospital, Dr. Foley; University Hospital, Dr. Wright and others.
- 49su,f,w,s. Genitourinary Clinic. The observation, examination, and treatment of patients in the Out-Patient Department. Sixth year. Part of Course 35. Dr. Wethall, Dr. Creevy.

ELECTIVE COURSES

- 60f,w,s. Urologic Clinic. Fifth or sixth year. 17 hours. Minneapolis General Hospital. Dr. Owre.
- 64su,f,w,s. Night Clinic in Urology. (Venereal Diseases.) 33 hours. University Dispensary. Dr. Wethall.

DIVISION OF ANESTHESIA

REQUIRED COURSE

- 35v. Individual Instruction in Anesthesia. Part of surgical clerkship. Surgery 35. Dr. Knight, and others.

UNIVERSITY HOSPITAL

(With Departmental Status)

Paul Fesler, Superintendent, with rank of Department Head.

DIVISION OF NURSING INSTRUCTION

See School of Nursing.

DIVISION OF DIETETICS

Gertrude I. Thomas, Director.

For courses see Nursing School bulletin and special circular.

DIVISION OF HOSPITAL SOCIAL SERVICE

Instructors Frances M. Money, Ph.B., M.S., Director; Annie L. Baker, M.A., Lydia B. Christ, B.A., Grace Gardner, M.S., Mathilda Mathisen,

M.S., Mary A. Stites, M.A.; Staff Workers Helen Eaves, B.S., Carmen Frazee, B.S.

The Hospital Social Service Department provides field work for medical-social students in the Training Course for Social and Civic Work. Field work is given to a few undergraduates but mainly to graduate students.

For a statement of courses see bulletin of the College of Science, Literature, and the Arts, and special bulletin of the Training Course for Social and Civic Work.

SCHOOL OF NURSING

(With Departmental Status)

Professor Katharine J. Densford, M.A., R.N., Head and Director; Assistant Professors Dorothy Kurtzman, R.N., O'ena Ordahl, R.N., Elizabeth Reynolds, B.S., R.N., Barbara Thompson, R.N.; Instructors Phoebe Gordon, B.A., Ethel Gough, B.S., Eva Gregerson, Mildred Hagstrom, B.S., Cecilia Hauge, B.S., R.N., Melda Korfhage, B.S., R.N., Mabel Larson, R.N., Julia Miller, R.N., Sena Peterson, R.N., Lucile Petry, M.A., R.N., Mary C. Sands, B.S., R.N., Esther Thompson, M.A., R.N., Helen Torgerson, B.S., R.N.

For courses for nurses see bulletin of the School of Nursing.

ELECTIVE COURSE

60. Nursing Practice for Medical Students. Demonstrations and conferences on the more common nursing procedures and their adaptation in the home.

THE SCHOOL OF CHEMISTRY

For faculty, see Science, Literature, and the Arts bulletin

DEPARTMENT OF PHYSICAL CHEMISTRY

(Required course in the Medical School)

- 110f. Physical Chemistry. Designed chiefly for medical and biological students. 3 credits. Prerequisite, 7. Mr. Taylor.

For other courses in chemistry which may be elected for credit in the Medical School see bulletin of the School of Chemistry.

DEPARTMENT OF MILITARY SCIENCE AND TACTICS, R.O.T.C.

Assistant Professor Major William G. Guthrie, M.D., U.S.A. (Medical Corps), Head.

This department contributes elective courses to the Medical School and leads to a certificate of proficiency in military science and tactics—medical, which qualifies for appointment and commission in the Medical Officers Reserve Corps, U. S. Army. The course is progressive and as a whole is intended also to aid the student in his preparation for citizenship. B stands for basic, A for advanced courses.

- B-1f. Elements of Military Science. An introductory course to familiarize the student with the more necessary fundamentals of military science and organization of the Medical Department. For freshmen only. 33 hours; 3 credits. Major Guthrie.
- B-2s. Medical Tactics. A theoretic course in organization and tactics, preparatory to completion of this training by practical work in camp. For sophomores only. 33 hours; 3 credits. Major Guthrie.
- A-1w. Military Hygiene and Sanitation. A theoretic course in the essentials of military hygiene and sanitation, to supplement the practical training in camp and in the Department of Public Health and Preventive Medicine. For juniors only. 33 hours; 3 credits. Major Guthrie.
- A-2s. Medical Administration. A theoretic and practical course to train the student in medico-military administration with special reference to hospitals and hospitalization methods and also includes surgical and medical diseases peculiar to war, methods of gas defense, and miscellaneous medico-military subjects. For seniors only. 33 hours; 3 credits. Major Guthrie.
- A-1su. Field Service. A practical course at an army camp in hygiene and sanitation, medical tactics, administration, drill command, of six weeks' duration. Summer quarter following sophomore year. 180 hours. Major Guthrie.

INTERDEPARTMENTAL INSTRUCTION

In charge of Dr. W. A. O'Brien, Associate Professor of Pathology

CORRELATION CLINICS

Recognizing the trend in educational practice of correlating fundamental and applied knowledge, the Medical School offered one hour weekly clinics in applied anatomy in the winter quarter of the freshman year in 1929. Since then, regular weekly clinics have been held for both the freshman and sophomore classes. The aim is to emphasize the condition of various patients in terms of the fundamental sciences. During the coming year, the program will be as follows:

Freshman year: Fall quarter, General Introduction, Dr. O'Brien; Winter, Anatomy, Dr. W. T. Peyton; Spring, Physiologic Chemistry, Dr. O'Brien.

Sophomore year: Fall quarter, Neurology, Dr. J. C. McKinley; Winter, Physiology and General Pathology, Dr. O'Brien; Spring, Special Pathology, Dr. M. Barron.

These courses, one hour a week respectively; no credit.

COURSE IN MEDICAL ETHICS AND ECONOMICS

Through the courtesy and efforts of the Medical Alumni Association a course of lectures on ethics, economics, and related subjects is offered yearly. Members of the profession particularly informed on these important

aspects of practice offer the benefit of their experience. The course includes about ten lectures, and is unofficial and without credit. Attendance is, however, expected on part of all senior students. Dr. S. B. Solhaug is in charge.

AGRICULTURAL BIOCHEMISTRY

(Contributing elective courses to the Medical School)

Professors Ross A. Gortner, Ph.D., Chief; Leroy S. Palmer, Ph.D.; Associate Professor Cornelia Kennedy, Ph.D.; Assistant Professor W. Martin Sandstrom, Ph.D.

111f-112w. Biochemistry. Advanced course dealing with the colloidal state, and the chemistry of proteins, carbohydrates, glucosides, tannins, fats, acids, enzymes, and pigments, and their physicochemical relations to the vital processes involved in growth and nutrition. Prerequisites, organic chemistry and zoology (1 year) or botany (1 year). 3 credits each quarter; lect. MWF III; Th VI. Dr. Gortner.

113f-114w-115s. Biochemical Laboratory Methods. A laboratory course paralleling the lectures in 111-112, using recent methods for the investigation of biologically important compounds, with especial reference to the detection and estimation of such compounds in cells or tissues. Prerequisite, Quantitative Analysis, parallel 111-112. 2 credits each quarter; T VI, VII, VIII; Th VII, VIII, IX. Dr. Sandstrom.

116w. Advanced Animal Nutrition. Lectures and assigned readings on recent developments in animal nutrition, covering the field of proteins, mineral metabolism, vitamins, and the relation of nutrition to disease. Prerequisite, 111 or physiologic chemistry; 3 credits. TThS III. Dr. Palmer, Dr. Kennedy.

206f. Colloids. Lectures dealing with the colloidal state, the preparation and properties of colloidal solutions, and the relation of these to biochemical processes. Prerequisites, Course 111-112, or physical chemistry. 3 credits; MWF II. Dr. Gortner.

207s. Enzymes. Lectures dealing with the nature of enzyme action, including methods of preparation and investigation of enzymes, their physical and chemical properties and their methods of action. Prerequisites, Course 111-112, or physiologic chemistry. 3 credits; MWF III. Dr. Sandstrom.

208w.¹ Proteins. Lectures on the composition, structure, biochemical reactions, and functions of the protein and amino acids. Prerequisite, Course 111-112, or physiologic chemistry. 3 credits; MWF III. Dr. Gortner.

DEPARTMENT OF ZOOLOGY

For faculty, see Science, Literature, and the Arts bulletin

(Contributing elective courses to the Medical School)

107f-108w. Protozoology. Lectures, reference, and laboratory work on the structure and life history of Protozoa. Special reference is paid to the

¹ Offered in alternate years. Offered in 1931-32.

- relations of the Protozoa to diseases of animals. 3 credits each quarter. TThS I, II. Dr. Sigerfoos.
- 144f,s-145w-146s. Animal Parasites and Parasitism. Lectures and laboratory work. Origin and biological significance of parasitism, and the structure, life-history, and economic relations of representative parasites. Second term devoted primarily to relations of insects to diseases of man and animals. 3 credits each quarter. WF VI, VII, VIII. Dr. Riley.
- 181f-182w. Embryology. A survey of the principles of animal development dealing with fundamental invertebrate and vertebrate types. Lectures, reference and laboratory work. 3 credits each quarter. TTh VI, VII, VIII. Dr. Ringoen.
- 183s. Genetics and Eugenics. Facts and theories of heredity and application to man. 3 credits. TThS III. Dr. Wodsedalek.

THE COLLEGE OF DENTISTRY AND THE
SCHOOL FOR DENTAL HYGIENISTS

ANNOUNCEMENTS FOR THE YEARS 1930-32

See bound bulletin for year 1932-33

Vol. XXXIII

No. 37

August 8, 1930

THE SCHOOL OF MINES AND METALLURGY

ANNOUNCEMENTS FOR THE YEARS

1930-32

See bound bulletin for 1930-31

Vol. XXXIII

No. 35

August 4, 1930

The Bulletin *of the University of* **Minnesota**

The College of Pharmacy
Announcement for the Years
1931-1933



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ADMINISTRATIVE OFFICERS

Lotus Delta Coffman, Ph.D., LL.D., President

Frederick J. Wulling, Phm.G., Phm.D., LL.M., Ph.M., *causa honoris*, D.Sc.,
causa honoris, Dean of the College of Pharmacy, Professor of Pharmacology, and Director of the University Medicinal Plant Gardens

GENERAL INFORMATION

The fortieth course of the College of Pharmacy begins and ends as announced in the calendar in the bulletin of general information.

ADMISSION BY CERTIFICATE

Diplomas or other evidences of the completion of an accredited four-year high school course, or of its educational equipment, are required for admission. The high school course must have included:

1. English 4 units
 or English 3 units
 and a foreign language 2 units
2. Mathematics
 Elementary algebra 1 unit
 Plane geometry 1 unit
3. Latin 1 unit
4. Physics 1 unit
5. Enough additional work to make in all 15 units, of which not more than 4 may be in Group F.

Group F consists of high school, vocational, and miscellaneous subjects. The subjects are no longer designated by the University. The applicant is free to present in this division such subjects as are not listed in other groups, but which are certified by the superintendent or principal as being of acceptable nature and counted toward graduation.

Prospective students in pharmacy are advised to include in their high school courses, higher algebra and solid geometry, but not botany, chemistry, or physiology because these latter three subjects are included in the regular pharmacy course.

Owing to the limited capacity of the Pharmacy Building, not more than sixty new students can be admitted annually. Applications for admission should be in the registrar's office not later than July 1, by June 1, if possible.

ADMISSION BY EXAMINATION

Students may take examinations in subjects for which they have no certificates. A high school training covers a minimum of 15 units, a unit being a school year of standard work in a given subject. State High School Board certificates and College Entrance Examination Board certificates are accepted in lieu of examinations in respective high school subjects.

NEW STUDENTS

All applicants for admission and to advanced standing should request the high schools or colleges they attend to send complete transcripts of their records to the registrar of the University as early as possible and not later than July 1. Upon receipt of the credentials, the registrar will

notify the applicant concerning his admission and will forward directions for registration.

New students are admitted only at the beginning of the fall quarter.

OLD STUDENTS

About September 1, the registrar will send a fee statement to the student's home address as it appears on the records of his office. Those who fail to receive the statement within a week should write to the registrar and ask for it.

FEES AND OTHER EXPENSES

The quarterly tuition fee of \$35 for resident students and \$45 for non-resident students is payable before the beginning of each quarter. Certificates entitling the student to admission to classes will not be issued until fees have been paid.

Tuition fee (per quarter)	
Residents of Minnesota.....	\$35.00
Non-residents	45.00
Incidental fee (per quarter).....	6.00
Deposit (first quarter only).....	10.00
Military deposit (required of all students taking military drill).....	10.00
Special fees:	
Examination for removal of condition.....	1.00
Examination for credits (after the first six weeks in residence).....	5.00
Special examination	5.00
Chemistry deposit	5.00
Graduation fee	10.00

Students registered in Dispensing and Dispensary Practice are required to wear white coats to be purchased at their own expense but to be laundered by the University at no expense to the students.

Registration penalties.—A penalty fee for late registration, late change of registration, or late payment of fees shall be \$2 prior to the day classes begin, on and after which the penalty increases at the rate of \$1 per day, provided that no student shall pay more than \$10 of penalty in any given quarter.

Those desiring to take special work may pay fees on a clock hour basis, the rate being \$1.50 an hour for resident students and \$2 an hour for non-resident students.

GRADUATION REQUIREMENTS

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

Every person upon whom any degree is conferred must be of good moral character; must have completed the required lecture and laboratory courses, the last year spent in this college; and must have passed examinations in the subjects required for graduation.

Drug store experience is not a requirement for graduation.

NEW PHARMACY LAW REQUIREMENTS

The latter part of March, 1929, the Minnesota Legislature passed an act requiring graduation from a college of pharmacy recognized by membership in the American Association of Colleges of Pharmacy as a prerequisite to application for examination by the Minnesota State Board of Pharmacy for license to practice pharmacy in the state of Minnesota. The act went into effect upon passage. Accordingly, all persons who will apply to the State Board of Pharmacy for examination must be graduates of recognized colleges of pharmacy. Many of the colleges of pharmacy are already on a minimum four-year graduation course basis and all others who are members of the American Association of Colleges of Pharmacy are required to be on a four-year minimum basis by January 1, 1932. Other colleges whose graduation requirements are less will not be among the recognized colleges and their graduates cannot be accepted for examination for license to practice.

The legislature passed another law abolishing the former examination for pharmaceutical assistants. Therefore all who desire to prepare themselves to practice pharmacy in the state of Minnesota must complete a minimum of four years of work at a recognized college of pharmacy. There is no lower standard in the state of Minnesota.

ADVANCED STANDING

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

UNCLASSED STUDENTS

Persons meeting the entrance requirements desiring to do less than the work of the regular course may be admitted as unclassified or special students provided there is laboratory room for them. Work completed satisfactorily will be credited should the students subsequently enter the regular course. Registered pharmacists who desire to take certain branches of study may avail themselves of any of the college facilities.

EXAMINATIONS AND STANDING

Examinations are held during the last week of each quarter, and are supplementary to the written and practical tests and quizzes that are held at frequent intervals during the year, and, with them, form largely the basis of final determination of fitness for promotion or graduation.

The standing of students is indicated by the letters A, B, C, D, (A highest, D lowest passing mark), E (condition), I (incomplete), and F (failure). Conditions may be removed as indicated below. An *incomplete* not removed before the end of the first month of the student's next quar-

ter in college becomes a *condition*. The Students' Work Committee may, in special cases, extend this time limit.

In order to become eligible for final examinations students are required to attend at least seven eighths of the lectures in each course. This does not apply to laboratory courses, which must be taken in full.

Students having conditions in more than two major or in more than three minor subjects of the first year cannot enter upon the second year's work. Candidates for graduation must have removed all conditions before entering upon the third quarter of the graduating year.

Examinations for the removal of conditions will be offered the week preceding the opening of the fall quarter. Similar examinations will also be given during the first thirty days of the winter and spring quarters. Announcement of these examinations will appear in the general information bulletin and the *Official Daily Bulletin*. Conditioned students are required to inform themselves as to these dates as soon as they learn that they are conditioned, as no other notice is given. A fee of one dollar is charged for a condition examination. Failure at the condition examination necessitates a repetition of the subject. Students who carry a condition into a succeeding year may find a conflict of lecture or laboratory hours. In such cases they are to give preference to the lower course.

Absences will not be excused unless satisfactory reasons are given. Habitual absence without a satisfactory excuse, continued indifference to study, or persistently poor scholarship may subject the student to probation or temporary or permanent suspension. Any of the facilities afforded by the University are open to the students of this college, subject to the approval of the dean. Opportunity is offered to do advanced work in all branches. Textbooks may be obtained after coming to the University.

Students find their time fully occupied with the regular curriculum.

MEDICINAL PLANT LABORATORY AND GARDEN

Students receive instruction in medicinal plant culture and in the harvesting, drying, preparing, and milling of drugs in the very representative medicinal plant garden and in the plant laboratory and conservatory. The garden and plant laboratory have been added to increase the educational facilities of the college. The college has no experience or information concerning the commercial cultivation of medicinal plants.

DISPENSARY PRESCRIPTION PRACTICE

The seniors, under competent direction and supervision, dispense the prescriptions written by the physicians in the Out-Patient Department of the University Hospitals. During the past year upwards of twenty-five thousand prescriptions were filled, most of them formulated ones, only a negligible percentage calling for proprietaries.

ELECTIVES IN OTHER UNIVERSITY COLLEGES

Students may elect certain subjects in other university colleges, if such election does not interfere with their regular work. Subjects elected must be approved by the dean.

COLLEGE TRAINING FOR PHARMACISTS

The recognition of the need of substantial college training for pharmacists finds expression in many ways. In many states, including Minnesota, such training is now obligatory by law. In a number of other states credit is given for college work. Graduates of the four-year course need only one additional year of drug store experience before they become eligible for examination by the State Board of Pharmacy for full registration.

SUMMER QUARTER

The College of Pharmacy offers no courses in purely pharmaceutical subjects but the summer quarter offers the following courses which are part of the pharmacy course: general chemistry, qualitative chemistry, organic chemistry, general botany, physiology, bacteriology, rhetoric, physics, modern languages, and zoology.

Requests for summer quarter bulletins should be made directly to the university registrar.

MINNESOTA STATE PHARMACEUTICAL ASSOCIATION SCHOLARSHIP

The Minnesota State Pharmaceutical Association awards annually \$105 in cash and a token to that student who is a citizen of the United States, who has resided in Minnesota for the last five years, and who has earned the highest general or average rating at the completion of the first two years of technical pharmaceutical work up to ten days before Cap and Gown Day and who is a candidate for the first degree in pharmacy from this college. If such student should discontinue attendance at the college, the said sum is to be awarded to the student next highest in standing who meets the other requirements.

THE FAIRCHILD SCHOLARSHIP

Mr. Samuel W. Fairchild offers a scholarship in the sum of \$500 to be awarded to the student in any of the colleges holding membership in the American Association of Colleges of Pharmacy who has graduated from any of the association colleges' four-year course and who has won the competitive examination provided as a preliminary to graduate work in pharmacy. Fuller particulars may be had from the dean of the college.

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 from the four-year course leading to the degree of bachelor of science in pharmacy.

THE JACOBSON PRIZE

David L. Jacobson, '99, offers annually a gold medal to that student who graduates with the highest general average rating from the first graduate course in pharmacy leading to the degree master of science in pharmacy.

POSITIONS FOR GRADUATES

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

STATE BOARD OF PHARMACY

The State Board of Pharmacy meets at the college four times each year to examine candidates for registration. For information concerning the board or state examinations, address the secretary of the board, 2943 Twenty-seventh Ave. So., Minneapolis.

THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

This college is a member of the American Association of Colleges of Pharmacy, whose object is the promotion of higher pharmaceutical education. Through the influence of the association, higher standards of education are being adopted from time to time by its members and others, evidenced by the fact that several states by law or by board of pharmacy ruling recognize the standards set by the association. Member colleges must maintain certain minimum entrance and graduation requirements. This college exceeds these requirements.

THE NORTHWESTERN BRANCH OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

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

COMMUNICATIONS

Communications not relating to registration should be addressed to the dean, Professor Frederick J. Wulling, University of Minnesota, Minneapolis, Minnesota. Communications relating to registration or advanced standing should be addressed to the University Examiner, Registrar's Office, University of Minnesota.

For further information see bulletin of general information.

COURSE OF STUDY

The College of Pharmacy has discontinued the three-year course leading to the degree pharmaceutical chemist and now offers only one undergraduate course of four years' duration, leading to the degree bachelor of science in pharmacy and including one year of work in certain subjects in the College of Science, Literature, and the Arts, or other colleges of equal standing. This was formerly the optional four-year course. It has become the obligatory minimum degree course by action of the university regents at their April, 1926, meeting. Graduate work in pharmacy, leading to the Master's and Doctor's degrees, respectively, is now under the direction of the Graduate School. The graduate work is open to graduates of the four-year course of this or other colleges of pharmacy of similar standing and who have the degree bachelor of science in pharmacy and who have shown exceptional scholarship and capacity in the undergraduate course and possess unquestioned ability to carry on independent or research work.

THE PRESENT REGULAR COURSE

This course extends over a period of four full university years. The curriculum is described in the following pages, but its division among the four years may be changed as necessity may warrant. All courses begin only with the fall or first quarter.

OUTLINE OF THE REGULAR FOUR-YEAR COURSE (Subject to change)

FIRST YEAR

This year includes a minimum total of 45 quarter credits among which must be a minimum of 10 of rhetoric, 9 of modern language, 10 of college physics or zoology. The 16 additional credits are electives. Students may complete this first year at the College of Science, Literature, and the Arts at the University, or at any junior college, or at any academic college of equal standing, in which case they will be admitted to the second year of the four-year course; or they may complete the 45 academic credits at the University by carrying them concurrently during the first two years with some of the technical pharmaceutical subjects. The first choice is recommended. If the student chooses to carry academic and professional work concurrently, the outline of the first two years would be as follows:

FIRST YEAR—COMBINED

<i>First Quarter</i>	<i>Second Quarter</i>	<i>Third Quarter</i>
General Chemistry	General Chemistry	Qualitative Chemistry
General Botany	General Botany	General Botany
Rhetoric* (5 cred.)	Rhetoric* (5 cred.)	Rhetoric* (5 cred.)
Modern Language† (3 or 5 cred.)	Modern Language† (3 or 5 cred.)	Modern Language† (3 or 5 cred.)
Military Drill	Military Drill	Military Drill
Preventive Medicine (2 cred.)		

* Total of only 10 credits required.

† Total of only 9 credits required.

THE COLLEGE OF PHARMACY

SECOND YEAR—COMBINED

<i>First Quarter</i>	<i>Second Quarter</i>	<i>Third Quarter</i>
Physics or Zoology* (5 cred.)	Physics or Zoology* (5 cred.)	Physics or Zoology* (5 cred.)
Academic electives†	Academic electives†	Academic electives†
Didactic Pharmaceutical Chemistry	Didactic Pharmaceutical Chemistry	Didactic Pharmaceutical Chemistry
Pharmacy	Pharmacy	Pharmacy
Pharmacognosy	Pharmacognosy	Pharmacognosy
Military Drill	Military Drill	Military Drill

SECOND YEAR

<i>First Quarter</i>	<i>Second Quarter</i>	<i>Third Quarter</i>
Botany	Botany	Botany
General Chemistry	General Chemistry	Qualitative Chemistry
Military Training	Military Training	Military Training
Pharmacy	Pharmacy	Pharmacy
Pharmac. Chemistry, Didactic	Pharmac. Chemistry, Didactic	Pharmac. Chemistry, Didactic
Pharmacognosy	Pharmacognosy	Pharmacognosy

THIRD YEAR

The third and fourth year curricula are the same for all students, as follows:

<i>First Quarter</i>	<i>Second Quarter</i>	<i>Third Quarter</i>
Materia Medica	Materia Medica	Materia Medica
Pharmacognosy	Pharmacognosy	Pharmacognosy
Pharmac. Chemistry, Practical	Pharmac. Chemistry, Practical	Therapeutics
Military Training	U. S. P. Testing	Operative Pharmacy
Organic Chemistry	Military Training	Military Training
	Organic Chemistry	Physiology

FOURTH YEAR

<i>First Quarter</i>	<i>Second Quarter</i>	<i>Third Quarter</i>
Dispensing	Dispensing	Dispensing
U. S. P. Assay	U. S. P. Assay	U. S. P. Assay
Bacteriology	Drug and Food Analysis	Mineralogy and Crystallog.
Drug and Food Analysis	Physiology	Drug and Food Analysis
Dispensary Practice	Dispensary Practice	Law and Ethics
Organic Pharmacy		Dispensary Practice

CREDIT VALUE

The credit values of courses were changed September, 1918. Now a credit value covers one period of lecture or recitation or two, and in some laboratory subjects three, periods of laboratory work per week per quarter. The numbers expressing the credit value of courses are now fifty per cent greater than formerly, when the college was on the semester basis.

* Total of only 10 credits of either required.

† Sufficient to make a total of 45 credits.

DESCRIPTION OF COURSES

STATEMENT OF COURSES

Following each course is a statement, in parentheses, of credits, classes of students eligible, prerequisites, days of the week, class hours, and location of class. Thus (3 cred.; jr., sr., grad.; prereq., 3-4; MTW II) means that the course carries three credits, is open to juniors, seniors, and graduates, demands Course 3-4 as a prerequisite, and meets on Monday, Tuesday, and Wednesday, at the second hour.

BACTERIOLOGY AND IMMUNOLOGY

Professors Winford P. Larson, M.D., Robert G. Green, M.A., M.D., Arthur T. Henrici, M.D., Assistant Professor H. Orin Halvorson, Ch.E., Ph.D.; Instructors Beryl S. Green, M.A., Charles E. Skinner, Ph.D.

5f,w,s,su. General Bacteriology. Lecture and laboratory course. The principles and technique of general bacteriology. Studies in the morphologic and biologic characters of the common bacteria. Preparation of culture media. Disinfectants and disinfection. Bacteriology of water and food products. (5 cred.; sr.; prereq., 1 yr. biol., 1 yr. chem.) Dr. R. G. Green, Dr. Henrici.

BOOK RESEARCH AND SEMINAR WORK

Throughout the year students are required to do book research and seminar work in the pharmaceutical library during certain hours released for the purpose from the pharmaceutical laboratory and other periods. Beginning with the coming year it is proposed to provide regularly in the college schedule one two-hour period a week for library and seminar work during the second quarter of the graduating year. A room has been reserved for this purpose in the Pharmacy Building.

BOTANY

Professors Carl O. Rosendahl, Ph.D., Acting Chairman; William S. Cooper, Ph.D., Josephine E. Tilden, M.S.; Associate Professors George O. Burr, Ph.D., Frederic K. Butters, Ph.D., Assistant Professors Ned L. Huff, M.A., Alan E. Treloar, Ph.D.; Instructors Ethel S. Horton, M.A., Ethel M. Mygrant, M.S., Henry Oosting, M.S.; Teaching Assistants Helen Foot, M.A., Marjorie Forbes, M.A., Martin L. Grant, M.A., Borghild Gunstad, B.A., Robert R. Humphrey, M.A., Elmer S. Miller, B.S., John W. Moore, M.A.; Technician Esther H. Wilson.

17f,18w,19s. General Botany. Study of the external form and internal structure of the various organs of flowering plants; special study of the flower and the outline of the classification of flowering plants, etc. (9 qtr. cred.; fr.; no. prereq.) Mr. Butters and assistants.

Botany 1, 5, and 7 in the College of Science, Literature, and the Arts may be substituted for Courses 17, 18, and 19, respectively.

CHEMISTRY: INORGANIC

Professors M. Cannon Sneed, Ph.D., Chief; Lloyd H. Reyerson, Ph.D.

- 14f-15w. Inorganic Chemistry. A study of the general laws of chemistry and of the non-metals and their compounds. (10 cred.; fr.; no prereq.) Mr. Reyerson.
- 16s. Qualitative Chemical Analysis. 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.; fr.; prereq., 5 or 15.) Mr. Reyerson.

CHEMISTRY: ORGANIC

Professor William H. Hunter, Ph.D., Chief; Professor Emeritus George B. Frankforter, Ph.D.; Associate Professor Lee I. Smith, Ph.D.; Assistant Professor Walter M. Lauer, Ph.D.

- 1f,s-2w. Elementary Organic Chemistry. (Pre-med., pre-dent., pharmacists.) A discussion of the important classes of organic compounds, both aliphatic and aromatic. The laboratory work includes the preparation of typical substances. (4 cred. per qtr.; prereq., Inorg. Chem. 11.) Mr. Lauer.
- 1w-2s,f. Elementary Organic Chemistry. (Pre-med., pre-dent., pharmacists.) A discussion of the important classes of organic compounds, both aliphatic and aromatic. The laboratory work includes the preparation of typical substances. (4 cred. per qtr.; prereq., Inorg. Chem. 11.) Mr. Smith.

CLINICAL MICROSCOPY

Professor.....; Instructor.....

- 1s. Clinical Chemistry and Microscopy. Includes (a) the microscopic study of the urine, its color, sediments, and finer chemical tests and (b) the microscopic study of urine sediments, blood, pus, epithelial cells, casts, etc. Optional. (1 cred.; sr.; no prereq.)

DISPENSARY PRESCRIPTION PRACTICE

Instructor Hallie Bruce, Phm.G.; Assistants, Ralph Nelson, Phm.C., Edna Steeves, Phm.G.

- 1f,w,s. Dispensary Prescription Practice. The prescription dispensing for the Out-Patient Department of the University Hospital is in charge of the College of Pharmacy. The senior students do the prescription work under competent direction. (3 cred.; sr.; prereq., Pharm. 5.) Miss Bruce and assistants.

FIRST AID TO THE INJURED

Lecturer Charles N. McCloud, Phm.D., M.D., and assistant.

- 1s. Emergency Cases. A series of lectures and demonstrations designed to qualify the pharmacists to administer upon emergency cases before the arrival of the physician. (1 cred.; sr.; no prereq.) Dr. McCloud.

MATERIA MEDICA

Professor Frederick J. Wulling, D.Sc.; Associate Professor Earl B. Fischer, B.S.; Instructor Charles E. Smythe, and assistants.

- 1f,w,s. Inorganic Materia Medica. This course runs concurrently and in close relationship with Pharmacy 8 and 11, and includes chiefly the medical properties and doses of inorganic official bodies. (3 cred.; fr.; no prereq.) Mr. Wulling and assistants.
- 2f,w,s. Organic Materia Medica. The identity, sources, botanical origins, families, constituents, preparations and doses of the U. S. P., and of some unofficial vegetable drugs are studied in this course. (6 cred.; fr.; no prereq.) Mr. Fischer, Mr. Smythe, and assistants.

MILITARY SCIENCE AND TACTICS

Professor John H. Hester, Major, Infantry; Assistant Professors Willis Shippam, Major, Coast Artillery Corps; William G. Guthrie, Major, Medical Corps; William C. Webb, Jr., Major, Dental Corps; William A. Ellis, Captain, Infantry; Porter P. Wiggins, Captain, Infantry; Emil Krause, Captain, Infantry; William G. Walker, Captain, Infantry; Murray T. Davenport, Captain, Infantry; Hewitt W. Richmond, 1st Lieutenant, Coast Artillery Corps; Richard A. Ericson, 1st Lieutenant, Coast Artillery Corps; Vincent J. Conrad, 1st Lieutenant, Infantry; Harlan N. Hartness, 1st Lieutenant, Infantry; Rex W. Minckler, 1st Lieutenant, Signal Corps; Instructors Alfred Brandt, Master Sergeant, Infantry; Harry E. Strider, Master Sergeant, Signal Corps; Aubrey R. Dunkum, Technical Sergeant, Coast Artillery Corps; Roy Cunningham, Staff Sergeant, Infantry; John Coop, Sergeant, Infantry; Ernest R. Mylk, Sergeant, Coast Artillery Corps; Clayton A. Peterson, Sergeant, Infantry.

- 1f-2w. First Year Basic Course R.O.T.C. Infantry. Practical and theoretical instruction in school of soldier squad and company; elementary subjects of military training; rifle marksmanship. (No cred.; fr.; no prereq.; MWF IV; A.)
- 3s. First Year Basic Course. Same as 1f-2w. (No cred.; fr.; prereq. 1-2; W VII, VIII, IX; A.)
- 4f-5w. Second Year Basic Course R.O.T.C. Infantry. Practical instruction in school of platoon and company; musketry; automatic rifle; scouting and patrolling and combat principles. (No cred.; fr., jr.; prereq. 1-2-3 MWF IV; A.)

- 6s. Second Year Basic Course R.O.T.C. Infantry. Same as 4f-5w. (No cred.; fr., jr.; prereq., 4-5; W VII, VIII, IX; A.)
- 51f-52w. First Year Advanced Course R.O.T.C. Infantry. Map reading and military sketching; machine gun; 37-mm. gun and 3-inch trench mortar; drill and command; combat principles. (No cred.; jr.; prereq., 1-2-3, 4-5-6; MWF II, III, VI, VIII; TThS I, II, III, IV; TTh VI, VII, VIII, IX; A.)
- 53s. First Year Advanced Course R.O.T.C. Same as 51f-52w. (No. cred.; jr.; prereq., 51-52; W VII, VIII, IX; A.)
- 54f-55w. Second Year Advanced Course R.O.T.C. Infantry. Drill and command; administration; military history; combat principles; field engineering; military law and officers' reserve corps regulations. (No cred.; sr.; prereq., 51-52, 53; MWF II, III, VI, VIII; TTh II, III; A.)
- 56s. Second Year Advanced Course R.O.T.C. Same as 54f-55w. (No cred.; sr.; prereq. 54-55; W VII, VIII, IX; TThS IV; A.)

PHARMACY

Professors Frederick J. Wulling, D.Sc.; Gustav Bachman, Phm.D., Phm.M., Charles H. Rogers, D.Sc. in Phm.; Instructors Ragnar Almin, Phm.C., Hallie Bruce, Phm.G., Charles V. Netz, Phm.C., M.S., Del D. Turner, Phm.C.

- 1f. History of Pharmacy. This course embraces the study of the history of pharmacy, including the U. S. Pharmacopoeia through all of its revisions and the literature of pharmacy. ($\frac{3}{4}$ cred.; fr., jr.; no prereq.) Mr. Wulling, Mr. Rogers.
- 2f. This course includes the study and preparation of the active constituents of many vegetable drugs, scale salts of iron, plasters, soaps, oleoresins, collodions, effervescing salts, etc. ($6\frac{1}{2}$ cred.; jr.; prereq., 4f, 6w, 8s.) Mr. Bachman, Mr. Turner.
- 3i. Metrology. A critical study of weights and measures and balances; specific gravity, specific volume; allegation, etc. ($4\frac{1}{2}$ cred.; fr., jr.; no prereq.) Mr. Rogers, Mr. Netz.
- 5w. The Physics of Pharmacy. This course covers a review and more extended elucidation of such divisions of physics as apply to pharmaceutical processes. ($4\frac{1}{2}$ cred.; fr., jr.; prereq., 3.) Mr. Rogers, Mr. Netz.
- 7w,s. Pharmaceutical Processes. A study of the various laboratory processes employed in pharmaceutical manufacture. (5 cred.; fr., jr.; prereq., 5.) Mr. Rogers, Mr. Netz.
- 2w,s. Pharmacopoeial Preparations. This course includes the study and preparation of official bodies for which the Pharmacopoeia gives formulae and processes. ($7\frac{1}{2}$ cred.; fr., jr.; prereq., 7.) Mr. Rogers, Mr. Netz, and assistants.

- 4f,w,s. Pharmacy Quiz. A thoro review of the work covered in Courses 3f, 5w, 7s, and 2s. ($4\frac{1}{2}$ cred.; fr., jr.; prereq., 3, 5, 7, 2.) Mr. Rogers, Mr. Netz.
- 6w,s. Identification of Inorganic U. S. P. Preparations. The study of the appearance and physical properties of inorganic official preparations. (2 cred.; fr., jr.; prereq., 2) Mr. Rogers, Mr. Netz.
- 9f. Pharmaceutical Chemical Philosophy. This course treats of the principles underlying chemistry and elucidates chemical facts and phenomena in their pharmaceutical aspects. (3 cred.; fr., jr.; no prereq.) Mr. Wulling.
- 11w. The Pharmaceutical Chemistry of the Non-Metals. A study of the description, properties, pharmacy, and manufacture of the non-metals used in pharmacy, including their U. S. P. preparations. (3 cred.; fr., jr.; prereq., 9.) Mr. Wulling.
- 8s. U. S. P. Inorganic Salts. Especial reference to sources, description, properties, and manufacture. (3 cred.; fr., jr.; prereq., 9.) Mr. Wulling, Mr. Almin.
- 13s. Classification of Pharmaceutical Organic Compounds. A preparation for Pharmacy 15. ($1\frac{1}{2}$ cred.; jr., sr.; prereq., Chemistry 1f and 2w.) Mr. Wulling, Mr. Rogers.
- 15f,w,s. Pharmaceutical Organic Compounds and Their Preparations. Includes the critical study of cellulose and its derivatives, destructive distillation products, starches, sugars, fermentation products, organic acids, fixed oils and fats, volatile oils, waxes and animal fats, alkaloids, glucosides, animal drugs and products, etc. (9 cred.; jr., sr.; prereq., 13, Chemistry 1f and 2w.) Mr. Rogers.
- 17w. Pharmacopoeial Qualitative Analysis. A critical study of the identity, purity, limit, and percentages tests of the Pharmacopoeia and their application either wholly or in part to practically every official organic and inorganic salt and compound ($5\frac{1}{2}$ cred.; jr.; prereq., 11w and Chem. 16s.) Mr. Bachman, Mr. Almin, Mr. Turner.
- 18w,s. Pharmacopoeial Quantitative Analysis. This course includes the gravimetric, volumetric, and gasometric determinations of the U. S. Pharmacopoeia, but not Pharmaceutical Assay (12w). (15 cred.; sr.; prereq., 17w.) Mr. Bachman, Mr. Almin, Mr. Turner.
- 19f,w,s. Prescription Incompatibility. Therapeutic, pharmaceutical, and chemical incompatibility is taken up in lecture and recitation work preliminary to Course 21. (2 cred.; sr.; prereq., 17w.) Mr. Bachman, Mr. Turner.
- 21f,w,s. Prescription Dispensing. This course runs concurrently and in cooperation with Dispensary Prescription Practice 1f,w,s, and includes the critical study of the prescription and practical work in dispensing a wide range of prescriptions taken from actual medical practice. (13 cred.; sr.; prereq., 17w.) Mr. Bachman, Miss Bruce, Mr. Turner, Mr. Nelson, Miss Steeves.

- 8a,w,s. Manufacture of Pharmaceutical Inorganic Salts. The preparation of upwards of forty pharmaceutical salts included in this course. (6 cred.; jr., sr.; prereq., 8s, Chemistry 16s.) Mr. Rogers, Mr. Netz, and assistants.
- 10f. National Formulary. This lecture and laboratory course includes a partial study of the National Formulary and the making of a number of its more important preparations. (1½ cred.; jr., sr.; prereq., 8a, 15.) Mr. Bachman, Mr. Almin, Mr. Turner.
- 12s. Pharmaceutical Assay. The quantitative determination of alkaloidal and other active constituents of a number of the potent U. S. P. organic drugs and preparations. (2 cred.; sr.; prereq., 17w.) Mr. Bachman, Mr. Almin, Mr. Turner.
- 14s. Synthetic Remedies. The study of the pharmaceutical chemistry of synthetic chemicals in medical use. (1 cred.; jr., sr.; prereq., 15f,w,s.) Mr. Rogers.
- 16w. Homeopathic Pharmacy. Exposition of principles underlying the preparation of homeopathic remedies, including some laboratory work. (1 cred.; jr.; no prereq.) Mr. Wulling, Mr. Bachman. Optional.
- 25w,s. Identification of U. S. P. Salts. The study of the physical identity of the more important official inorganic and organic salts. (2 cred.; jr., sr.; prereq., 8a, 15.) Mr. Bachman, Mr. Turner.
- 20s. Microchemistry. Work in the microchemistry of pharmacy is included in the work of a number of other courses, but will soon be offered as a separate course. (No cred.; no prereq.)
- 27f. Mathematics of Pharmacy. While students are required to have a preparation in arithmetic, algebra, and geometry, before entering, they receive frequent drills throughout the year. Examinations in the subject are required. (1 cred.; fr., jr.; prereq., 3.) Mr. Wulling, Mr. Bachman, Mr. Rogers, Miss Bruce.
- 29f,w,s. Drug and Food Analysis. A course designed to prepare students for commercial pharmaceutical analytical work. (24 cred.; sr.; prereq., Chemistry 1f and 2w.) Mr. Rogers, Mr. Netz, and assistant.
- 51f,w. Metrology, Elementary. For nurses. (1 cred.; fr., jr.; no prereq.) Mr. Wulling.

PHARMACEUTICAL AND BUSINESS LAW

Professor Frederick J. Wulling, D.Sc.

- 1s. Law of Pharmacists. The lectures introduce the subjects of contracts, agency, commercial paper, insurance, etc., in their application to the practice of pharmacy, and discuss the liability of retail pharmacists. (2 cred.; sr.; no prereq.) Mr. Wulling.
- 2s. Minnesota Pharmacy Laws. Statute laws of Minnesota affecting practice of pharmacy. Lectures by special lecturers experienced in the application and operation of pharmacy laws. (½ cred.; sr.; no prereq.)

PHARMACEUTICAL MINERALOGY AND CRYSTALLOGRAPHY

Professor.....

- 1s. Mineralogy. A study of the occurrence and properties of minerals of pharmaceutical importance; ores of metals used in pharmacy; non-metallic minerals and mineral waters in their mineralogic and geologic relation. (1 cred.; sr.; grad.; no prereq.)
- 2s. Crystallography. A survey of form and more evident physical characters as a basis for practice in sight recognition of economic minerals and their distinction from common rocks. (1 cred.; sr., grad.; prereq., 1.)

PHARMACOGNOSY

Associate Professor Earl B. Fischer, B.S.; Instructor Charles E. Smyithe and assistants.

- 1f. Medicinal Plant Study and Drug Preparations. The principles underlying the preparation of plant drugs, including the study of plants cultivated in the medicinal plant garden, and herbarium work. (1 cred.; fr.; no prereq.; ar.; ar.) Mr. Fischer, Mr. Smyithe, and assistants.
- 2w,s. The Pharmacognosy of the Thallophytes and Archegoniates. In this course some of the drugs and economic products obtained from the thallophytes and archegoniates are studied. (5 cred.; fr.; prereq., 1f.) Mr. Fischer, Mr. Smyithe, and assistants.
- 3f. Drug Collection and Preparation. Scientific methods of drug collection and preparation of about fifty drugs from plants grown in the medicinal plant garden. (3 cred.; jr.; prereq., 1f.) Mr. Fischer, Mr. Smyithe, and assistants.
- 4s,w. Pharmaco-Histology and Pharmacognosy of the Angiosperms. Includes micrometry and the detailed study of the inner structure of parts of the higher plants as illustrated by the study of the whole and powdered, vegetable and animal drugs, and their adulterants. (10 cred.; jr.; prereq., 2w,s, 3f, Botany 17f, 18w.) Mr. Fischer, Mr. Smyithe, and assistants.
- 5s. Field Work. The classes are taken on field searches for native medicinal plants. The study of the distinguishing characteristics of certain orders, families, and genera of medicinal plants is included in this work. (2 cred.; jr.; prereq., 4w.) Mr. Fischer.
- 6w. Physiological Drug Assay. Optional. The pharmacopoeial and the more important unofficial methods of biologic assay of drugs and their preparations are studied. (3 cred.; sr.; prereq., 4s,w.) Mr. Fischer.
- 7w,s. Advanced Pharmacognosy. Designed to give students a working knowledge of the use of the more important microscopical accessories in advanced pharmacognostic work. (3 cred.; sr.; prereq., 4s,w.) Mr. Fischer.

PHYSICAL EDUCATION AND ATHLETICS FOR MEN

Professors Herbert O. Crisler, Ph.B., (Director); Fred W. Luehring, Ph.M. Associate Professors Louis J. Cooke, M.D., Louis F. Keller, M.A.; Assistant Professors Frank G. McCormick, B.A., LL.B., David Mac-Millan, B.S.; Instructors Clarence Osell, B.S., Ralph A. Piper, B.P.E., Blaine McKusick, LL.B., Walter R. Smith, B.A., Neils Thorpe; Assistant Lloyd S. Boyce.

A special lecture on sex hygiene is given sometime during the first ten days of the fall quarter, with required attendance on the part of all freshmen.

PHYSICAL EDUCATION FOR WOMEN

Professor J. Anna Norris, M.D., Director; Assistant Professors Gertrude M. Baker, M.A., May S. Kissock, M.A., Alice H. Tolg, M.D.; Instructors Grace Christianson, B.S., Josephine Dickson, B.S., Elizabeth Graybeal, Ph.B., Esther Hume, Ed.M., B.A., Florence Mahoney, M.S., Catherine Snell, B.S., Helen Starr, B.S., Alice Timberman, B.S.

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 upperclass students; gives courses in hygiene; organizes neuromuscular activity leading toward organic strength, nervous stability, conscious motor control, correct bodily mechanics, skill in handling the body and in physical recreation, and the development of that valuable social quality known as good sportsmanship; co-operates closely with the Woman's Athletic Association in encouraging and organizing athletic sports; holds regular office hours for the purpose of consultation with all students who desire its advice.

Work in this department is required of all newly entering students (see Course 4). Physical examinations or consultations required annually of all students.

For elective classes in gymnastics, dancing, swimming, field hockey, basket-ball, baseball, and other activities, see bulletin of the College of Science, Literature, and the Arts.

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

45. Preliminary Hygiene. The most essential aspects of the care of the body. (No cred.; no prereq.; II T.) (For nurses and transfer students.)

PHYSIOLOGY

Professors Elias P. Lyon, Ph.D., M.D., LL.D., Frederick H. Scott, Ph.D., M.B., D.Sc., Jesse F. McClendon, Ph.D.; Associate Professor Karl W. Stenstrom, Ph.D.; Assistant Professors Esther M. Greisheimer, Ph.D., M.D., Joseph T. King, Ph.D., M.D.; Instructors Jesse W. Cavett, Ph.D., Dean A. Collins, B.A.

- 4f,w,s,su. Human Physiology. Lectures and demonstrations. (4 qtr. cred.; S.L.A., H.E., pharmacy students, and others; prereq. elem. zool. and chem.) Dr. Lyon, Dr. Griesheimer, Dr. King, and others.
- 57f,su. Physiologic Chemistry. (4 qtr. cred.; dent. stud. and others; prereq., org. chem.) Mr. Cavett and others.

For other courses see Medical School bulletin.

PREVENTIVE MEDICINE

Professor Harold S. Diehl, M.A., M.D.; Instructor Robert G. Hinckley, B.S., M.D.

- 3f,w,s. Personal Hygiene and Elementary Sanitation. Elementary principles of normal body function; predisposing and actual causes of disease; ways in which disease may be avoided. (2 cred.; fresh., soph.; no pre-req.) Dr. Hinckley.

THERAPEUTICS AND TOXICOLOGY

Associate Professor Edgar D. Brown, Phm.D., M.D.

- 2s. Therapeutics and Toxicology. Drugs are studied in groups as governed by their medicinal and toxic properties. Remedial measures other than those depending upon drugs are fully considered. Poisonous action and doses of drugs also receive consideration. (3 cred.; jr.; prereq., Pharmacognosy 5, Mat. Med. 1.) Dr. Brown.

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The College of Education

Part I

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¹ Died April 24, 1930.

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¹ Died September 26, 1929.

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¹ Died February, 1930.

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J. Arthur Myers, Ph.D., M.D., Associate Professor of Preventive Medicine
and Public Health
Walter R. Myers, Ph.D., Assistant Professor of Economics
Henry F. Nachtrieb, B.S., Professor Emeritus of Zoology
Charles W. Nichols, Ph.D., Assistant Professor of English
Elizabeth Nissen, Ph.D., Assistant Professor of Romance Languages
J. Anna Norris, M.D., Professor of Physical Education for Women and
Director of Health and Physical Education for Women
William A. O'Brien, M.D., Associate Professor of Pathology
Oscar W. Oestlund, Ph.D., Professor Emeritus of Entomology
Everett W. Olmsted, Ph.D., Litt.D., Professor of Romance Languages and
Head of the Department of Romance Languages
Olena Ordahl, R.N., Assistant Professor of Nursing
Ernest S. Osgood, Ph.D., Assistant Professor of History
Harry J. Ostlund, B.A., Assistant Professor of Economics
Leroy S. Palmer, Ph.D., Professor of Agricultural Biochemistry
Donald G. Paterson, M.A., Professor of Psychology and Chairman of
the Department of Psychology
Abe Pepinsky, Assistant Professor of Music
Frederick L. Pfeiffer, Ph.D., Assistant Professor of German
Anna H. Phelan, Ph.D., Assistant Professor of English
Ethel L. Phelps, Ph.D., Assistant Professor of Textiles and Clothing
Joseph B. Pike, M.A., Professor of Latin and Head of the Department of
Latin
Harold S. Quigley, Ph.D., Professor of Political Science
Frank M. Rarig, M.A., Professor of Speech and Chairman of the Depart-
ment of Speech.
Andrew T. Rasmussen, Ph.D., Professor of Neurology
Gertrude Reeves, Assistant Professor of Music
John J. Reighard, M.A., C.P.A., Assistant Professor of Accounting
Lloyd H. Reyerson, Ph.D., Associate Professor of Chemistry
William H. Richards, Assistant Professor of Woodworking
Harlow C. Richardson, B.A., Assistant Professor of Music
Hewitt Richmond, First Lieutenant, Coast Artillery Corps, Assistant Pro-
fessor of Military Science and Tactics
William A. Riley, Ph.D., Professor of Entomology and Economic Zoology
and Head of the Department of Zoology
Adolph Ringoen, Ph.D., Assistant Professor of Zoology
Thomas S. Roberts, M.D., Professor of Ornithology and Director of the
Museum of Natural History
Rhodes Robertson, M.Arch., Associate Professor of Architectural Design
C. Otto Rosendahl, Ph.D., Professor of Botany
Henry Rottschaefler, B.A., J.D., S.J.D., Professor of Law
Clare Leo Rotzel, B.C.S., C.P.A., Associate Professor of Accounting
Arthur G. Ruggles, M.A., Professor of Economic Entomology

- Harold Russell, B.A., B.L.S., Assistant Professor of Library Methods
 Martin B. Ruud, Ph.D., Professor of English
 W. Martin Sandstrom, Ph.D., Assistant Professor of Agricultural Bio-chemistry
 Landon A. Sarver, Ph.D., Assistant Professor of Chemistry
 Allan F. Saunders, Ph.D., Assistant Professor of Political Science
 Charles A. Savage, Ph.D., Professor of Greek and Chairman of the Department of Greek
 Richard E. Scammon, Ph.D., Professor of Anatomy
 George M. Schwartz, Ph.D., Associate Professor of Geology and Mineralogy
 Carlyle M. Scott, Professor of Music and Chairman of the Department of Music
 Frederick H. Scott, M.B., Ph.D., Sc.D., Professor of Physiology
 Colbert Searles, Ph.D., Professor of Romance Languages
 S. Carl Shipley, B.S., M.E., Professor of Mechanical Engineering
 Willis Shippam, Major, Coast Artillery, Assistant Professor of Military Science and Tactics and Head of the Coast Artillery Corps Unit
 Lester B. Shippee, Ph.D., Professor of History
 Royal R. Shumway, B.A., Associate Professor of Mathematics
 Charles P. Sigerfoos, Ph.D., Professor of Zoology
 Edward H. Sirich, Ph.D., Professor of Romance Languages
 Lee I. Smith, Ph.D., Associate Professor of Chemistry
 M. Cannon Sneed, Ph.D., Professor of Chemistry
 Edward Staadt, B.A., Assistant Professor of Speech
 Elvin C. Stakman, Ph.D., Professor of Plant Pathology and Botany
 Clinton R. Stauffer, Ph.D., Professor of Geology and Mineralogy
 William H. Stead, Ph.D., Assistant Professor of Economics
 Lawrence D. Steefel, Ph.D., Assistant Professor of History
 J. Warren Stehman, Ph.D., Professor of Economics
 Clyde Stephens, Assistant Professor of Piano
 Henry N. Stephens, Ph.D., Assistant Professor of Chemistry
 George M. Stephenson, Ph.D., Associate Professor of History
 Russell A. Stevenson, Ph.D., Professor of Economics and Dean of the School of Business Administration
 Thomas E. Steward, B.A., Assistant Professor of Journalism
 Elmer E. Stoll, Ph.D., Professor of English
 Andrew A. Stomberg, M.S., Professor of Scandinavian Languages and Literature
 August L. Strand, Ph.D., Assistant Professor of Entomology
 Lucy A. Studley, M.A., Assistant Professor of Home Economics
 William W. Swanson, B.A., M.S., Associate Professor of Physiology
 David F. Swenson, B.S., Professor of Philosophy
 John T. Tate, Ph.D., Professor of Physics
 Nelson W. Taylor, Ph.D., Assistant Professor of Chemistry
 George A. Thiel, Ph.D., Associate Professor of Geology and Mineralogy
 Faith Thompson, Ph.D., Assistant Professor of History

- Josephine E. Tilden, M.S., Professor of Botany
Miles Tinker, Ph.D., Assistant Professor of Psychology
Alice J. H. Tolg, M.D., Assistant Professor of Physical Education for Women
Alice F. Tyler, Ph.D., Assistant Professor of History
Anthony L. Underhill, Ph.D., Associate Professor of Mathematics
Everard M. Upjohn, M.A., Assistant Professor of Fine Arts
Roland S. Vaile, M.A., Professor of Economics
Joseph Valasek, Ph.D., Associate Professor of Physics
Marion L. Vannier, R.N., Associate Professor of Nursing and Director of School of Nursing
E. Marion Wade, M.A., Assistant Professor of Preventive Medicine and Public Health
Frederick C. Wagner, M.A., Associate Professor of Marketing
Warren C. Waite, Ph.D., Associate Professor of Economics
William G. Walker, Captain, Infantry, Assistant Professor of Military Science and Tactics
Wilson D. Wallis, Ph.D., Professor of Anthropology
Frank K. Walter, M.A., M.L.S., Professor of Library Methods, University Librarian
William C. Webb, Jr., Major, Dental Corps, Assistant Professor of Military Science and Tactics
Robert M. Weidenhammer, Ph.D., Assistant Professor of Economics
Marion Weller, B.A., Associate Professor of Textiles
Albert B. White, Ph.D., Professor of History
Harold A. Whittaker, B.A., Assistant Professor of Preventive Medicine and Public Health
Porter P. Wiggins, Captain, Infantry, Assistant Professor of Military Science and Tactics
Norman Wilde, Ph.D., Litt.D., Professor of Philosophy and Head of the Department of Philosophy
Malcolm Willey, Ph.D., Professor of Sociology
Jerry Wodsedalek, Ph.D., Professor of Zoology
Elmer E. Young, Assistant Professor of Fine Arts
Jeremiah S. Young, Ph.D., Professor of Political Science
Anthony Zeleny, Ph.D., Professor of Physics
Carle C. Zimmerman, Ph.D., Associate Professor of Sociology
Jean Boyer, Licence ès Lettres, Professorial Lecturer in Romance Languages
Otto F. Bradley, B.A., Lecturer in Sociology
Castle M. Brown, J.D., Ph.B., Lecturer in Political Science
Wayne E. Butterbaugh, M.S., Lecturer in Transportation
John P. Dalzell, B.A., LL.B., Lecturer in Political Science
Monica K. Doyle, M.A., Lecturer in Sociology
Olwen Kendall, M.A., Lecturer in History
Alice Leahy, M.A., Lecturer in Sociology
Howard Longstaff, M.A., Lecturer in Psychology
Belle Mead, M.A., Lecturer in Sociology

Jay L. O'Hara, Ph.D., Lecturer in Economics
 Benjamin Palmer, M.A., LL.B., Lecturer in Political Science
 Pearl C. Salsberry, B.A., Lecturer in Sociology
 Edward F. Waite, B.A., LL.M., Lecturer in Sociology
 Helen A. Young, B.S., Lecturer in Sociology
 Ingvald W. Alm, B.S., Instructor in Accounting
 Francis S. Appel, M.A., Instructor in English
 Amy E. Armstrong, M.A., Instructor in English
 Harold Ayres, Instructor in Violin
 Emily A. Babcock, M.A., Instructor in Latin
 Emma Bach, M.A., Instructor in German
 Clara F. Baldwin, B.A., Instructor in Library Methods
 Irene Barnes, M.A., Instructor in Sociology
 Fred S. Beers, B.A., Instructor in English
 Herbert C. Behm, M.A., Instructor in English
 David R. Blanpied, B.A., Instructor in Romance Languages
 Harold C. Blote, B.A., Instructor in Philosophy
 Else H. Bockstruck, B.S., Instructor in Physical Education for Women
 Arthur M. Borak, Ph.D., Instructor in Economics
 Corrine F. Bowen, Instructor in Voice
 Alfred Brandt, Master Sergeant, Infantry, Instructor in Military Science
 and Tactics
 Harold E. Briggs, M.A., Instructor in English
 Alward E. Brown, Ph.D., Instructor in Philosophy
 Carlotta M. Brown, Instructor in Millinery
 Joseph A. Burns, M.A., Instructor in English
 Harold C. Carter, M.A., Instructor in Psychology
 John A. Cederstrom, Ph.B., Instructor in Zoology
 Ruth Christie, M.A., Instructor in English
 George B. Clarke, M.S., Instructor in Agricultural Economics
 Mary Starr Conger, Instructor in Physical Education for Women
 John Coop, Sergeant, Infantry, Instructor in Military Science and Tactics
 E. P. Crossen, M.S., Instructor in Agricultural Economics
 Anne Culligan, B.A., Instructor in Sociology
 John E. Davis, M.A., Instructor in English
 Marion Day, B.A., Instructor in Sociology
 Lucile Curtis Deinard, M.A., Instructor in English
 Frances del Plaine, M.A., Instructor in English
 Robert W. Desmond, B.A., Instructor in Journalism
 Samuel N. Dicken, B.A., Instructor in Geography
 Ernestine C. Donaldson, B.A., Instructor in Secretarial Training
 Aubrey E. Dunkum, Technical Sergeant, Coast Artillery Corps, Instructor
 in Military Science and Tactics
 Carl E. Dutton, M.A., Instructor in Geology
 Alexandre Duvoir, Instructor in Oboe
 James M. Edmunds, M.A., Instructor in English
 Johan Egilsrud, B.S., Instructor in Music

Christian Erck, Instructor in Cello
William Faetkenhouser, Instructor in Tympani
Anne Fenlason, M.A., Instructor in Sociology
Hally J. Fisher, R.N., Instructor in Preventive Medicine and Public Health
Margaret Gable, M.A., Instructor in Rhetoric
Dorothy P. Gary, M.A., Instructor in Sociology
Roger Gauthier, Instructor in Oboe
Yvonne Gauthier, Instructor in Cello
Bueford M. Gile, M.A., Instructor in Agricultural Economics
Howard Gilkinson, M.A., Instructor in Speech
Vetta Goldstein, Instructor in Drawing and Design
Ethel R. Gorham, M.A., Instructor in Home Economics
Adah Grandy, B.L., Instructor in English
Richard A. Graves, M.A., Instructor in Economics
George Grisez, Instructor in Clarinet
Madeleine Guillemin, M.A., Instructor in Bacteriology and Immunology
Marguerite Guinotte, Brevet Supérieur, Certificat d'Aptitude Pédagogique,
M.A., Instructor in Romance Languages
J. Roy Haag, Ph.D., Instructor in Agricultural Biochemistry
Clifford Haga, B.A., Instructor in English
Ford P. Hall, B.A., B.C.L., Instructor in Political Science
Irwin A. Hammer, B.A., Instructor in Sociology
Frank Harris, M.A., Instructor in Sociology
Donald C. Heath, B.S. (Arch.), Instructor in Architecture
Oscar E. Heskin, M.A., Instructor in Economics
Orville B. Hodges, B.S., Instructor in Economics
Harry D. Hoey, M.A., Instructor in English
Ethel Sue Horton, M.A., Instructor in Botany
Ruth Houlton, B.A., R.N., Instructor in Public Health Nursing
Thomas P. Hughes, Instructor in Mechanical Engineering
Clinton C. Humiston, B.S., Instructor in Romance Languages
Melba Hurd, B.A., Instructor in Speech
Frank M. Hursley, M.A., Instructor in English
Carlyle Jacobsen, B.A., Instructor in Psychology
Harrison W. Johnson, Instructor in Piano
Mabel C. Johnson, M.A., Instructor in Romance Languages
Arnold V. Johnston, M.A., Instructor in Political Science
Amaretta B. Jones, B.A., R.N., Instructor in Sociology
Helen M. Kepler, M.A., M.D., Instructor in Anatomy
Fred L. Kildow, B.A., Instructor in Journalism
Charles Kirby-Miller, Ph.B., Instructor in English
Franklin H. Knower, M.A., Instructor in Speech
Richard L. Kozelka, M.A., Instructor in Economics
Mary J. S. Kuypers, Ph.D., Instructor in Orientation
Paul H. Landis, M.A., Instructor in Sociology
Pauline Lane, B.A., Instructor in Physical Education for Women
Emilio Le Fort, M.A., Instructor in Romance Languages

Ernest Liegl, Instructor in Flute
 Richard Lindenhahn, Instructor in French Horn
 Winslow H. Loveland, M.A., Instructor in English
 Percy M. Lowe, M.A., Instructor in Agricultural Economics
 Reuel I. Lund, C.P.A., M.A., Instructor in Accounting
 Winifred Lynskey, M.A., Instructor in English
 Walter G. McAllister, B.A., Instructor in Psychology
 Bruce McCoy, B.A., Instructor in Journalism
 James McDowell, M.A., Instructor in Romance Languages
 Channing MacFaden, M.A., Instructor in Romance Languages
 Della McGregor, B.A., Instructor in Library Methods
 Thorvald B. Madsen, M.A., Instructor in Scandinavian
 Edward Mallam, M.A., Instructor in English
 Robert E. Maxwell, M.A., Instructor in Economics
 J. Lewis Maynard, B.A., Instructor in Chemistry
 John H. Moffett, Met.E., Instructor in Mechanical Engineering
 Elio Monachesi, M.A., Instructor in Sociology
 Ethel M. Mygrant, M.S., Instructor in Botany
 Ernest R. Mylk, Sergeant, Coast Artillery Corps, Instructor in Military
 Science and Tactics
 Ada M. Olsen, R.N., Instructor in Nursing
 Henry Oosting, M.S., Instructor in Botany
 Fern Osbeck, B.S., Instructor in Home Economics
 J. Henry Owens, M.A., Instructor in Romance Languages
 Gaige Paulsen, B.A., Instructor in Psychology
 Helen Chelsey Peck, R.N., Instructor in Public Health Nursing
 James T. Petri, B.A., Instructor in English
 Francis J. Pettijohn, M.A., Instructor in Geology
 Robert E. Pike, B.A., Instructor in Romance Languages
 Alvin E. Prottengeier, B.A., Instructor in German
 Engelbert Roentgen, Instructor in Cello
 Dayton A. Rogers, Instructor in Machine Shop Practice
 Peter Schellenberg, B.A., Instructor in Psychology
 Karl Scheurer, Instructor in Music
 Charles G. Sears, Sergeant, Instructor in Military Science and Tactics
 I. Irene Sell, M.S., Instructor in Home Economics
 Miles Sery, Instructor in Tuba and Cornet
 Peter L. Slagsvold, M.A., Instructor in Economics
 Ethel Slider, B.A., Instructor in Zoology
 Mary Cynthia Smith, B.A., Instructor in Medical Social Service
 Walter R. Smith, B.A., Instructor in Physical Education for Men and
 Director of Intramural Athletics
 Agnes R. Snyder, Instructor in Voice
 Isobel Spencer, M.A., Instructor in English
 Robert L. Starkey, Ph.D., Instructor in Bacteriology
 Joseph R. Starr, M.A., Instructor in Political Science
 Gilbert Stinson, Instructor in Saxophone

FACULTY

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Abraham Stoesz, M.A., Instructor in Botany
Harry E. Strider, Master Sergeant, Signal Corps, Instructor in Military
Science and Tactics
Robert Swanson, Instructor in Bassoon
Edward A. Taylor, M.A., Instructor in Sociology
Marion A. Tebbets, B.A., Instructor in Medical Social Service and Director
of the Division of Medical Social Service
Gertrude I. Thomas, Instructor in Dietetics
Ella A. M. Thorp, B.A., Instructor in Mathematics
Niels Thorpe, Instructor in Physical Education for Men
Arturo Torres-Rioseco, M.A., Certificado de Pedagogia, Instructor in
Romance Languages
Herbert Tout, B.A., Instructor in Economics
Gilbert N. Tucker, M.A., Instructor in History
Kate M. Twichell, Instructor in Piano
Lloyd L. Ulliyot, B.S., Instructor in Agricultural Economics
George B. Vold, M.A., Instructor in Sociology
Gina Wangsness, B.A., Instructor in German
Edgar W. Weaver, B.A., Instructor in English
Robert B. Westbrook, M.A., Instructor in Economics
Isabel White, R.N., B.S., Instructor in Nursing
Henry J. Williams, Instructor in Harp
David H. Willson, Ph.D., Instructor in History
Harriet A. Wood, B.A., Instructor in Library Methods
Vernon Young, M.A., Instructor in Botany
Nina L. Youngs, B.A., Instructor in Economics

GENERAL INFORMATION

The College of Education is organized to offer professional courses in the field of education, to promote research in the problems of education, and to provide educational guidance for prospective teachers and other educational workers in the schools. The completion of satisfactory curricula in this college entitles graduates to receive certificates for school work from the Minnesota State Department of Education. Such certificates are issued only to those graduating from this college.

Among the important curricula offered by the college are those relating to teaching in the following fields: academic subjects in elementary and high schools, agriculture, art, business subjects, home economics, industrial arts, natural science, physical education, and public school music.

Work is also offered in the fields of educational administration and supervision, clinical psychology, educational psychology, library service, school health work, sociology, teaching of subnormal children, professional education of teachers, work of the visiting teacher, educational and vocational guidance, nursery school and kindergarten education, nursing education, and public health education.

ADMISSION

Admission as regular students.—Admission to regular standing in the College of Education may be effected in one of the following ways:

a. Completion of the requirements for admission to the College of Education as outlined below, or to the junior year of the College of Agriculture, Forestry, and Home Economics. This preparation involves the earning of 90 credits and 90 honor points exclusive of physical education and represents two years work in a junior college.

b. Graduation from the advanced graduate course of the Minnesota state teachers' colleges or of other fully accredited state teachers' colleges. The College of Education grants 90 credits to such graduates.

c. Registration in one of the following four- or five-year specialized curricula in the freshman year, provided the requirements for admission to the University have been completed:

Art Education	Physical Education for Men
Industrial Education	Physical Education for Women
Library Methods	Public School Music
Nursery School and Kindergarten Education	School Health Work

In all other cases of four- or five-year curricula as outlined in this bulletin, the prescribed work of the first two years is to be taken prior to the student's entrance to the College of Education.

ENTRANCE REQUIREMENTS

All students who desire to prepare for teaching must register in the College of Education beginning with the junior year. They should enroll

as pre-education students in the Junior College as early in their course as possible. Advisers for pre-education students will be members of the faculty of the College of Education. Entrance to the college will be conditioned upon a student's meeting the general and specific requirements outlined below:

1. Ninety quarter credits, exclusive of credit for physical education, carried with an average grade of C. The ninety credits thus indicated must be earned in the following groups of college courses:

- Group A English
- Group B Foreign languages: German, Greek, Latin, Romance Languages, Scandinavian
- Group C Social sciences: Anthropology, Economics, Geography, History, Political Science, Sociology
- Group D Natural sciences: Astronomy, Botany, Chemistry, Geology and Mineralogy, Human Physiology, Physics, Psychology, Zoology
- Group E Mathematics
- Group F Journalism, Philosophy, Speech, Fine Arts, or such courses in other colleges or departments of the University as are approved by the College of Education

2. Within the general requirements listed above the student during his high school and junior college years must have completed the required work indicated under A, B, C, and D below, and at least 20 credits in groups B, C, and D must be completed in college.

	When Taken	In High School	In College
A. English		3 years	and 9 credits in composition
B. Language		3 years in one language	or 20 credits in one language
		or	
		2 years in one language	and 10 credits in same language
		or	
		1 year in one language	and 15 credits in same language
C. Social sciences	2 years		or 10 credits in one department
D. Natural sciences	2 years		or 10 credits in one department

NOTE.—In lieu of the specific course requirements indicated in the language group a student may elect a comprehensive examination in an elected language to be conducted by a committee appointed by the dean of the College of Education.

3. Within the total credits stipulated under No. 1 a student must meet, in fields of study which are represented in prevailing high school curricula, the following requirement: at least 15 credits in a major field and at least 10 credits in each of two minor fields. The purpose of this requirement is to prepare the student for the study of the advanced courses necessary to the completion of satisfactory teaching majors and minors.

4. The student must have completed six credits in general psychology.

5. In the cases of certain specialized curricula described in this bulletin the above requirements may be modified in details. All courses of a special curriculum should be completed, altho it may not always be possible to complete them in the order listed.

6. Students with two years of college training who are short certain entrance requirements will make up all deficiencies after enrolling in the College of Education.

7. At the time of entrance a student must present a certificate from the Students' Health Service indicating that he is free from physical defects which would prevent him from the successful pursuit of educational work.

8. At the time of entrance to the College of Education the student will be given a general examination designed to show his capacities to pursue professional curricula in education.

9. In the freshman and sophomore years, men must complete three quarters of physical education and six quarters of military drill; women must complete six quarters of physical education. Five credits, to be counted toward graduation from the College of Education, will be granted for the completion of the requirement in physical education. The total number of credits required for graduation will be 185.

Admission as unclassified students.—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 unclassified students pending the completion of twenty-seven additional credits.

Teachers of experience who are unable to meet the regular requirements for admission are admitted to the College of Education as unclassified students.

Admission with advanced standing.—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 for supervisors in elementary grades, principals in state graded schools, 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.

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 offered in the College of Education.

Graduates of state teachers colleges will not be permitted to take for credit, Psychology 1 and 2, General Psychology.

GRADUATION—DEGREES—HONORS COURSE

The degree of bachelor of science.—Students graduating from the College of Education will receive the degree of bachelor of science. A total of 185 credits and 185 honor points are required for graduation. Candidates for this degree must (a) have met the requirements in a major and in a minor field and in professional subjects, or (b) they must have completed one of the specialized curricula. In addition they must have met the special scholarship requirements as stated on p. 23. Candidates may major in any department listed on pp. 25-26.

Graduation with high distinction.—All graduates of this college who have attained *special excellence* in scholarship as is evidenced by an honor point ratio¹ of 2.5 or more are candidates for the degree of bachelor of science *with high distinction*. This award is conditional upon favorable recommendation of the faculty and is conferred by faculty action only.

Graduation with distinction.—All graduates of this college who have attained *excellence* in scholarship to the extent of having earned an average honor point ratio¹ of 2.0 or more are candidates for the degree of bachelor of science *with distinction*. This award is conditional upon favorable recommendation of the faculty and is conferred by faculty action only.

Limited honors course.—A limited honors course will be offered on an experimental basis for the year 1930-31.

1. The purpose of this course will be to offer the students of ability the opportunity to direct their own training to a greater degree than is now afforded by the prevailing methods of class instruction.

2. The course will be open by choice to those students who by tests of general ability and previous scholastic achievement give evidence of the capacity for self-direction. Continuance in the course will be conditioned by continued evidence of worthiness of such enrolment.

3. The course will be in lieu of the present requirement of Educational Psychology, 3 credits; Technique of High School Instruction, 3 credits; and Special Methods in History, English, Science, Language, or Mathematics, 4 credits. The field of work to be covered will be approximately that now embraced in the three courses. Students who satisfactorily complete this honors course will be given ten credits and be relieved of the several course requirements named above.

4. Students electing the honors course will be relieved from certain formal requirements but not from the mastery of a minimum content.

GRADUATE WORK IN EDUCATION

Graduate work in education leading to the degree of master of arts or doctor of philosophy may be pursued in the Graduate School. Students who desire to undertake graduate work with education as a major must have had at least 6 credits in psychology, and in addition to this, a total of not less than 18 credits in education which shall include Ed.Psy. 55 and Ed. Psy. 60 or the equivalent. Students who desire to undertake graduate work with education as a minor must have at least 6 credits in psychology, and, in addition to this, a total of not less than 18 credits in education.

All courses bearing numbers of 100 and above are open for credit to graduate students. Before attempting to make out their programs, graduate students in education should consult the dean of the College of Education and the dean of the Graduate School.

Graduate courses may be pursued during summer sessions. The work for the Master's degree may ordinarily be completed in four summer sessions. For full statement of regulations, consult Graduate School bulletin.

¹ The honor point ratio is calculated by dividing the total number of honor points earned by the total number of credits earned. See pp. 24-25.

BUREAUS OF RECOMMENDATION AND RESEARCH

Bureau of Recommendations.—Graduates of the College of Education who have met the requirements for a state teacher's certificate will be recommended for positions for which they are qualified. Students on the Minneapolis campus should register with the Bureau of Recommendations, 208 Old Library Building.

Bureau of Educational Research.—The College of Education conducts a Bureau of Educational Research for the purpose of promoting investigations by faculty and students in problems of education. The bureau is under the direction of the dean of the college and the members of the faculty co-operate as their several interests dictate. Through the bureau opportunity is given for co-operation with public schools in studies bearing upon problems of school administration, classroom instruction, and related matters. The bureau is responsible for the publication of a series of studies under the general title of Educational Monographs.

SPECIAL FEES

All special methods and practice teaching courses carry a fee of \$1 per credit hour.

GENERAL REQUIREMENTS

Residence requirements.—The minimum term of residence in the College of Education is two years beginning as soon as the entrance requirements have been fulfilled.

Students may shorten the two years of residence only by meeting such additional requirements in quality and quantity of professional work as will make the training of such students equal to that of students regularly registered for two full years.

AMOUNT AND QUALITY OF WORK

a. Upon entering the College of Education the student should, under advisement, plan his program (a) to secure one academic major and one academic minor and the required professional courses;¹ or (b) he should plan his program in accordance with one of the specialized curricula.

b. During his entire course the student must earn (1) 185 credits including the required courses in drill, gymnasium, and physical education, or a smaller number of credits determined as follows: For every 5 honor points in excess of one honor point per credit the number 185 is diminished by one, but no student will be recommended for graduation who has not completed all of the courses required in his particular curriculum and who has not satisfied all the requirements of his curriculum; (2) 1½ honor points per credit in his major subject; and (3) an average of 1 honor point per credit in all other courses pursued during the junior and senior years.

c. Fifteen credits are regarded as the usual load. Students who wish to register for more than 17 hours must show a record of 1½ honor points per credit for the previous quarter. Students may not carry less than 13 hours without petition.

d. A maximum of 27 credits is elective from courses in agriculture and home economics except in the special curricula in those fields.

e. No student whose absences in any course exceeds one sixth of the scheduled meetings of the class shall be admitted to the final examination without permission of the dean of the college or of the Students' Work Committee.

f. 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. 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. A student who is found to be below passing in 50 per cent of his work either at the middle or at the end of the quarter will be placed on probation.

¹ For requirements in Education see p. 26.

g. All students registered in the College of Education shall maintain satisfactory standards of oral and written English. A Committee on Standards of English in Education will recommend ways of remedying deficiencies and will determine when satisfactory standards have been attained.

h. Students registered as freshmen and sophomores in the College of Education will be guided by the faculty regulations of the College of Science, Literature, and the Arts, but will be amenable to the Students' Work Committee of this college.

i. Honor points are computed on the basis of one and one-half times the number of credits required in the major subject, e.g., in case a major recommendation requires 36 credits, the number of honor points will be 54. From among the courses carried in a department the student may select those which he will present as meeting this requirement except that he must include all courses which are specified in the departmental announcement as required for the recommendation for the certificate.

Credits and honor points.—The Senate regulations governing the system of marks is as follows:

1. That there shall be four grades, A, B, C, and D, representing varying degrees of achievement, which shall be acceptable for the completion of a single course; but this definition shall not be construed as preventing any college or school from setting special standards of performance as a condition of registration in particular courses of study, of admission to the college or school, of promotion, of counting work toward a degree, or of continued residence in the college or school. Work merely acceptable for the completion of all his single courses of study does not constitute a satisfactory record for a student when his college specifies higher requirements for any purpose.

2. There shall be two grades indicating work of distinctly unsatisfactory quality. These grades shall be known as E (condition), which may be removed by examination or other means stipulated by the faculty of the college or school concerned, and F (fail) which may be removed only by a repetition of the work in the course, or, in exceptional cases, by examination by permission of the faculty concerned.

3. There shall be a Grade I (incomplete), which shall indicate that a student, for reasons satisfactory to the instructor in charge, shall have been unable to complete the work of the course. This grade shall be given only when the work already done has been of a quality acceptable for the completion of the course. Any student receiving this grade shall be given an opportunity to complete the said course within the first thirty days of his next quarter in residence.

4. There shall be a symbol, T (transferred), indicating the transfer of credit from another institution or from one college to another of the University of Minnesota. This symbol shall be provisional and subject to final evaluation by the faculty of the college or school to which the student is transferred.

The amount of work pursued by a student is estimated in credit hours; the quality or grade of his work, in honor points.

A credit hour is one hour per week of recitation or lecture work extending throughout one quarter, or three hours per week of laboratory work through one quarter. It is assumed that each credit hour will demand on the average three hours a week of the student's time for recitation or lecture, one hour in class and two hours of preparation; for laboratory courses, three hours in the laboratory.

Honor points are computed as follows: each credit hour with the grade of A entitles the recipient to 3 honor points; each credit hour with the

grade of B entitles the recipient to 2 honor points; each credit hour with the grade of C to 1 honor point; each credit hour with the grade of D to no honor points. Illustration: A student completing a one-quarter 3-credit course and receiving the grade of A would be entitled to 9 honor points; if receiving the grade of B, to 6 honor points; if receiving the grade of C, to 3 honor points; if receiving the grade of D, to no honor points.

Professional lectures.—From time to time during the year lectures of general interest to students of education will be given by members of the faculty and invited speakers. All students in the College of Education are expected to attend these lectures. Special announcements will appear in the *Official Daily Bulletin*.

CERTIFICATION OF TEACHERS

Employment in a professional capacity in the schools of Minnesota is conditioned upon the proper licensing of the person to be employed. By a recently enacted law (1929) all authority for such certification is conferred upon the State Department of Education. Certification by institutions and the university teacher's certificate have been discontinued. Within the scope of this law the University operates its program for those students who desire certification for teaching in the public schools.

The law provides that certification is automatic for the graduates of the College of Education who have completed specifically named curricula in this college. No provision is made for the certification of any other university graduates. Certificates may be issued only to those persons who are "physically competent and morally fit to teach." The various curricula in the College of Education provide the training necessary for any type of state certificate which is based upon four or five years of training beyond the high school.

Courses which provide the training necessary for holding positions in the public schools of Minnesota are offered in the following subjects:

Agriculture	Home Economics
Art Education	Industrial Education
Botany	Junior High School Education
Chemistry	Latin
Clinical Psychology	Library Methods
Commercial Education	Mathematics
Educational and Vocational Guidance	Natural Science
Educational Psychology	Nursery School and Kindergarten Education
Elementary Education	Nursing Education
Elementary School Supervision	Physical Education for Men
English	Physical Education for Women
French	Physics
Geography	Political Science
German	Professional Education of Teachers
History	Public Health Nursing

Public School Administration	Sociology
Public School Music	Spanish
Scandinavian	Speech
School Health Work	Teaching Subnormal Children
Social Studies	Zoology

Students who desire certification upon graduation shall be registrants in the College of Education beginning with the junior year. Students in home economics and agriculture will also be registrants in the College of Agriculture, Forestry, and Home Economics. They shall have satisfied the prescribed requirements for a major and a minor in secondary school subjects or the specific requirements of a specialized curriculum as outlined in this bulletin. Such students will also be required to complete the two years' work leading to the degree of bachelor of science. No certificate is granted without a degree from the University of Minnesota.

By a proper selection of courses students qualifying for the degree of bachelor of science may qualify for teaching in more than one field. This is desirable since most beginning teachers in public schools are required to teach more than one subject.

PRESCRIBED COURSE OF STUDY FOR TEACHERS OF SECONDARY SCHOOL SUBJECTS

In order to receive the bachelor's degree and to qualify for the state general high school certificate in secondary school subjects, students not completing a specialized curriculum as set forth in this bulletin will be required to pursue in addition to one academic major and one academic minor the following professional courses, totaling 26 credits.

A. *Required courses—General.*

Course No.	Title	Credits	Prerequisite Courses
Ed.Psy. 55	Educational Psychology	3	Psy. 1-2
Ed.T. 15	Technique of High School Instruction	3	Ed.Psy. 55
Ed.Ad. 65	The High School	3	Ed.Psy. 55

B. *Methods and practice teaching.*—In addition the student must complete a *Special Methods and Practice Teaching Course* (9 credits, prerequisite, Ed.T. 15) in his major field and a course in *Special Methods* in his minor field (3 credits, prerequisite, Ed.T. 15).

C. *Education electives.*—To complete the professional requirement of 26 quarter credits required for this degree and the teacher's certificate the candidate will elect additional credits, under faculty advisement, from among the following subjects:

GENERAL REQUIREMENTS

Course No.	Title	Credits	Prerequisite Courses
H.Ed. 1	Brief Course in History of Education ..	5	Psy. 1-2
H.Ed. 3	Educational Sociology	3	Psy. 1-2
H.Ed. 5	Public Education in the U. S.	3	Psy. 1-2
H.Ed. 101	Historical Foundations of Modern Education	3	Psy. 1-2
H.Ed. 102	History of Modern Secondary and Higher Education	3	Psy. 1-2
H.Ed. 103	History of Modern Elementary Education	3	Psy. 1-2
Ed.Ad. 75	The Elementary School	3	Ed.Psy. 55
Ed.Ad. 113	The High School Curriculum	3	10 hrs. in ed.
Ed.Ad. 121	Educational Advising of Women and Girls	3	15 hrs. in ed. and psy.
Ed.Ad. 124	Public School Administration	3	10 hrs. in ed.
Ed.Ad. 133-134	Guidance in Secondary Schools	4	10 hrs. in ed.
Ed.Ad. 167-168	The Junior High School	4	10 hrs. in ed.
Ed.Ad. 169	Extra-curricular Activities	2	10 hrs. in ed.
ArtEd. 189	Application of Esthetic Theory to Art Education	3	See departmental statement
Ind. 105	Industrial Education	3	See departmental statement
Ind. 110	Guidance in the Schools	2	Ed.Psy. 55
H.E.Ed. 143	Home Economics Curricula	2	H.E. 42
Ed.T. 110	Educational Diagnosis in Secondary Education	2	Ed.Psy. 55
Ed.T. 122	Literature for Adolescents	3	See departmental statement
Ed.T. 193	Foundations of Secondary School Methods	3	Ed.T. 15
Ed. Psy. 134	Mental Tests	2	Ed. Psy. 55 and 60
Ed.Psy. 146-147	Child Guidance	4	15 hrs. in psy. and ed.
Ed.Psy. 157	Psychology of Child Development	2	6 hrs. in psy.
Ed.Psy. 158	Psychology of Adolescence	3	Ed.Psy. 55 or equiv.
Ed.Psy. 159	Psychology of Personality	3	Ed. Psy. 55 and 60 or 134 or equiv.
P.M.&P.H. 80	Health Supervision of the School Child	3	P.M.&P.H. 50 or 52 or 53

PRACTICE TEACHING¹

Special methods and practice teaching are normally combined into a one-year course extending throughout the senior year. Failure to register for such course for the fall quarter of the senior year may result in delay in graduation. All courses prerequisite to special methods and practice teaching should have been completed by the beginning of the senior year. In addition to the special methods and practice teaching course in the subject which the student wishes to teach he must satisfy the requirements for a major or minor in that subject according to his curriculum. By the beginning of his senior year he should have completed courses in his academic field which will enable him to do practice teaching satisfactorily.

Arrangements for practice teaching should be made at the close of the junior year and before the student registers for other courses. In the academic subjects arrangements should be made through Mr. Charles W.

¹ See departmental statement.

Boardman, principal of the University High School, and in the special subjects through the major advisers, as follows:

Agricultural Education	A. V. Storm
Art Education	Ruth Raymond
Commercial Education	Ellen A. Davidson
Home Economics	Ella J. Rose
Industrial Education	Homer J. Smith
Nursery School and Kindergarten Education ...	John E. Anderson
Physical Education for Men	L. F. Keller
Physical Education for Women	J. Anna Norris
Public School Music	Carlyle Scott, A. Pepinsky
Teaching of Subnormal Children	John G. Rockwell

The teachers' courses in methods of teaching and in practice teaching are combined into a one-year course in the following subjects:

English	German
Mathematics	Latin
Secondary school science	Romance languages (French and Spanish)
History and social science	Commercial subjects

SPECIALIZED CURRICULA AND MAJOR SEQUENCES

SPECIALIZED CURRICULA IN ADMINISTRATION OR SUPERVISION

The following specialized curricula are prescribed for prospective superintendents of schools, elementary school principals or supervisors, and high school principals. These curricula require five years for completion, two years in the Junior College, two years in one of the three special curricula in the College of Education, and one year in the Graduate School. The satisfactory completion of four years of work entitles the student to the degree of bachelor of science and to the state high school or elementary school teacher's certificate. The satisfactory completion of the fifth year's work entitles the student to the Master's degree and provides the training for the university certificate in administration or supervision.

1. *Students from other institutions.*—Students entering from other institutions may qualify for the certificate in administration or in supervision, either by meeting the requirements set forth below or by making such substitutions or modifications as their previous education and training shall warrant. All substitutions or modifications of these requirements must meet with the approval of the student's major adviser and the faculty.

2. *Extra-curricular activities.*—The student who is anticipating the field of public school administration as his life work should avail himself of the opportunities which the University offers for the development of leadership and those personal qualities essential to success in the administrative field. Under guidance, he should select for active participation those extra-curricular activities which offer the best training and experience suitable to his individual needs.

3. *Teaching minors.*—Students anticipating the state high school certificate must complete two teaching minors during the four years of undergraduate work, and a course in special methods and practice teaching in one of these minors. A third teaching minor is desirable. Students should have these requirements in mind when planning their junior college work. The teaching minors¹ may be selected from any two of the following fields: English, foreign language, history and social science, mathematics, science. Other teaching minors may be selected on the approval of the major adviser and the faculty.

¹ See departmental course outlined for minor requirements.

CURRICULA IN ADMINISTRATION OR SUPERVISION

A. GENERAL JUNIOR COLLEGE CURRICULUM

FOR ALL STUDENTS ANTICIPATING A FOUR- OR FIVE-YEAR SPECIALIZED CURRICULUM IN ADMINISTRATION OR SUPERVISION

Freshman Year

Course No.	Title	Credits
Eng. A-B-C or	Freshman English	15
Comp. 4-5-6	Freshman Composition (or exemption)	9
Hist. 1-2	Modern World	10
Pol.Sci. 1	American Government	5
	Natural Science	10
	French or German ¹	5
	Physical Education	
	Military Science	

Sophomore Year

Course No.	Title	Credits
Psy. 1-2	General Psychology	6
Soc. 1	Introduction to Sociology	5
Econ. 8-9	Principles of Economics ²	6
	Electives ³	28
	Physical Education	
	Military Science	

B. CURRICULA IN COLLEGE OF EDUCATION—SPECIALIZED CURRICULA IN ADMINISTRATION OR SUPERVISION

I. THREE-YEAR CURRICULUM FOR SUPERINTENDENTS OF SCHOOLS AND ELEMENTARY SCHOOL PRINCIPALS

Major Adviser: Fred Engelhardt

Junior Year

Course No.	Title	Credits
Ed.Psy. 55	Educational Psychology	3
Ed.Psy. 60	Statistical Methods	2
Ed.T. 15	Technique of High School Instruction	3
Ed.Ad. 75	The Elementary School	3
Ed.Ad.65	The High School	3
	Electives ^{3,4}	31

¹ Twenty credits must be secured in either French or German in the University if no work in these languages was presented for entrance. (See General Information p. 19.)

² See College of Engineering bulletin.

³ The electives should be selected in view of the teaching minor requirements.

⁴ Selection under guidance from the following additional courses is recommended: Ind. Ed. 105, Industrial Education; Public Health 53, Elements of Preventive Medicine; Speech and Journalism; Phys. Ed. 97, Organization and Administration of Physical Education; Agricultural Administration 151; Ed.Ad. 158, Organization for Supervision; H.Ed. 3, Educational Sociology; H.Ed. 103, History of Education.

Senior Year

Course No.	Title	Credits
Ed.T.	Special Methods and Practice Teaching	9
Ed.Ad. 124	Public School Administration	3
Ed.Ad. 125	Techniques in Administration	3
Ed.Ad. 150	Supervision and Improvement of Instruction	2
Ed.Ad. 156	Practice Supervision	3
Ed.Ad. 123	Supervision of High School Instruction	3
Ed.Psy. 134	Mental Tests	2
	Electives ¹	20

II. THREE-YEAR CURRICULUM FOR HIGH SCHOOL PRINCIPALS

Major Adviser: Harl R. Douglass

Junior Year

Course No.	Title	Credits
Ed.Psy. 55	Educational Psychology	3
Ed.Psy. 60	Introduction to Statistical Methods	2
H.Ed. 102	History of Modern Secondary and Higher Education	3
Ed.T. 15	Technique of High School Instruction	3
Ed.Ad. 75	The Elementary School	3
Ed.Ad. 65	The High School	3
	Electives ^{1,2}	28

Senior Year

Course No.	Title	Credits
Ed.T.	Special Methods and Practice Teaching	9
Ed.Ad. 124	Public School Administration	3
Ed.Ad. 150	Supervision and Improvement of Instruction	2
Ed.Ad. 133-134	Guidance in Secondary Schools	4
Ed.Ad. 113	High School Curriculum	3
Ed.Ad. 123	Supervision of High School Instruction	3
Ed.Psy. 134	Mental Tests	2
Ed.Psy. 111	Educational Measurements in the Elementary School	3
Ind. 105	Industrial Education	3
	Electives ²	13

¹ Selection under guidance from the following additional courses is recommended: Ind. Ed. 105, Industrial Education; Public Health 53, Elements of Preventive Medicine; Speech and Journalism; Phys. Ed. 97, Organization and Administration of Physical Education; Agricultural Administration 151; Ed.Ad. 158, Organization for Supervision; H.Ed. 3, Educational Sociology; H.Ed. 103, History of Education.

² The electives should be selected in view of the teaching minor requirements.

III. THREE-YEAR CURRICULUM FOR ELEMENTARY SCHOOL SUPERVISORS

The completion of the first two years of this curriculum entitles one to the advanced elementary school certificate for teaching in the elementary and not in the high school.

Major Adviser: Leo J. Brueckner

Required Courses

Course No.	Title	Credits
Ed.Psy. 56	Educational Psychology	3
Ed.Psy. 60	Introduction to Statistical Methods	2
Ed.Psy. 111	Educational Measurements in the Elementary School	3
Ed.Psy. 134	Mental Tests	2
Ed.Ad. 75	The Elementary School	2
Ed.Ad. 119	Elementary School Curriculum	3
Ed.Ad. 124	Public School Administration	3
Ed.Ad. 125	Techniques in Administration	3
Ed.Ad. 150	Supervision and the Improvement of Instruction	2
Ed.Ad. 151	Uses of Tests in Improving Instruction	2
Ed.Ad. 156	Practice Supervision	3
Ed.Ad. 156	Elective in Supervision	2
Ed.T. 181	Technique of Elementary Instruction	3
Total		33

Eleven hours of electives from courses listed below

Course No.	Title	Credits
H.Ed. 3	Educational Sociology	3
H.Ed. 103	History of Modern Elementary Education	3
Ed.T. 23	Teachers Course in Geography	3
Ed.T. 45	Teaching of Geography and History in the Elementary School	2
Ed.T. 143-144	Teaching of Reading in Elementary School	3 or 4
Ed.Ad. 152	Supervision—Adjustment of Schools to Individual Differences	2 or 3
Ed.Ad. 153	The Supervision of English	2 or 3
Ed. Ad. 154	The Supervision of Social Studies	2
Ed.Ad. 155	The Supervision of Arithmetic	2
Ed.Ad. 157	Practice in Supervision	3
Ed.Ad. 158	Organization for Supervision	2
Ed.Ad. 159	Supervision of Reading	2
Ed.Ad. 160	Supervision of Elementary Subjects	2
Ed.Ad. 167-168	The Junior High School	4
Special methods courses in elementary and junior high school teaching.		
Total required credits		44
<i>18 credits in each of two of the following fields or such others as may be approved: English literature, history, languages, political science, natural science, social science, mathematics, geography, art, music, or physical education</i>		36
General electives		10
Total credits required		90

C. GRADUATE SCHOOL CURRICULUM

*Fifth Year*FOR STUDENTS ANTICIPATING A CERTIFICATE IN ADMINISTRATION
OR SUPERVISION

The candidate for the certificate of administration or supervision in any one of the following fields (superintendent of schools, elementary principal, elementary supervisor, and secondary school principal) must satisfactorily complete the requirements for the Master's degree (see Graduate School bulletin). The language requirement may be waived in all cases where a language is not essential in the thesis or the work to be pursued.

The work of the student shall constitute a major in educational administration and supervision and a minor in educational psychology.

AGRICULTURAL EDUCATION

PREPARATION FOR TEACHING AGRICULTURE

Students who have completed the required work of the freshman and sophomore years of the College of Agriculture, or equivalent, may prepare to teach agriculture in the public schools by completing the junior and senior years in a combined curriculum of the College of Education and the College of Agriculture.

The agriculture requirements can be fulfilled by the major, minor, and elective plan (Method I) as shown below, or by completing the suggested curriculum under Method II shown later.

The education requirements can be fulfilled by completing satisfactorily 24 quarter hours in Agricultural Education courses some of which are required courses. The courses now required are 11, 42, 181, 182, 183.

FRESHMAN AND SOPHOMORE COURSES

The courses during the freshman and sophomore years are the same as are required of all agriculture students in the College of Agriculture. Every student should, if possible, complete these subject courses before the end of the sophomore year. Any subjects that cannot be taken in the freshman or sophomore years must take precedence the following year. Care should be taken in registration to give precedence to courses offered only one quarter. See bulletin, College of Agriculture, Forestry, and Home Economics.

JUNIOR AND SENIOR YEARS

METHOD I. ELECTIVE CURRICULA

Under this method the student, with the approval of his adviser, may select any curriculum which complies with the following requirements:

- a. A major of from 24 to 36 credit hours.
- b. A minor of 18 credit hours.

- c. Limited electives 18 credit hours, which must be selected outside of the groups from which the major and minor have been chosen, and
- d. Free electives, sufficient to meet the number of credit hours required for graduation chosen from any of the courses offered in the University.

The major and minor must be selected from different elective groups, except that students whose major is chosen from Group 3 (see below), Agricultural Sciences and Plant Industry, may select their minor from a different field of work in the same group.

Elective Groups

A. Groups from which major, minor, or electives may be chosen

1. Agricultural Economics and Farm Management
2. Agricultural Education
3. Animal Industry, including
 - Animal Husbandry
 - Dairy Husbandry
 - Poultry Husbandry
 - Veterinary Medicine
4. Agricultural Sciences and Plant Industry, including
 - Agricultural Biochemistry
 - Agricultural Education
 - Agronomy and Plant Genetics
 - Entomology and Economic Zoology
 - Horticulture
 - Plant Pathology and Botany
 - Soils
5. Agricultural Engineering

B. Groups from which electives only may be chosen

1. Bee Culture
2. Forestry
3. Home Economics
4. Military Science and Tactics
5. Physical Education
6. Rural Publications and Journalism
7. Courses in departments of other schools and colleges of the University

METHOD II. SUGGESTED CURRICULUM

Below is found a suggested curriculum which, tho not required, may serve as a guide to students desiring a well-balanced preparation for teaching agriculture and the sciences, for serving as county agent or for practical farming, and will facilitate making a program that will avoid conflicts.

JUNIOR YEAR

SENIOR YEAR

Fall Quarter

<p>Agron. 121f, Grain Crops, 3 (Agron. 1, Bot. 9 cred.)</p> <p>An. Husb. 2f, Types and Breeds of Livestock, 3 (An. Husb. 10-11)</p> <p>Dy. Husb. 101f, Milk Production, 5 (Dy. Husb. 1)</p> <p>Hort. 6f, Fruit Growing, 3 (May be omitted if completed as a part of the general requirements)</p> <p>Electives, 3 or 6</p>	<p>Agr. Econ. 40f,s, Principles of Marketing Organization, 3 (Agr. Econ. 2)</p> <p>Agron. 102f,w, Farm Management Organization, 3 (Agron. 1, Agr. Econ. 2, Soils 4)</p> <p>Dy. Husb. 6f, Judging Dairy Cattle, 1 (An. Husb. 1)</p> <p>Pl. Path. 1f, Plant Pathology, 5 (Bot. 9 cred.)</p> <p>Electives, 5</p>
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Winter Quarter

Agron. 131f,w, Principles of Genetics, 3 (Bot. or Zool. 9 cred.)	Agron. 103w,s, Farm Management Opera- tion, 3 (Agron. 102)
An. Husb. 3w, Types and Breeds of Livestock, 3 (An. Husb. 2)	Sociol. 14f,w,s, Rural Sociology, 3 (Sociol. 1 or sr. class.)
Ent. 3f,w, Economic Entomology, 3 (Zool. 16)	Electives, 11
Vet. 9w, Veterinary Studies, 3	
Electives, 5	

Spring Quarter

Agr. Eng. 40f,s, Mechanical Training I, 3	Electives, 17
Agron. 123s, Forage Crops, 3 (Agron. 1, Bot. 9 cred.)	
An. Husb. 8s, Fundamentals of Feed- ing and Management, 5	
Vet. 10s, Veterinary Studies, 3 (Vet. 9)	
Electives, 3	

It is recommended that electives be chosen from the courses in Agricultural Education or from such of the subject-matter courses as will best complete a well-balanced and well-distributed preparation. In addition to those found in the suggested curriculum above may be mentioned Agricultural Engineering 12; Agronomy 122, 132, 133; Forestry 37; Plant Pathology 9; Poultry 1; Publications and Rural Journalism 19. Recommended electives in education: Agr.Ed. 141, 161; Ed.Ad. 65T.

Graduates of the University of Minnesota completing these agriculture and education requirements will be eligible for the Minnesota "high school standard special" certificate for teaching agriculture and the sciences in high schools or elementary schools of this state.

Students desiring to obtain the teacher's certificate should consult the head of the Division of Agricultural Education, preferably during the freshman year, to avoid difficulties that may arise in program making.

ART EDUCATION

Major Adviser: Ruth Raymond

The following special curriculum leads to the degree B.S. and provides the training necessary for the Minnesota "high school standard special" certificate for teaching art in elementary or high school. Teachers with experience in other subjects and with talent and taste for art are especially recommended to qualify for art supervision. A minor is provided with especial reference to graduates of state teachers colleges who have taste in art and some teaching experience, that they may meet our state's need for teachers of art in combination with other elementary or high school subjects. For the statement of requirements in this art minor see below.

Students preparing for the university degree and a teacher's certificate in art may register in the Department of Art Education at the beginning of their freshman year.

FOUR-YEAR CURRICULUM IN ART EDUCATION

1. In Art, the following is the minimal requirement for the art major:
 - 18 credits in design
 - 18 credits in drawing
 - 12 credits in handicrafts¹
 - 5 credits in art history and appreciation²
 - 3 credits in theory of art teaching
 - 9 credits in practice teaching and special methods in art
2. In professional education courses:
 - 3 credits in Educational Psychology, Ed.Psy. 55 or 56
 - 3 credits in Technique of High School Instruction, Ed.T. 15
 - 12 credits selected from the list of options on page 27
3. A minor group: a minimum of 18 credits, chosen, in accordance with the individual student's interest and ability, from any one of the departments offering courses through the College of Education bulletin.³
4. Required supporting courses: a minimum of
 - 19 credits in English composition and literature
 - 10 credits in history, if a minor of high school history has not been presented for entrance
 - 6 to 10 credits in a natural science, if a minor of a laboratory science has not been presented for entrance
 - 6 credits in general psychology
 - 5 credits in sociology
 - 3 credits in textiles
5. Electives. Recommended electives: continuation of a language begun in high school (French especially recommended); speech arts, for use in teaching, and to lead to the play production courses; courses in philosophy, history, sociology, and psychology; courses for the appreciation of music, literary classics, and the stage, (attendance upon concerts, exhibitions, and plays is urged as part of an art education). A large number of the 40 electives may be spent profitably for art courses beyond the minimal requirement listed above.

Requirements for a Minor in Art

- 9 credits in design
- 9 credits in drawing
- 6 credits in handicrafts
- 3 credits in art history and appreciation
- 3 credits in special methods and practice teaching

¹ Course 11 in Industrial Education may be chosen as a handicraft.

² Art.Ed. 55, 56, 57, 70, 153, and 154, and the various courses offered in English by the Greek Department may fulfill this requirement as well as those courses specifically designated Art History or Art Appreciation.

³ This requirement is waived for graduates from state teachers colleges.

BOTANY

Botany as a major subject:

	Credits
Bot. 1 General Botany	4
Bot. 2 Elementary General Morphology of Plants	3
Bot. 7 Taxonomy of Flowering Plants	3
Bot. 21 Elementary Ecology	3
Bot. 22 Elementary Plant Physiology	3
Bot. 12 Morphology of Algae and	
Bot. 13 Morphology of Fungi	6
or	
Bot. 23 Bryophytes and Pteridophytes and	
Bot. 63 Gymnosperms and Angiosperms	6
Additional courses	9
Bot. 51 Histological Methods, advised	
Total credits	31

Botany as a minor subject:

Bot. 1, 2, 7, 21 or 22 Bot. 51 advised (see above)	
Total credits	20

For specialized curriculum in natural science, see p. 54.

CHEMISTRY

Major Adviser: H. O. Jackson

Chemistry as a major subject:

	Credits
Inorg.Chem. 9-10 General Inorganic Chemistry	10
Inorg.Chem. 12-13 Qualitative Chemical Analysis	10
Anal.Chem. 1-2 Quantitative Analysis	10
Org.Chem. 51-52 Organic Chemistry	10
Total credits	40

Chemistry as a minor subject:

Inorg.Chem. 9-10, 12-13; Anal. Chem. 1-2 or 7 and six additional credits in chemistry	
Total credits	30

Students without entrance credits in chemistry must take Inorg.Chem. 6-7-8 (15 credits) instead of Inorg.Chem. 9-10 (10 credits).

For specialized curriculum in natural science, see p. 54.

COMMERCIAL EDUCATION

Major Adviser: Ellen A. Davidson

The curriculum in commercial education is designed to prepare teachers of commercial subjects in secondary schools. It is purposely made much broader in its scope than the present program of the typical high school commercial department, with the idea of paving the way for meeting more effectively than at present the needs of high school students who enter business. Satisfactory completion of this curriculum leads to the bachelor

of science degree and provides the training necessary for the Minnesota "high school standard special" certificate for teaching commercial subjects.

The first two years' work, taken in the Junior College, Science, Literature, and the Arts, consists of the regular academic requirements of that college, with the foreign language requirement omitted and foundation courses in psychology, economics, statistics, and accounting added.

Students who enter the College of Education from other institutions must substitute for some of their electives such of the junior college requirements as they have not fulfilled. Graduates from the two-year course in state teachers colleges may find it necessary to attend an extra summer session in order to meet all requirements.

FOUR-YEAR CURRICULUM IN COMMERCIAL EDUCATION

JUNIOR COLLEGE¹

1. 9 credits in English (Composition 4-5-6 or Eng. A-B-C or exemption)
2. 10 credits in one natural science
3. 10 credits in one social science, other than economics
4. 5 credits in Mechanism of Exchange (Economics 3)
5. 10 credits in Principles of Economics (Economics 6-7)
6. 6 credits in General Psychology (Psychology 1-2)
7. 3 credits in Elements of Accounting (Econ. 20)²
8. 6 credits in Principles of Accounting (Economics 25-26)
9. 5 credits in Elements of Statistics (Economics 14)
10. 1 credit in Typewriting (Econ. 32)³
11. 26 credits of electives, for which the following are especially recommended: continuation of a language begun in high school, speech, philosophy, additional social science

COLLEGE OF EDUCATION

Junior Year

Course No.	Title	Credits
Econ. 51-52-53	Business Law	9
Econ. 37-38-39 ⁴	Secretarial Training	9
Econ. 33-34 ³	Secretarial Training	2
B.A. 139	Advanced General Accounting	3
Ed.Psy. 53	Educational Psychology	3
Ed.T. 15	Technique of High School Instruction	3
Ed.Ad. 65	The High School	3
	Electives	

¹ During the freshman and sophomore years students must secure the required credits in physical education. Men must also register for military science.

² 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.

³ Students who have had one year of high school typewriting are admitted to Econ. 33; those who have had two years of high school typewriting are admitted to Econ. 34.

⁴ Students who have had two years of high school shorthand are admitted to Econ. 40 and are exempt from Econ. 37-38-39.

Senior Year

Course No.	Title	Credits
Ed.T. 80-81-82	Special Methods and Practice Teaching	9
Econ. 40-41-42	Secretarial Training	9
Econ. 85	Economics of Marketing	3
Econ. 141	Monetary and Banking Policy	3
Econ. 161	Labor Problems	3
B.A. 86	Office Management	3
Geog. 41	Geography of Commercial Production	5
Geog. 102	Trade Routes and Trade Centers	3
	Electives	

Recommended Electives

	Credits
History of Education (H.Ed. 1)	5
Educational Sociology (H.Ed. 3)	3
Advertising (Psychology 56 and B.A. 88)	6
Introduction to Economic History (History 80-81)	6
Personnel Management (B.A. 167)	3
Additional English Composition	6
The Modern Corporation (Economics 160)	3
Survey of Cost Accounting (B.A. 130)	3
Economics of Transportation (Economics 172)	3

EDUCATIONAL PSYCHOLOGY

UNDERGRADUATE CURRICULA IN EDUCATIONAL PSYCHOLOGY,
CLINICAL PSYCHOLOGY, AND EDUCATIONAL AND
VOCATIONAL GUIDANCE

Students who are planning on assuming certain specialized duties in connection with their high school teaching or who are interested in securing a basis for graduate work may elect an undergraduate major or minor in the above fields.

These curricula are intended particularly for students who may perform the duties of counselor, dean, clinical psychologist, or specialist in tests and measurements in connection with teaching duties in the high school. It is not their purpose to produce a person with highly specialized training in those fields, but to supply a basis for later professional growth as well as some immediate background for handling the problems involved in the several positions indicated. Students with a real interest in these fields are advised to procure training on the graduate level.

Three general programs have been set up. The first constitutes a major or minor in general educational psychology; the second is a major in clinical educational psychology; and the third is a major or minor in educational and vocational guidance. It is expected that students who secure a major in one of these curricula will also secure two teaching minors in meeting the requirements for the state teacher's certificate. If the curricula are elected as minors, it is expected that the student will secure a major in an academic subject in order to meet the requirements for the certificate.

Permission of the adviser must be secured to elect one of these curricula.

I. UNDERGRADUATE CURRICULUM IN EDUCATIONAL PSYCHOLOGY

Major Advisers: W. S. Miller, A. C. Eurich

For a Major

Course No.	Title	Credits
Psy. 1-2 ¹	General Psychology	6
Psy. 4-5	Introductory Laboratory Psychology	4
Ed.Psy. 55	Educational Psychology	3
Ed.Psy. 60	Introduction to Statistical Methods	2
Ed.Psy. 134	Mental Tests	2
Ed.Psy. 157	Psychology of Child Development or	
Ed.Psy. 158	Psychology of Adolescence	3
Ed.Psy. 159	Psychology of Personality	3
	Electives in Educational Psychology	7
	Total	30

For a Minor

Course No.	Title	Credits
Psy. 1-2 ¹	General Psychology	6
Psy. 4-5	Introductory Laboratory Psychology	4
Ed.Psy. 55	Educational Psychology	3
Ed.Psy. 60	Introduction to Statistical Methods	3
Ed.Psy. 134	Mental Tests	2
Ed.Psy. 157	Psychology of Child Development or	
Ed.Psy. 158	Psychology of Adolescence	3
	Total	21

In addition to the above major or minor requirements students will take Ed.Ad. 65, The High School, 3 credits; Ed.T. 15, Technique of High School Instruction, 3 credits; and practice teaching and special methods, 9 credits.

II. CLINICAL PSYCHOLOGY

Major Adviser: J. G. Rockwell

The following courses are considered basic for the training of the clinical psychologist. The student should plan on pursuing training for an advanced degree. He may secure an undergraduate major by electing a total of 45 credits from the courses listed below.

Course No.	Title	Credits
Psy. 1-2 ¹	General Psychology	6
Psy. 4-5	Introd. Lab. Psychology	4
Psy. 144-145	Abnormal Psychology	6
Soc. 1	Introduction to Sociology	5
Soc. 49	Occurrence of the Socially Inadequate	3
Soc. 52	Elementary Case Work	3
Soc. 53	Elements of Criminology	3
Soc. 60	Social Protection of the Child	3
Soc. 90-91-92	Elementary Field Training	6
Ed.Psy. 55	Educational Psychology	3
Ed.Psy. 60 or 116-117	Statistical Methods	2 or 4

¹ To be taken during the sophomore year. Graduates of normal schools are not permitted to take Psy. 1 or 2 for credit.

Course No.	Title	Credits
Ed.Psy. 134	Mental Tests	2
Ed.Psy. 143-144	Individual Mental Examination	4
Ed.Psy. 146-147	Child Guidance	4
Ed.Psy. 149-150-151	Psycho-Educational Clinic	6
Ed.Psy. 184	Mental Deficiency	2

In addition to the above, major students will take Ed.Ad. 65, The High School; Ed.T. 15, Technique of High School Instruction, 3 credits; and practice teaching and special methods, 9 credits.

III. EDUCATIONAL AND VOCATIONAL GUIDANCE

Major Advisers: M. E. Haggerty, Ruth A. Merrill

For a Major

Course No.	Title	Credits
Psy. 1-2 ¹	General Psychology	6
Psy. 4-5	Introd. Lab. Psychology	4
Ed.Psy. 55	Educational Psychology	3
Ed.Psy. 60	Introduction to Statistical Methods	3
Ed.Psy. 134	Mental Tests	2
Ed.Psy. 187	Practice in Personnel Work	2
Ed.Ad. 65	The High School	3
Ed.Ad. 169	Extra-curricular Activities	2
Soc. 1	Introduction to Sociology	5
Soc. 49	Occurrence of the Socially Inadequate	3
Soc. 52	Elementary Case Work	3
Soc. 90	Elementary Field Training in Case Work	2
Ed.Ad. 133	Guidance in Secondary Schools, or	} 2 or 3
Ind.Ed. 110	Guidance in the Schools, or	
Ed.Ad. 121	Educational Advising of Women and Girls	
	Electives	5
Total		45 or 46

For a Minor

Course No.	Title	Credits
Psy. 1-2 ¹	General Psychology	6
Psy. 4-5	Introd. Lab. Psychology	4
Ed.Psy. 55	Educational Psychology	3
Ed.Psy. 60	Introduction to Statistical Methods	3
Ed.Psy. 134	Mental Tests	2
Soc. 1	Introduction to Sociology	5
Soc. 49	Occurrence of the Socially Inadequate	3
Ed.Ad. 65	The High School	3
Ed.Ad. 133	Guidance in Secondary Schools, or	} 2 or 3
Ind.Ed. 110	Guidance in the Schools, or	
Ed.Ad. 121	Educational Advising of Women and Girls	
Total		28 or 29

In addition to the above major or minor requirements students will take Ed.T. 15, Technique of High School Instruction, 3 credits; and practice teaching and special methods, 9 credits.

¹To be taken during the sophomore year. Graduates of normal schools are not permitted to take Psy. 1 or 2 for credit.

ELEMENTARY EDUCATION

PRESCRIBED CURRICULUM FOR THE ADVANCED CERTIFICATE
FOR ELEMENTARY SCHOOL TEACHERS

Major Advisers: L. J. Brueckner, W. E. Peik

Students who have been graduated from a two-year teachers college or normal school course or its equivalent and who wish to work for the Bachelor's degree in education and the Minnesota "elementary school advanced" certificate for teaching in elementary schools should enroll in this curriculum. By substituting certain courses in the junior high school field the certificate can be made legal for junior high schools. The courses listed below as required presuppose a full two-year normal training course.

Course No.	Title	Credits
Ed.Psy. 56	Educational Psychology	3
Ed.Psy. 60	Educational Statistics	2
Ed.Psy. 111	Educational Measurements in the Elementary School	3
Ed.Ad. 119-120	Elementary School Curriculum	4
Ed.Ad. 124	Educational Administration	3
Ed.Ad. 150	Supervision and Improvement of Instruction	3
Ed.T. 143	The Teaching of Reading in the Elementary School	2
Ed.T. 181	Technique of Elementary Instruction	3

Thirteen hours to be elected from courses listed below

Ed.Ad. 75	The Elementary School	3
Ed.Ad. 151	Use of Tests in Improvement of Instruction	2
Ed.Ad. 152	Supervision—The Adjustment of Schools to Individual Differences	2
Ed.Ad. 153	Supervision of English in the Elementary Schools	2
Ed.Ad. 155	Supervision of Arithmetic in the Elementary Schools	3
Ed.Ad. 159	The Supervision of Reading	2
Ed.Ad. 160	Supervision of Elementary Subjects	2
Ed.Ad. 167-168	The Junior High School	4
Ed.Soc. 3	Educational Sociology	3
H.Ed. 103	History of Modern Elementary Education	3
Ed.T. 23	The Teaching of Geography	3
Ed.T. 44	Children's Literature	3
Ed.T. 45	Teaching of History and Geography	2
Ed.Psy. 134	Mental Tests	2
Ed.Psy. 159	Psychology of Personality	3
	Special methods courses in elementary and junior high school subjects	

Total required credits	36
18 credits in each of two of the following fields or such others as may be approved: English, history, social studies, languages, political science, science, mathematics, geography, art, music, physical education, library methods	36
General electives	18
Total credits required for certificate	90

ENGLISH

Major Advisers: C. W. Nichols, Rewey B. Inglis, Dora V. Smith

English as a major subject:

	Credits
English 22-23 Introduction to Literature	10
English 55-56 Shakespeare	6
English 73-74 American Literature	6
Composition 11-12 or 18-19	6
Speech	6
Additional credits, all of which must be secured in courses numbered 100 or above	6
Total credits	40

English as a minor subject:

English 22-23 Introduction to Literature	10
English 55-56 Shakespeare	6
English 73-74 American Literature	6
Composition 11-12 or 18-19	6
Total credits	28

GEOGRAPHY

Major Adviser: D. H. Davis

Geography as a major subject:

Twenty-eight credits from the following courses:

	Credits
Geog. 11 Human Geography	5
Geog. 41 Geography of Commercial Production	5
Geog. 43 Political Geography	5
Geog. 53 Historical Geography of the U.S.	3
Geog. 71 Geography of North America	3
Geog. 101 Geography of Europe	3
Geog. 102 Trade Routes and Trade Centers	3
Geog. 110 Geography of South America	3
Geog. 111 Cartography	3
Geog. 120 Geography of Asia	3
Geog. 133 Climatology	3
Geog. 235 Geography of Minnesota	3
Geog. 251-252-253 Seminar in Geography	3

Five additional credits from the following courses in geology:

Geol. 1-2 General Geology (Dynamic and Historical)	10
Geol. 1-3 General Geology (Dynamic and Economic)	10
Geol. 8 Introductory Geology	5
Geol. 29 General Physiography	5

Total credits

33

Geography as a minor subject:

Eighteen credits selected from the following courses:

Geog. 11, 41, 71, 101, 102, 110, 120

Total credits

18

COLLEGE OF EDUCATION

GERMAN

Major Adviser: S. Kroesch

German as a major subject:

	Credits
Ger. 50-51-52 Composition ¹	6
Ger. 56-57 Essay Writing	6
Ger. 65 Survey through Reformation	3
Ger. 66 Eighteenth Century Survey	3
Ger. 67 Nineteenth Century Survey	3
Ger. 108 Phonetics	3
Additional credits in courses numbered above 50	11

Total credits 35

German as a minor subject:

Ger. 50-51-52 Composition	6
Ger. 108 Phonetics	3
Additional credits in courses numbered above 50	8

Total credits 17

HISTORY

History as a major subject:

	Credits
Total number of credits	45
At least 15 credits must be in senior college courses and of these one course (5 credits) must be numbered from 151 to 200.	

History as a minor subject:

Total number of credits	18
Recommended Hist. 1-2, Hist. 7-8.	

No major recommendation to teach history will be given unless the student has taken at least the general course in American History, Hist. 7-8.

HOME ECONOMICS EDUCATION

Major Adviser: Wylle B. McNeal

For the junior and senior years the following courses have been approved by the College of Agriculture, Forestry, and Home Economics, and by the College of Education. All students who are candidates for the degree of bachelor of science and for the Minnesota "high school standard special" certificate for teaching home economics in elementary or high schools are required to pursue one of the following curricula.

Such students become registrants in both colleges during the junior and senior years but register for their freshman and sophomore work in the College of Agriculture, Forestry, and Home Economics. Every student who expects to teach home economics and to obtain the state certificate must meet the following requirements: (a) a minimum of 22 credits in professional work, (b) the special scholarship requirement, (c) home practice in foods and cookery, and (d) completion of all of the subjects

¹ Prerequisite, Ger. 4 or four years of preparatory German.

listed under any one of the five lines of specialization described below. When a student has acquired 90 credits and 90 honor points and indicates her specialization as the teachers' or the extension course she becomes also a registrant in the College of Education.

REQUIREMENTS OF TEACHERS' CURRICULA IN HOME ECONOMICS

Students in the Home Economics Course desiring to qualify as teachers must comply with the following requirements:

A. Completion of 22 credits of professional work, including

JUNIOR YEAR

Ed.Psy. 55f,w,s, Ed.Psy., 3 (Psy. 1-2)
or Agr.Ed. 11f,w,s, Principles of Vocational Education, 3

H.E.Ed. 40f,w,s, Child Training, 3 (Psy. 1-2)

Hist. of Ed. 1f,w,s, Brief Course in the Hist. of Ed., 5 (6 cred. in Psy.) or Hist. of Ed. 55, Public Ed. in U. S., 3 (Psy. 1-2) or Hist. of Ed. 101f, Foundations of Modern Ed., 3 (6 cred. in Psy. and 6 cred. in Hist.) or Ed. Ad. 65f,w,s, The High School, 3 (Ed. Psy. 55)

H.E.Ed. 42f,s, Special Methods of Teaching Home Economics, 3 (H.E. 13, 83, Psy. 1-2, Agr.Ed. 11 or Ed.Psy. 55)

H.E.Ed. 143f,w,s, Home Economics Curricula, 2 (H.E.Ed. 42 or parallel)

SENIOR YEAR

H.E.Ed. 49f,w,s, Observation and Teaching, 8 (H.E.Ed. 42)

B. Satisfaction of special scholarship requirement

Prior to registration for Observation and Teaching the student must have a grade of C in each of the following home economics courses: Clothing Planning and Construction A and B, Textiles, Foods and Cookery, Food Management, Color and Design I and II, and Advanced Design.

C. Home practice in foods and cookery following H.E. 83 is required as a prerequisite to Observation and Teaching. A conference with a home economics instructor should precede this work and an examination must be passed.

D. Completion of one of the following subject-matter courses.

GENERAL REQUIREMENTS

Junior Year

1. *General courses.*—The following courses may be registered for any quarter that they are offered except that the proper sequence of continuation courses and prerequisites must be observed.

Agr.Econ. 1f,w,s, Principles of Economics, 5

H.E. 83f,w,s, Food Management, 3 (H.E. 70, 80)

H.E. 85f,w,s, Food Marketing, 2 (Agr. Econ. 1 or parallel H.E. 80 or 81)

H.E. 131f,w,s, Home Management: House Planning and Equipment, 5 (H.E. 53)

H.E.Ed. 40f,w,s, Child Training, 3 (Psy. 1-2)

Physiol. 4f,w,s, Human Physiology, 4 (Chem. 4 cred., Zool. 3 cred.)
 Prev.Med. 52f,w,s, Health Care of the Family, 3 (Bact. 41, Physiol. 4)
 Rhet. 11f,w,s, Argumentation, 3 (Rhet. 3, 22 advised) or Rhet. 31f,w,s, Survey of
 English Literature 1, 5 (Rhet. 3)

2. *Additional courses* as prescribed by the curriculum of the line of specialization selected. See special requirements on pages 46-49.

3. *Electives*.—Enough electives should be selected to make from 15 to 17 credit hours each quarter.

Senior Year

1. *General courses*.—The following courses may be registered for any quarter that they are offered except that the proper sequence of continuation courses and prerequisites must be observed.

H.E. 34f,w, Home Management: Operation and Maintenance, Lectures, 3 (H.E. 40 or parallel, H.E. 83, Agr.Econ. 1 or parallel, Prev. Med. 52)

H.E. 35f,w,s,¹ Home Management: Operation and Maintenance, Laboratory, 6 (H.E. 83, H.E.Ed. 40, Prev.Med. 52, home practice in foods and cookery; H.E. 34 or parallel)

H.E. 170f,w,s, Nutrition of the Family, 3 (Agr. Biochem. 4, H.E. 70 and 80 or 81)

H.E. 171f,w,s, Child Nutrition, 3 (H.E. 170 or parallel, H.E.Ed. 40)

2. *Additional courses* as prescribed by the curriculum of the line of specialization selected. See special requirements on pages 46-49.

3. *Electives*.—Enough electives should be selected to make, with those listed above, from 15 to 17 credit hours each quarter.

TEACHERS' CURRICULUM IN GENERAL HOME ECONOMICS

To those courses listed under *Requirements of Teachers' Curricula* in Home Economics and *General Requirements* add the following:

a. *Required courses.*

Agr.Econ. 126s, Economics of Consumption, 3 (Agr.Econ. 1)

H.E. 11f,w,s, Clothing Planning and Construction, A, 3

H.E. 13f,w,s, Clothing Planning and Construction, B, 3 (H.E. 3, 11, 51, home practice in garment making)

H.E. 17w,s, Advanced Clothing, 3 (H.E. 13, 53)

or

H.E. 18f,s, Commercial Clothing Manufacture, 3 (H.E. 13, 53)

H.E. 150f,w,s, Art History and Appreciation, 3 (H.E. 51 or equivalent)

H.E.Ed. 142(a)f,w,s, Educational Measurement in Home Economics (H.E.Ed. 42)

b. *Elective courses*.—Five to ten credits must be elected from Group A and enough credits from Group B to make a total of fourteen credits.

Group A

Anthrop. 41

Hist. 1-2

Pol.Sci. 1

Group B

Astron. 11

Bot. 1

Child Wel. 60, 80, 90, 120

Ed.Psy. 60

¹A special project in the field of home management may be substituted or required at the discretion of the Division of Home Economics.

Eng. 31-32, 33, 73-74
 H.E. 55, 57, 61, 182, 195, 154, 73, 75, 179, 173, 136, 186, 102, 175
 H.E.Ed. 147
 HumanGeog. 11
 Jour. 13, 41, 55, 69, 73-74, 82
 Lib.Meth. 1
 Psy. 3, 56
 Rhet. 28, 32, 33, 34
 Zool. 183.

TEACHERS' CURRICULUM IN HOME ECONOMICS EXTENSION

To those courses listed under *Requirements of Teachers' Curricula in Home Economics* and *General Requirements* add the following:

a. *Required courses.*

Agr.Econ. 126s, Economics of Consumption, 3 (Agr.Econ. 1)
 H.E. 11f,w,s, Clothing Planning and Construction, A, 3
 H.E. 13f,w,s, Clothing Planning and Construction, B, 3 (H.E. 3, 11, 51, home practice in garment making)
 H.E. 17w,s, Advanced Clothing, 3 (H.E. 13, 53)
 or
 H.E. 18f,s, Commercial Clothing Manufacture, 3 (H.E. 13, 53)
 H.E. 44w, Home Economics Extension Work, 3 (H.E.Ed. 42, 49 or parallel)
 H.E. 15of,w,s, Art History and Appreciation, 3 (H.E. 51 or equivalent)

b. *Elective courses.*—The credits must be elected from the following courses:

Agr.Ed. 75
 Agr.Eng. 34
 ChildWel. 60
 Agr.Econ. 25
 H.E. 57, 61, 75, 173, 179, 182, 195
 Jour. 13, 41, 65, 69
 Psy. 56
 Rhet. 24
 Soc. 110

TEACHERS' CURRICULUM IN FOODS AND NUTRITION

To those courses listed under *Requirements of Teachers' Curricula in Home Economics* and *General Requirements* add the following:

a. *Required courses.*

Agr.Econ. 126s, Economics of Consumption, 3 (Agr.Econ. 1)
 H.E. 73f,s, Nutrition I, 4 (Agr. Biochem. 4, H.E. 80 or 81, Physiol. 4)
 H.E. 173s, Nutrition in Disease, 3 (H.E. 170, 175)
 or
 H.E. 175f,w, Nutrition II, 4 (H.E. 73)
 or
 H.E. 75f, Dietetics Laboratory, 2 (H.E. 182)
 and
 H.E. 179w,s, Readings in Nutrition, 2 (H.E. 170)
 H.E. 182f,w,s, Experimental Cookery, 3 (H.E. 80)
 H.E. 186f,s, Special Food Problems, 3 (H.E. 182)
 or
 H.E. 187f,s, Special Food Problems, 5 (H.E. 182, Agr. Biochem. 2)
 H.E.Ed. 142(a)f,w,s, Educational Measurement in Home Economics (H.E.Ed. 42)

b. *Elective courses.*—Thirteen additional credits must be elected from the following courses:

Agr.Biochem. 2, 106, 108
 Agr.Eng. 34, 35
 Phys.Chem. 110
 Eng. 31-32, 33, 73-74
 French 1-2-3, 8-9-10
 German 1, 2, 3, 4, 24-25-26, 27, 28-29
 Hist. 1-2
 H.E. 11, 13, 17, 18, 60, 61, 63, 65, 136, 150, 163
 Jour. 13, 41, 65, 69
 Lib.Meth. 1
 Math. 3, 4, 5, 6, 7
 Phys. 3, 4, 23, 24, 43, 44
 Pol.Sci. 1
 Rhet. 28, 32, 33, 34

TEACHERS' CURRICULUM IN TEXTILES AND CLOTHING

To those courses listed under *Requirements of Teachers' Curricula in Home Economics* and *General Requirements* add the following:

a. *Required courses.*

Agr.Econ. 126s, Economics of Consumption, 3 (Agr.Econ. 1)
 H.E. 11f.w.s, Clothing Planning and Construction, A, 3
 H.E. 13f.w.s, Clothing Planning and Construction, B, 3 (H.E. 3, 11, 51, home practice in garment making)
 H.E. 17w.s, Advanced Clothing, 3 (H.E. 13, 53)
 or
 H.E. 18f.s, Commercial Clothing Manufacture, 3 (H.E. 13, 53)
 H.E. 102f.s, Advanced Textiles, 3 (H.E. 3, Agr. Biochem. 3-4, Agr.Econ. 1 or parallel)
 H.E. 115f.w, Clothing Economics, 2 (H.E. 13, Agr.Econ. 1)
 H.E. 150f.w.s, Art History and Appreciation, 3 (H.E. 51)
 H.E.Ed. 142(a)f.w.s, Educational Measurement in Home Economics (H.E.Ed. 42)

b. *Elective courses.*—Nine additional credits must be added from the following courses:

Agr.Biochem. 2
 Bot. 1
 H.E. 17 or 18, 55, 57, 107, 154, 195

TEACHERS' CURRICULUM IN RELATED ART

To those courses listed under *Requirements of Teachers' Curricula in Home Economics* and *General Requirements* add the following:

a. *Required courses.*

H.E.Ed. 147w, Organization and Methods for Related Art Teaching, 3 (H.E.Ed. 42 or parallel, H.E. 53, 131 or parallel) (Omit H.E.Ed. 143 as listed under requirements for university teacher's certificate)
 ArtEd. 4f-5w-6s, Still Life, 3
 ArtEd. 7f-8w-9s, Sketch, 3
 ArtEd. 29f-30w-31s, Sketch, Course II, 3 (ArtEd. 7, 8, 9)
 H.E. 11f.w.s, Clothing Planning and Construction, A, 3
 H.E. 13f.w.s, Clothing Planning and Construction, B, 3 (H.E. 3, 11, 51, home practice in garment making)
 H.E. 55f, Decorative Needlework and Other Crafts, 3 (H.E. 53 or parallel)

- H.E. 57s, Batik and Other Crafts, 3 (H.E. 3, 53, or parallel)
- H.E. 150f,w,s, Art History and Appreciation, 3 (H.E. 51)
- H.E. 152w, Advanced Interior Design, 3 (H.E. 53, 131, 150)
- H.E. 154s, Advanced Costume Design, 3 (H.E. 13, 53, 55 recommended)

b. *Elective courses.*—Electives should be chosen following consultation with adviser.

INDUSTRIAL EDUCATION

Major Adviser: H. J. Smith

The following curriculum has been designed for young men who desire to prepare for teaching and administrative positions in the fields of the manual arts and trade education. The satisfactory completion of the four years of work here specified entitles a student to the bachelor of science degree and provides the training necessary for the Minnesota "high school standard special" certificate.

Minnesota Standards for Graded Elementary and High Schools, p. 35 contains the following provision:

From and after July 1, 1929, a certificate to teach general industrial education may be issued only upon a Bachelor's degree in industrial education from an institution accredited for the training of teachers of industrial arts, but the status of industrial teachers holding certificates prior to that date shall not be affected.

Certain courses of the curriculum are acceptable for Smith-Hughes certification, for service in trade schools and classes—day, evening, and part time. These should be enrolled for only upon recommendation of the departmental adviser or the state supervisor of trade and industrial education.

A bulletin descriptive of the plan and work of this special department will be furnished upon request. Those interested in credit transfer, graduate work, etc., should confer with the major adviser.

FOUR-YEAR CURRICULUM IN INDUSTRIAL EDUCATION¹

*Freshman Year*²

Course No.	Title	Credits			Prerequisite Courses
		F	W	S	
Comp. 4-5-6	Freshman Composition ³	3	3	3	None
Ind. 1-2	General Shopwork	2	2	..	None
Ind. 5	Wood Finishing .....	..	..	2	
Ind. 20	Industrial History .....	..	2	..	None
Ind. 25	Literature of Industrial Education .....	..	..	2	None
	Mathematics or Physical Science	5	5	5	
	Drawing	2	..	..	None
	Electives	3	3	3	
	Totals	15	15	15	

¹ Part II of the College of Education bulletin lists some courses of this department which are not a part of this curriculum. Examples, Ind. 11, Ind. 65, Ind. 105, and Ind. 150-151-152.

² During the freshman and sophomore years students must secure the required credits in physical education. Men must also register for military science.

³ Or Eng. A-B-C or exemption from the requirement.

COLLEGE OF EDUCATION

Sophomore Year¹

Course No.	Title	Credits			Prerequisite Courses
		F	W	S	
Econ. 6-7	Principles of Economics	5	5	..	None
Soc. 1	Introduction to Sociology .....	..	..	5	None
Psy. 1-2	General Psychology	3	3	..	None
Ed.Psy. 55	Educational Psychology .....	..	..	3	Psy. 1-2
Ind. 60	Philosophy of Vocational Education	2	..	..	None
Ind. 61	Practices in Vocational Education .....	..	2	..	Ind. 60
Ind. 40	Analysis .....	..	..	2	None
	Shopwork	3	3	3	
	Drawing .....	..	2	2	
	Electives	2	..	..
	Totals	15	15	15	

Junior Year

Course No.	Title	Credits			Prerequisite Courses
		F	W	S	
Ed.T. 15	Technique of High School Instruction	3	..	..	Ed.Psy. 55
H.Ed. 3	Educational Sociology .....	..	3	..	Psy. 1-2
Ed.Psy. 134	Mental Tests	2	..	..	Ed.Psy. 55
Ind. 70	Methods in Shop Subjects	2	..	..	Ind. 40
Ind. 44	Equipment and Management .....	..	2	..	
Ind. 90	Tests in Industrial Subjects .....	..	2	..	Ed.Psy. 55
Ind. 30	Graphic Presentation .....	..	..	2	None
Ind. 42	Course Organization .....	..	..	2	Ind. 40
Ind. 66	Methods in Related Subjects .....	..	..	2	Ind. 40
Ind. 14	Methods in Drawing .....	..	..	2	10 cr. in drawing
	Mathematics or Physical Science .....	..	..	5	
	Shopwork	3	2	..	
	Drawing	2	2	..	
	Electives	3	4	2	
	Totals	15	15	15	

Senior Year

Course No.	Title	Credits			Prerequisite Courses
		F	W	S	
Ind. 50-51-52	Practice Teaching	2	2	2	Ind. 80; either Ind. 14, 66 or 70 and consent of inst.
Ed.Ad. 124	Public School Administration ..	3	..	..	10 hrs. in ed.
Ed.Ad. 167-168	Junior High School .....	..	2	2	10 hrs. in ed.
Ind. 80	General Industrial Training ..	2	..	..	None
Ind. 170-171-172	Administration of Industrial Education (Day, Evening, Part-time)	2	2	2	
Ind. 110	Guidance in the Schools .....	..	2	..	Ed.Psy. 55
Psy. 130	Vocational Psychology .....	..	..	2	10 hrs. in Psy. and Educ.
	Electives	6	7	7	
	Totals	15	15	15	

¹ During the freshman and sophomore years students must secure the required credits in physical education. Men must also register for military science.

Requirements above are classified as follows: 52 academic, 18 education, 40 industrial education, 30 shopwork and drawing, 40 elective. Total 180 quarter credits required for the bachelor of science degree, exclusive of physical education.

The 20 credits in shopwork and 10 credits in drawing (30 total) may be increased by election to a maximum of 45 credits. Such additional courses should be elected under advice and may be either extensive or intensive in resultant preparation for teaching.

The 20 credits in mathematics and physical science may be earned in any selected courses within these two fields and in any ratio. Students are hereby presented opportunity to attain certification in an academic subject in addition to the major field, at the same time pursuing subject-matter extremely useful in the major.

Art, physical education, and athletic coaching are appropriate elective fields.

Several of the required courses and numerous others acceptable as electives may be carried in extension or by correspondence. All courses are brought into the summer sessions by rotation.

See College of Education bulletin, Part II, for days, hours, rooms, lecturers, prerequisites, etc.

LATIN

Major Adviser: J. B. Pike

Latin as a major subject:

Course No	Title	Credits
Latin 73	Advanced Grammar and Composition	3
Any two of the following:		
Latin 51	Pliny's <i>Letters</i> ¹	3
Latin 52	Horace's <i>Satires</i> and <i>Epistles</i>	3
Latin 53	Suetonius, <i>Selected Lives</i>	3
Latin 62	Horace's <i>Odes</i> and <i>Epodes</i>	3
Latin 63	Apuleius	3
Latin 71	Cicero's <i>De Amicitia</i> and <i>De Senectute</i>	3
Three courses in the hundred sequence		9
Total credits (senior college courses)		18

Latin as a minor subject:

Course No	Title	Credits
Latin 73	Advanced Grammar and Composition	3
Any two of the following:		6
Latin 51, 52, 53, 62, 63, 71 (see above).		—
Total credits (senior college courses)		9

Students entering the University 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.

¹ Prerequisite any two of courses 21, 22, 23 or equivalent.

LIBRARY METHODS

Major Adviser: F. K. Walter

The following curriculum has been arranged in co-operation with the Division of Library Instruction. It is designed to offer professional library training to prospective teachers who desire such work.

The successful completion of this four-year curriculum will entitle the student to the degree of bachelor of science. Students will also qualify for the Minnesota high school general certificate for teaching academic subjects in junior and senior high schools by completing requirements for a teaching major or for two teaching minors. It will usually be wisest to choose majors and minors in the fields of English and history.

Minor.—The requirements for a minor in library training will be satisfied upon the completion of Courses 102f, 104f, 107s, 108s, 112w, 114s.

FOUR-YEAR CURRICULUM FOR SCHOOL LIBRARIAN¹*Freshman Year*²

Course No.	Title	Credits
Eng. A-B-C or Comp. 4-5-6	Freshman English	15
Hist. 1-2	Freshman Composition or exemption from the requirement ..	9
	Modern World	10
	History	5
	Language	15
	Totals	45

*Sophomore Year*²

Course No.	Title	Credits
Psy. 1-2	General Psychology	6
	Natural Science	10
	Language	5
	Electives ³	24
	Totals	45

¹ Prospective students who are interested in the curriculum should obtain the special bulletin issued by the Division of Library Instruction.

The tuition fees for full time students who are enrolled in this specialized curriculum are \$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 hour for all courses under the supervision of the Division of Library Instruction, irrespective of their registration in courses in other subjects.

² During the freshman and sophomore years students must secure the required credits in physical education. Men must also register for military science.

³ Electives should be selected to meet the requirement of one teaching major or two teaching minors.

Junior Year

Course No.	Title	Credits
Lib. Meth. 102	Cataloging	3
Lib. Meth. 104	Classification	3
Lib. Meth. 112	Reference	3
Lib. Meth. 107	Library Administration	} Any two..... 6
Lib. Meth. 108	Public Library Administration	
Lib. Meth. 114	Selection of Books for Adolescents	
Lib. Meth. 121	Library Work with Children	3
Ed. Psy. 55	Educational Psychology	3
Ed. T. 15	Technique of High School Instruction	3
Ed. Ad. 65	The High School	3
	Continuation of required academic courses ¹	18
Totals		45

Senior Year

Title	Credits
Special Methods and Practice Teaching	9
Library Methods	27
Electives ¹	9

MATHEMATICS

Major Adviser: R. W. Brink

Mathematics as a major subject:

Prerequisite courses: Solid Geometry (entrance credit or its equivalent);² Higher Algebra taken either in high school or college; Trigonometry; College Algebra; Analytic Geometry.

Senior college courses:

Course No.	Title	Credits
Math. 50	Calculus I	5
Math. 51	Calculus II	5
	Additional credits in courses numbered above 49	8
Total credits, senior college courses		18

Mathematics as a minor subject:

Prerequisite courses: Solid Geometry (entrance credit or its equivalent);² Higher Algebra taken either in high school or college.

Math. 6	Trigonometry	5
Math. 7	College Algebra	5
Math. 30	Analytic Geometry	6
	Additional credits in courses numbered above 30	8

Total credits

¹ Electives should be selected to meet the requirement of one teaching major or two teaching minors. Electives should also include two credits selected from the list on p. 27.

² Those who did not present solid geometry for entrance may meet this requirement in one of the following ways: (1) By taking the subject in the summer school or in the General Extension Division by correspondence; (2) By passing a college entrance examination or a special examination given by the Department of Mathematics.

NATURAL SCIENCE

Advisers: H. A. Erikson, H. O. Jackson

Students preparing to teach science in Minnesota high schools should qualify to give instruction in two or more sciences, since almost all positions open to graduates require teaching in at least two fields. As a matter of fact most Minnesota schools now require instruction in general science for which the teacher should be trained in both biological and physical sciences. While it is possible to meet the major or minor sequences in one or more of the sciences as in other academic subjects, the following special curriculum in natural science is recommended for those persons desiring to secure the best preparation for the teaching of high school science. It requires:

1. Completion of 30 hours of work in one of the four natural sciences: chemistry, botany, zoology, physics. (On account of mathematics requirements, students majoring in physics may satisfy the requirement by offering but 25 hours.) In the statement below the word *major* means any one of these four subjects.
2. Completion of 15 hours in one of the five natural sciences: chemistry, physics, botany, geology, zoology. This course is designated a *minor*.
3. Completion of introductory courses in two of three of the subjects named under (2) not major or minor.
4. Completion of ten hours in chemistry.

The above curriculum should be elected at the beginning of the freshman year. In general it permits a student to meet the requirements for admission to the College of Education except in the case of students majoring in physics. Such students should take Mathematics 6, 7, and 30 during the first four quarters of their course, 10 hours of natural science (instead of 15), begin foreign language during the third quarter, and postpone work in social science until after entering the College of Education at the beginning of the junior year. Students are advised to continue work in their major science through the senior year. Students finding it necessary to modify their programs to meet this schedule will be relieved from meeting other admission requirements of the College of Education by the beginning of the junior year. The following sample curricula are offered to show the distribution of courses:

FOUR-YEAR CURRICULUM FOR THOSE MAJORING IN NATURAL SCIENCE
ASIDE FROM PHYSICS

JUNIOR COLLEGE

Freshman Year

Title	Credits
Freshman English or Composition	15 or 9
Foreign Language ¹	15
Natural Science	15
Physical Education ²	

¹ See foreign language requirements, p. 19.

² In addition men must register for the required military science.

Sophomore Year

Title	Credits
Foreign Language ¹	5
Social Science	10
Psychology	6
Major	15
Natural Science	5
Physical Education ²	

COLLEGE OF EDUCATION

Junior Year

Title	Credits
Major	10
Natural Science	5
Educational Psychology	3
Technique of High School Instruction	3
Electives ³	24

Senior Year

Title	Credits
Natural Science	10
The High School	3
Special Methods and Practice Teaching	9
Electives ³	23

NATURAL SCIENCE WITH A MAJOR IN PHYSICS

JUNIOR COLLEGE

Freshman Year

Course No.	Title	Credits
Eng. A-B-C	Freshman English	15
or		
Comp. 4-5-6	Freshman Composition (or exemption)	9
Math. 6	Trigonometry	5
Math. 7	College Algebra	5
Math. 30	Analytic Geometry	6
	Natural Science	10
	Foreign Language ¹	5
	Physical Education ²	

Sophomore Year

Course No.	Title	Credits
Phys. 3,4	Elements of Mechanics	4
Phys. 23,24	Heat	4
Phys. 43,44	Electricity	4
Math. 43,44	Calculus	15
Math. 50-51-52	General Psychology	6
Psy. 1-2	Foreign Language ¹	15
	Electives	
	Physical Education ²	

¹ See foreign language requirements p. 19.

² In addition men must register for the required military science.

³ Electives should include the 8 credits of required education electives as listed on p. 27.

COLLEGE OF EDUCATION

Junior Year

Course No.	Title	Credits
Phys. 33,34	Optics	4
Phys. 134	Experimental Optics	3
Phys. 124	Pyrometry and Heat	3
Ed.Psy. 55	Educational Psychology	3
Ed.T. 15	Technique of High School Instruction	3
	Natural Science	15
	Electives ¹	

Senior Year

Course No.	Title	Credits
Phys. 144	Electricity Measurements	3
Ed.T. 62 63-64	Special Methods and Practice Teaching	9
Ed.Ad. 65	The High School	3
	Natural Science	8
	Electives ¹	

FIVE-YEAR COURSES LEADING TO THE DEGREE OF MASTER OF ARTS
GRADUATE SCHOOL

Many students will find it difficult to secure all of the training they desire within the limits of a four-year period. For those who find it possible to continue their training for an additional year, it is recommended that they pursue work in either of two majors—(1) they may continue their natural science major in the Graduate School and minor in education or (2) they may major in education and carry natural science as a minor. Programs should be made out in consultation with a major adviser.

NURSERY SCHOOL AND KINDERGARTEN EDUCATION

Major Advisers: J. E. Anderson, Josephine C. Foster

The following curriculum is arranged for persons who are preparing to teach or direct nursery schools and for persons who wish to enter the field of kindergarten teaching. Followed by a year of graduate work, it also offers excellent basic preparation for those wishing to enter the field of parental education. Students taking this curriculum should be able to play simple piano music.

This curriculum is offered in co-operation with the Institute of Child Welfare, an organization established in the University for the scientific study of the development of the child. Co-operating with the institute are a number of university departments: Anatomy, Education, Home Economics, Nervous and Mental Diseases, Pediatrics, Psychology, Public Health, and Sociology.

The institute maintains a nursery school and an experimental kindergarten for the observation and study of young children which will, in conjunction with the public schools, be used for observation and practice for students undertaking this curriculum.

¹ Electives should include the 8 credits of required education electives as listed on p. 27.

FOUR-YEAR NURSERY SCHOOL AND KINDERGARTEN CURRICULUM

Freshman Year

Course No.	Title	Credits			Prerequisite Courses
		F	W	S	
Zool. 1-2	General Zoology	5	5	..	None
Comp. 4-5-6	Freshman Composition	3	3	3	None
Hist. 1-2	Modern World	5	5	..	None
Pol.Sci. 1	American Government	}	}	}	None
or					
Geog. 11	Introduction to Human Geography				
Phys.Ed. 1-2-3	Elem. Phys. Training	1	1	1	None
	Electives	2	2	7	
		<hr/>	<hr/>	<hr/>	
		15	16	16	

Sophomore Year

Course No.	Title	Credits			Prerequisite Courses
		F	W	S	
Psy. 1-2	General Psychology	3	3	..	None
Psy. 4-5	Introductory Lab. Psy. ....	..	..	4	Psy. 1-2
Ed.Psy. 55	Educational Psychology .....	..	..	3	Psy. 1-2
Soc. 1	Introduction to Sociology	5	..	3	None
Soc. 49	Occurrence of the Socially Inadequate .....	..	..	3	Soc. 1
Art.Ed. 1-2-3	Fundamental Principles of Design	3	3	3	None
Art.Ed. 7-8-9 ¹	Sketch	1	1	1	None
Ind.Ed. 11	Special Class Woodwork .....	..	2	..	None
Speech 41-42	Fundamentals of Speech	3	3	..	Comp. 4-5-6
Phys.Ed. 16-17	Sophomore Games and Folk Dancing	3	3	..	
	One other course in Physical Education .....	..	..	3	
	Electives	0	3	1	
		<hr/>	<hr/>	<hr/>	
		15½	15½	15½	

¹ For ArtEd. 7-8-9 3 hours selected from Courses 4-5-6, 32, 35, 37, 38, or 41 may be substituted.

COLLEGE OF EDUCATION

Junior Year

Course No.	Title	Credits			Prerequisite Courses
		F	W	S	
Ed.Ad. 75	The Elementary School .....	..	..	3	Ed.Psy. 55 or 56 or equiv.
Phys.Ed.43-44	Theory and Function of Play ..	½	3	..	6 qtrs. phys. ed.
P.M.&P.H. 50	Public and Personal Health ..	3	..	..	Zool. 1-2, Psy. 1-2
Soc. 52	Elementary Case Work .....	..	3	..	Soc. 49
Soc. 90-91	Elementary Field Training in Case Work .....	..	3	3	Soc. 49 and 52
Ed.T. 30	Principles of Kindergarten and Nursery School Education ..	3	..	..	6 cred. psy.
Ed.T. 31	Permanent Play Materials .....	..	2	..	6 cred. psy.
Ed.T. 32	Plastic Materials .....	..	2	..	with Ed.T. 30
Ed.T. 33	Rhythms, Games, and Music for the Young Child .....	..	..	2	Ed.T. 30
Ed.T. 34	Story Telling for Young Children .....	..	..	2	Ed.T. 30
Ed.T. 85-86-87	Methods and Observation	1	1	1	6 cred. psy.
C.W. 80	Child Psychology	3	..	..	6 cred. psy.
Ed.Psy. 60	Introduction to Statistical Methods .....	..	..	2	6 cred. in Psy.
	Electives	5	2	2	
		15½	16	15	

Senior Year

Course No.	Title	Credits			Prerequisite Courses
		F	W	S	
Ed.Ad. 119	Elementary School Curriculum ..	3	..	..	Ed.Psy. 55 or equiv.
Ed.Psy. 134	Mental Tests	2	..	..	Ed.Psy. 55 or equiv.
Ed.Psy. 146-147	Child Guidance .....	..	2	2	15 cred. psy. and ed.
C.W. 90	Physical Development of the Child .....	..	2	..	Zool. 1-2, Psy. 1-2
C.W. 120	Health Care of Young Child ..	..	..	2	C.W. 90
H.E. 70	Nutrition Survey	3	..	..	10 cred. lab. science
Ed.T. 88-89-90	Practice Teaching in Kindergarten or Nursery School	3	3	3	Ed.T. 30-34, 85-87
Ed.T. 143-144	The Teaching of Reading	2	2	..	9 cred. ed.
	Electives	2	6	8	
		15	15	15	

NURSING EDUCATION AND PUBLIC HEALTH NURSING

Major Adviser: Eula B. Butzerin

REGULAR CURRICULUM

(Open to high school graduates)

The following curriculum leads to degrees of bachelor of science and graduate in nursing. In the case of those who choose proper subjects in the College of Education it entitles graduates to receive also a high school teacher certificate. In the case of those electing public health nursing, Part III A, it also leads to a certificate of public health nursing. It is planned to prepare students for such public health work as visiting nursing, school nursing, and health teaching, infant welfare, rural and industrial nursing; for administrative, supervising, and teaching positions in hospitals and

schools of nursing, and for combined positions in secondary schools involving both nursing and teaching.

Part I. During the first five quarters of the course the student is registered in the College of Science, Literature, and the Arts, during which time the following required subjects must be completed:

- English A-B-C or 4-5-6 or exemption from the requirement
- Zoology 1-2
- History 10 cred.
- Physiology 1 and 2 or 4
- Psychology 1-2
- Home Economics 70
- Sociology 1
- Botany 10 cred.
- Physical Education
- Electives to make a total of 75 credits exclusive of physical education

Part II. During the next 10 quarters, the student is registered in the School of Nursing taking required subjects and practical work as listed in the School of Nursing bulletin.¹ Sixty credits are granted for the nursing work if taken at the University of Minnesota.

During the last three quarters, the student is registered in the College of Education majoring either in nursing education or in public health nursing.

Part III A. The Public Health curriculum is as follows:

Course No.	Title	Credits
P.M.&P.H. 53	Elements of Preventive Medicine	3
P.M.&P.H. 58	Maternal and Child Hygiene	2
P.M.&P.H. 61	Mental Hygiene	3
P.M.&P.H. 62-63	Principles of Public Health Nursing and Special Fields	5
P.M.&P.H. 64	Field Practice in Infant Welfare Nursing	4
P.M.&P.H. 65	Field Practice in School Nursing	2
P.M.&P.H. 66	Field Practice in County Nursing	2
P.M.&P.H. 67	Field Practice in a Tuberculosis Sanatorium	2
P.M.&P.H. 68	Field Practice in Visiting Nursing	5
Soc. 52	Elementary Case Work	3
Soc. 90	Elementary Field Training in Case Work	2
Soc. 60	Social Protection of the Child	3
or		
H.E. 40	Child Training .....	..
Ed.T. 15	Technique of High School Instruction	3
	Electives	6
Total		45

Part III B. The Nursing Education curriculum is as follows:

	Title	Credits
Ed.T. 15	Technique of High School Instruction	3
Ed.T.	Special Methods and Practice Teaching	12
Ed.Ad. 65	The High School	3
	Hospital Administration	4
	Electives	23 ²
Total		45

¹ All five-year nursing students are allowed to take Educational Psychology in their preliminary quarter in the School of Nursing.

² Electives must be chosen so as to complete the professional requirement of 26 quarter credits for the teacher's certificate. See p. 27.

CURRICULUM FOR IRREGULAR STUDENTS

(Open to those who have already graduated in nursing)

In the case of graduate nurses from accredited nursing schools whose records are such as to warrant special consideration, the following arrangements can be made for earning the B.S. degree. Candidates must have their nursing school credits evaluated by the Nursing Committee, and must complete any necessary additional hospital services required in accordance with the decision of the committee before credit is granted. Forty-five credits represent approximately the average advanced standing given for a satisfactory three-year nursing school education.

For additional studies for the B.S. degree candidates pursuing this curriculum will register in the College of Education.

The amount and type of college work to be required of each candidate is to be decided by her major adviser after consideration of candidate's general education and experience. Any junior college courses specified as essential for a particular student may be taken either previous to or combined with the work in Nursing Education or Public Health Nursing.

The senior college courses of these students will correspond in general with Part III A for those specializing in Public Health or Part III B for those desiring Nursing Education, with such additional electives in either case as may be needed to fulfill the total credit and honor point requirements.

General Regulations

Electives in the Nursing Education sequence and those in the Public Health sequence whether of regular or irregular students are to be chosen with the approval of the respective advisers in these courses. All programs must also be approved by the Students' Work Committee and dean of the College of Education.

Candidates for the B.S. degree in the curriculum for either regular or irregular students must conform to the College of Education regulation relative to total credits and honor points and are entitled to the privileges of the quality credit rule. Candidates must also meet the physical education requirement.

The lists of studies here printed have been selected as suitable for a majority of the students working in the fields of nursing education and public health nursing respectively. Advisers may deviate from these recommendations when the objective of particular students would be favored by substituting other courses. Such substitutions are to be made on petition, duplicate copies of which shall be filed with the registrar.

Required and Recommended Subjects

a. Students in either group wishing to secure the high school teacher's certificate for secondary schools must complete the following, and 10 credits in botany or accepted sciences in addition to the special requirements of their respective groups.

Course No.	Title	Credits
Ed.Ad. 65	The High School	3
	Special Methods and Practice Teaching Course in Major Field	9
	Education electives ¹	2

Suggested electives:

Ed.Ad. 75	The Elementary School	3
Ed.Ad. 152	Supervision	2

b. Students preparing for general community health work must complete:

Course No.	Title	Credits
P.M.&P.H. 70	Methods and Materials in Teaching Home Nursing and Child Care	3
P.M.&P.H. 71	Supervision of Public Health Nursing	2
P.M.&H. 107	Sanitary Surveys	3

and select 10 credits from the following group:

Soc. 122-123	Methods of Social Investigation	6
Soc. 119	The Family	3
Bot. 101	Elementary Biometry	3
Psy. 130	Vocational Psychology	2
C.W. 80	Child Psychology	3
C.W. 130	Development of Young Child	3
C.W. 170	Parental Education	3
H.E. 33	Home Management Problems for Social Workers	3
H.E. 171	Child Nutrition	3

c. Further suggested public health electives:

Course No.	Title	Credits
P.M.&P.H. 59	Social Hygiene	1
P.M.&P.H. 60	Tuberculosis and Its Control	2
P.M.&P.H. 69	School Nursing Procedures	3
P.M.&P.H. 73	Occupational Hygiene and Disease	2
P.M.&P.H. 74	Health Instruction Methods and Materials	3
P.M.&P.H. 75	Practice Teaching in Health Subjects	Ar
P.M.&P.H. 80	Health Supervision of the School Child	3

GRADUATE WORK LEADING TO THE DEGREE OF MASTER OF ARTS

Graduate work may be carried and a Master's degree earned by students who meet the requirements of the Graduate School. Programs should be made out in consultation with a major adviser in the department.

PHYSICAL EDUCATION FOR MEN

A physical examination is required of all new matriculants, and of all others using the department privileges, at the beginning of the year, and as often during their college course as their physical condition may indicate. Students taking the required work in physical education are examined at the close of the year.

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

¹ Electives must be chosen so as to complete the professional requirement of 26-quarter credits for the teacher's certificate. See p. 27.

determined by the department to pass the swimming and life-saving requirements and will be assigned special hours for instruction.

The following curriculum has been outlined for a special four-year professional course in physical education and athletic coaching. Satisfactory completion of this curriculum entitles the graduate to the bachelor of science degree and provides the training necessary for the Minnesota "high school standard special" certificate for teaching physical education in elementary and high schools.

CURRICULUM FOR MEN MAJORING IN PHYSICAL EDUCATION

Major Adviser: L. F. Keller

Freshman Year

Course No.	Title	Credits			Prerequisite Courses
		F	W	S	
Comp. A-B-C or Comp. 4-5-6	Freshman English	5	5	5	None
	Freshman Composition or exemption from requirement	3	3	3	
Chem. 14, 15	General Inorganic Chemistry ..	5	5	..	None
Sociol. 1	Introduction to Sociology ....	..	..	5	None
P.M.&P.H. 3	Personal Hygiene and Elementary Sanitation .....	..	..	2	None
Mil.Sci. 1,2,3	First Year Basic Course .....	..	..	..	None
Phys.Ed. A,B,C	Elementary Physical Education	1	1	1	None
	Approved electives	5	5	3	
		16	16	16	

Sophomore Year

Course No.	Title	Credits			Prerequisite Courses
		F	W	S	
Zool. 1-2	General Zoology	5	5	..	None
Psy. 1-2	General Psychology	3	3	..	None
Anat. 3	Human Anatomy .....	..	..	4	Zool. 1-2
Phys.Ed. 10-11-12	Minor Sports	2	2	2	Phys.Ed. 1,2,3
Phy.Ed. 7-8-9	Advanced Leaders	1	1	1	Phys.Ed. 1,2,3
Mil.Sci. 4-5-6	Second Year Basic Course ....	..	..	..	Mil.Sci. 1,2,3
	General electives	4	4	8	
		15	15	15	

Junior Year

Course No.	Title	Credits			Prerequisite Courses
		F	W	S	
Physiol. 57,4,10	Human Physiology .....	..	4	4	Zool. 1 qtr., chem. 1 qtr.
Phys.Ed. 19-20-21	Gymnastics	1	1	1	Phys.Ed. A,B,C
Phys.Ed. 22-23	Kinesiology	2	2	..	Anat. 4
Phys.Ed. 24-25	Methods in Physical Education	..	2	2	Phys.Ed. 22-23
Phys.Ed. 30	Athletic Training and First Aid	..	..	2	None
P.M.&P.H. 53 or P.M.&P.H. 50	Elements of Preventive Medicine	3	..	..	Psy. 1-2, Bact. 51
Ed.Psy. 55	Public and Personal Health ...	3	..	..	Zool. 1-2, Psy. 1-2
Ed.Ad. 65	Educational Psychology .....	..	3	..	Psy. 1-2
	The High School .....	..	..	3	Ed. 55
	General electives ¹	7	3	3	
		13	15	15	

¹ At least 8 credits of elective work in the junior and senior years must be selected from the list on p. 27.

Senior Year

Course No.	Title	Credits			Prerequisite Courses
		F	W	S	
P.M.&P.H. 80	Educational Hygiene	3	..	..	Prev. Med. 50 or 52 or 53
Phys.Ed. 28	Physical Examination and Normal Diagnosis	2	..	..	Physiol. 58,59
Phys.Ed. 29	Adaptation of Activities in Orthopedic Procedures	2	..	..	Phys.Ed. 22-23-24
Phys.Ed. 31	History of Physical Education	2	..	..	Ed. 1
Phys.Ed. 32	Principles of Physical Education	3	..	..	Phys.Ed. 10-11-12, 23-24
Phys.Ed. 33	Organization and Administration of Physical Education .....	..	..	3	Phys.Ed. 32
Phys.Ed. 37	Football .....	..	..	3	None
Phys.Ed. 38	Basket-Ball	2	..	..	None
Phys.Ed. 39	Track .....	..	..	2	None
Phys.Ed. 42	Baseball	2	..	..	Phys.Ed. 10-11-12, 24, Ed. 55
Phys.Ed. 43-44-45	Practice Teaching	2	2	2	Psy. 1-2
	General electives ¹	7	3	5	
		15	15	15	

COURSES FOR MEN MINORING IN ATHLETIC COACHING

Course No.	Title	Credits			Prerequisite Courses
		F	W	S	
Phys.Ed. A,B,C	Elementary Physical Education	1	1	1	
Phys.Ed. 10-11-12	Minor Sports	2	2	2	
Phys.Ed. 19-20 21	Gymnastics	1	1	1	Phys.Ed. A,B,C
Phys.Ed. 24-25	Methods in Physical Education .....	..	..	2	Phys.Ed. A,B,C
Phys.Ed. 30	Athletic Training .....	..	..	2	
Phys.Ed. 33	Organization and Administration of Physical Education .....	..	..	3	
Phys.Ed. 37	Football	3	..	..
Phys.Ed. 38	Basket-Ball	2	..	..
Phys.Ed. 39	Track Athletics .....	..	..	2	
Phys.Ed. 42	Baseball .....	..	..	2	

NOTE.—All candidates for teacher's certificate with minor recommendation in athletic coaching must take Physical Education 19, 20, 21, 24, 30, and 33. The balance of nineteen credit hours may be secured from any of the courses listed above.

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

¹ At least 8 credits of elective work in the junior and senior years must be selected from the list on p. 27.

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 in the Junior College. Every student must complete Courses 1, 2, and 3 in the order indicated. All sophomore students are allowed as free a choice as their physical condition permits (see Courses 7 to 31); except that students who cannot swim must register for Course 22-23 during the sophomore year. Physical examinations or consultations are required annually of all students. Additional six credits toward graduation can be gained by taking the following courses: 41, 42, 43, 44, 45, 66-67-68, 69-70-71.

Statement of fees.—Elementary physical training, \$2.50 a quarter. All other exercise courses, including swimming, for which registration is required, except Phys.Ed. 24f,s, \$2 a quarter. Maximum fee paid by a student in physical education, \$3.50 a quarter.

REQUIREMENTS FOR TEACHING PHYSICAL EDUCATION

The special four-year professional course described below is designed to prepare graduates for the responsible direction of physical education activities and provides the training necessary for the Minnesota "high school standard special" certificate for teaching physical education in elementary and high schools. Students desiring to enter the course should consult with the head of this department. They should be without organic diseases 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. They should have a voice adapted to speaking in public. They should have training in the sciences and should, if possible, have had a unit of physics in high school.

FOUR-YEAR CURRICULUM IN THE COLLEGE OF EDUCATION FOR
WOMEN STUDENTS MAJORING IN PHYSICAL EDUCATION

Major Adviser: J. Anna Norris

Freshman Year

Course No.	Title	Credits			Prerequisite Courses
		F	W	S	
Eng. A-B-C	Freshman English ¹	5	5	5	None
or					
Comp. 4-5-6	Freshman English ¹	3	3	3	None
Chem. 14-15	Gen. Inorg. Chemistry ²	5	5	..	None
Agr. Eng. 23 ³	General Physics ⁴ .....	..	..	5	None
Hist. 1-2	Modern World ¹	5	5	..	None
Soc. 1	Introduction to Sociology ¹ .....	..	..	5	None
Phys. Ed. 255	Intermediate Swimming .....	..	..	$\frac{1}{2}$	None
Phys. Ed. 34f ⁵	Elementary Swimming for Ma- jors .....	..	..	..
Phys. Ed. 37-38-39 ⁴	Freshman Hockey, Basket-Ball, Baseball	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	None
Phys. Ed. 40	Personal Hygiene .....	..	..	2	None
Phys. Ed. 48f-49w- 50s ⁴	Tennis and Posture Training, Danish Gymnastics, Track, Soccer, Archery	1	1	1	None
		<hr/>	<hr/>	<hr/>	
		16 $\frac{1}{2}$	16 $\frac{1}{2}$	19	
		or	or	or	
		14 $\frac{1}{2}$	14 $\frac{1}{2}$	17	

¹ No exemption from the requirement. For description of course see bulletin of College of Science, Literature, and the Arts, Part I.

² For description of course see bulletin of School of Chemistry.

³ For description of course see bulletin of College of Agriculture.

⁴ The second and third quarters are open to students who have not taken the preceding quarters.

⁵ If one year of physics is presented at entrance no physics will be required.

⁶ Required only of those major students who cannot pass the elementary swimming test.

Sophomore Year

Course No.	Title	Credits			Prerequisite Courses
		F	W	S	
Zool. 1-2 ²	General Zoology ¹	5	5	..	None
Anat. 5s	Human Anatomy ³ .....	..	..	3	Zool. 1-2
Psy. 1-2 ²	General Psychology	3	3	..	None
P.M.&P.H. 2w ⁴	First Aid ⁵ .....	..	1	..	Zool. 9 cred.
Speech 41f-42w	Fundamentals of Speech	3	3	..	Comp. A-B-C or 4-5-6
Phys.Ed. 25f or 28f	Int. or Advanced Swimming ..	0	..	..	Phys.Ed. 34 or equivalent
Phys.Ed. 51-52	Soph. Major Gymnastics	$\frac{1}{2}$	$\frac{1}{2}$	..	Phys.Ed. 48-49-50
Phys.Ed. 56w-57s	Swim. with Technique and Methods .....	..	1	1	Phys. Ed. 28 or equivalent
Phys.Ed. 63-64-65	Hockey, Basket-Ball, Baseball with Technique and Methods ..	1	1	1	Phys.Ed. 37-38-39
Ed.Psy. 55	Educational Psychology .....	..	..	3	Psy. 1-2
Phys.Ed. 75	History of Physical Education ..	1	..	..	None
	Elective	3	..	6	
		<hr/>	<hr/>	<hr/>	
		16 $\frac{1}{2}$	14 $\frac{1}{2}$	14	

Junior Year

Course No.	Title	Credits			Prerequisite Courses
		F	W	S	
Physiol. 57f	Physiological Chemistry ⁴	4	..	..	Zool. 1-2, 10 cred., Chem. 10 cred.
Physiol. 4w	Human Physiology .....	..	4	..	See Physiol. 57f
Physiol. 60s	Physiology of Exercise .....	..	..	4	Physiol. 4
P.M.&P.H. 2 ⁴	First Aid ⁵	1	..	..	Zool. 10 cred.
P.M.&P.H. 53	Elements of Preventive Medicine .....	..	..	3	Psy. 1-2
Phys.Ed. 43-44-45	Theory and Function of Play ..	$\frac{1}{2}$	3	$\frac{1}{2}$	Phys.Ed. 6 qtrs., Psy. 1-2.
Phys.Ed. 54-55	Gymnastics for Junior Majors..	$\frac{1}{2}$	$\frac{1}{2}$	..	Phys.Ed. 51-52
Phys.Ed. 58-59	Adv. Folk Dancing with Technique and Methods .....	..	1	1	Phys.Ed. 6 qtrs.
Phys.Ed. 60-61	Minor Sports with Technique and Methods	1	..	1	Phys.Ed. 6 qtrs.
Phys.Ed. 66-67-68	Elementary Inter. Dancing	1	1	1	Phys.Ed. 6 qtrs.
Phys.Ed. 80-81	Anatomy and Kinesiology	3	3	..	Anat. 4 Agr.Eng. 23
Phys.Ed. 82	Physical Examination .....	..	2	..	Phys.Ed. 79-80-81
Phys.Ed. 83	Technique of Teaching and Principles of Gymnastics ....	..	..	4	Phys.Ed. 54-55, 79-80-81
	Electives ⁵	5	..	2	
		<hr/>	<hr/>	<hr/>	
		16	14 $\frac{1}{2}$	15 $\frac{1}{2}$	

¹ For description of course see bulletin of College of Science, Literature, and the Arts, Part I.

² The entire course must be completed before credit is received for any quarter.

³ For description of course, see bulletin of Medical School.

⁴ Course must be taken junior year if not taken sophomore year.

⁵ Eight credits must be elected from among educational subjects listed on p. 27 of this bulletin.

Senior Year

Course No.	Title	Credits			Prerequisite Courses
		F	W	S	
Ed.Ad. 65	The High School .....	..	..	3	Ed.Psych. 55
Phys.Ed. 69-70-71	Advanced Int. Dancing with Technique	1	1	1	Phys.Ed. 66-67-68
Phys.Ed. 72-73	Senior Gymnastics	½	½	..	Phys.Ed. 54-55
Phys.Ed. 85-86	Principles of Physical Education ..	..	2	1	Phys.Ed. 44, 84, 91
Phys.Ed. 87	School Hygiene and Technique of Teaching Personal Hygiene ..	3	..	..	Physiol. 58-59 and Prev. Med. 53
Phys.Ed. 88-89-90	Orthopedic and Remedial Gym- nastics	1	1	1	Phys.Ed. 82
Phys.Ed. 91	Principles of Dancing	2	..	..	Phys.Ed. 59, 67-68
Phys.Ed. 92-93-94	Practice Teaching	2	2	2	Phys.Ed. 56-57, 60- 61, 63-64-65, 69-70, 83, 91
Phys.Ed. 97	Administration of Physical Ed. ..	..	3	..	
	Electives	5	5	5	
		14½	14½	13	

Some electives which are permitted by program hours.

- Anthropology, 41 (Introduction)
- Art Education, 1 (Appreciation)
- Astronomy, 11 (Descriptive)
- English, 55-56 (Shakespeare)
- Greek, 42 (Sculpture), 44 (Literature and Life), 45 (Mythology)
- Human Anatomy, 135 (Physical Development of Childhood)
- Philosophy, 1 (Problems), 2 (Logic), 3 (Ethics)
- Political Science, 1 (American Government)
- Preventive Medicine and Public Health, 59 (Social Hygiene), 61 (Mental Hygiene)
- Sociology, 6 (Social Interaction), 14 (Rural Sociology)
- Home Economics, 70, Nutrition Survey (Freshmen or Sophomores)
- Home Economics, 170, Nutrition of the Family
- Home Economics, 171, Child Nutrition
- Bacteriology 41
- Art Ed. 37f, Basketry
- Art Ed. 38f, Elementary Weaving and Allied Crafts
- College of Engineering and Architecture 18f,w,s, General Woodworking

REQUIREMENTS FOR WOMEN STUDENTS MINORING IN
 PHYSICAL EDUCATION

Course No.	Title	Credits	Prerequisite Courses
Phys.Ed. 1-2-3 ¹	Elem. Physical Training	3	None
Phys.Ed. 20	Basket-Ball	$\frac{3}{2}$	
Phys.Ed. 21	Baseball	$\frac{3}{2}$	
Phys.Ed. 22-23	Elementary Swimming	1 $\frac{1}{2}$	None
Phys.Ed. 43-44-45	Theory and Function of Play	4	Phys.Ed., 6 qtrs.
Phys.Ed. 51-52	Soph. Major Gymnastics	$\frac{1}{2}$	Phys.Ed. 1-2-3
Phys.Ed. 54-55	Junior Major Gymnastics	1	Phys.Ed. 51-52
Phys.Ed. 64-65	Basket-Ball, Baseball with Technique and Methods	2	Phys.Ed. 20w-21s
Zool. 1-2	General Zoology	10	No prereq.
Anatomy 5	Human Anatomy	3	Zool. 1-2
Phys.Ed. 80-81	Anatomy and Kinesiology	6	Zool. 1-2, Anat. 4 ^s
Phys.Ed. 83	Technique of Teaching and Principles of Gymnastics	4	Phys.Ed. 79-80-81, 54-55
Prev.Med. 50	Public and Personal Health	3	Zool. 1-2, Psy. 1-2

PHYSICS

Major Adviser: H. A. Erikson

Physics as a major subject:

Course No.	Title	Credits
Phys. 3,4	Elements of Mechanics	4
Phys. 23,24	Heat	4
Phys. 33,34	Optics	4
Phys. 43,44	Electricity	4
Phys. 9	Acoustics	3
Phys. 52	Laboratory Arts	3

Six credits to be elected from the following:

Course No.	Title	Credits
Phys. 104	Precision Mechanics	3
Phys. 124	Pyrometry and Heat	3
Phys. 134	Experimental Optics	3
Phys. 136	Spectrum Analysis	3
Phys. 144	Electricity Measurements	3
Phys. 148	Radioactivity	3
Phys. 150	Conduction through Gases	3
Phys. 152	X-Rays	3

Total credits 28

Physics as a minor subject:

Twenty-two credits consisting of the following courses: 3 and 4, 23 and 24, 33 and 34, 43 and 44, 9, 52.

For specialized curriculum in natural science see p. 54.

¹ Transfer students who have not completed the requirement in preliminary hygiene may register for Phys.Ed. 4f,s or for P.M.&P.H. 3.

POLITICAL SCIENCE

Major Adviser: W. Anderson

Political Science as a major subject:

Thirty-six credits including:

Course No.	Title	Credits
Pol.Sci. A-B	Introd. to Government and Politics	10
or		
Pol.Sci. 1	American Government	5
and		
Pol.Sci. 15	Elements of Pol.Sci	5

Additional courses in Political Science to the extent of 26 credits, of which 12 must be in senior college courses exclusive of Courses 51-52-53

Political Science as a minor subject:

Eighteen credits including:

Course No.	Title	Credits
Pol.Sci. A-B	Introd. to Government and Politics	10
or		
Pol.Sci. 1	American Government	5
and		
Pol.Sci. 15	Elements of Pol.Sci.	5

Additional courses in Political Science to the extent of 8 credits, of which at least 3 credits must be in senior college courses, exclusive of Courses 51-52-53.

PROFESSIONAL EDUCATION OF TEACHERS

Major Adviser: W. E. Peik

This special curriculum is planned for persons who expect to enter the field of teacher training in elementary education. The demand at the present time comes from normal schools, teachers colleges, and high school or county normal departments for directors, supervisors, and critic teachers. The Master's degree is usually but not always required for normal school and teachers college positions. Rural teaching experience and the Bachelor's degree are required in Minnesota to qualify for positions in high school normal departments.

The curriculum listed below presupposes two years of teachers college or junior college work. The completion of two additional years entitles students to the degree of bachelor of science and to the teacher's certificate in elementary education in Minnesota. The satisfactory completion of a third year in the Graduate School entitles the student to the Master's degree and to a university certificate in teacher training.

Adjustments in the prescribed courses to meet the requirements of state departments or the specific needs of a student may be made with the approval of the major adviser and the faculty.

A. REQUIRED COURSES IN EDUCATION

Course No.	Title	Credits
Ed.Psy. 56	Educational Psychology	3-4
Ed.Psy. 60	Introduction to Statistical Methods	2
Ed.Psy. 134	Mental Tests	2
Ed.Ad. 124	Public School Administration	3
Ed.Ad. 75	The Elementary School	3
Ed.Ad. 119	The Elementary School Curriculum	3 or 4
Ed.Ad. 150w	Supervision and Improvement of Instruction	2
Ed.Ad. 151	Supervision: Uses of Educational Tests in Improving Instruction	2
Ed.Ad. 156	Practice Supervision (Field Work and Observation)	3
Ed.Ad. 172	Elementary Curriculum and Course of Study Construction ..	2
Ed.T. 181	Technique of Elementary School Instruction	3
Ed.Ad. 185	The Professional Education of Teachers	2

31

In addition 13 hours to be elected from the courses below

Course No.	Title	Credits
Ed.T. 45	The Teaching of Geography and History in the Elem. School	2
Ed.T. 143-144	The Teaching of Reading	3-4
Ed.Ad. 152	Adjustment of Schools to Individual Differences	2
Ed.Ad. 153	The Supervision of English	2
Ed.Ad. 154	The Supervision of Social Studies	2
Ed.Ad. 155	The Supervision of Arithmetic	2
Ed.Ad. 157	Practice in Supervision	3
Ed.Ad. 159	The Supervision of Reading	2
Pub.Sch.Mus.	Courses in Music Education (with approval only)	2-5
ArtEd.	Courses in Art Education (with approval only)	2-5
Phys.Ed.	Courses in Physical Education (with approval only)	2-5
Ed.Psy. 113-114-115	Psychology of Elementary School Subjects	6
Ed.Psy. 157	Psychology of Child Development	3
Ed.Ad. 184	Supervision of Practice Teaching	2
Ed.A. 186	Special Problems in Teacher Training	2
	Other courses on approval	13

Total credits in education

45

B. REQUIRED COURSES IN ACADEMIC SUBJECTS

Nine or ten credits in each of four of the following academic fields including English and social studies, or eighteen credits in each of two of the following fields or such others as may be approved:

English, English literature, history, geography, political science, social studies, languages, mathematics	36
General electives (recommended to be in academic subjects)	9

Total

45

Total credits required for the teacher's certificate and the bachelor of science degree

90

ADDITIONAL YEAR IN THE GRADUATE SCHOOL

For the work of the fifth year, the candidate for the Master's degree and for the university certificate in teacher training must satisfy the requirements of the Graduate School (see Graduate School bulletin). The language requirement may be waived in all cases where a language is not necessary in the thesis or the special work to be pursued.

PUBLIC SCHOOL MUSIC

Major Advisers: C. Scott, A. Pepinsky, A. N. Jones

The curriculum in Public School Music is designed to prepare supervisors and teachers of music in the elementary and secondary schools, and leads to the degree of bachelor of science and the Minnesota "high school standard special" certificate for teaching music in elementary and high schools.

In addition to the practical and theoretical studies in music this course includes such cultural subjects as English, psychology, and history, and the professional courses which are prescribed by the College of Education. The music studies are equally distributed between the instrumental and vocal departments so that, on graduation, a student is capable of being an instrumental, vocal, or general supervisor.

Observation and practice teaching are required in the Minneapolis and Saint Paul grade schools, and in the Minneapolis, Saint Paul, and University high schools.

Following are the specific regulations and requirements applying to this course:

For entrance.—All students wishing to register for the course in Public School Music must, upon matriculation, choose a major instrument, and pass an entrance examination in that instrument, before a committee of the faculty of the Music Department. Entrance requirements for a major, according to instruments are:

Piano—Any minor or major scale in octaves, thirds, sixths, or tenths, M.M. quarter notes—108; Bach Invention, or dances from one of the suites; a sonata by Haydn or Mozart; a modern composition of equal difficulty with the sonata.

Voice—Good natural equipment.

Violin—Major and minor scales, arpeggios; the simpler Kreutzer *Etudes*; a sonata by Handel, Haydn, Mozart, or Schubert; a more modern work displaying special technique peculiar to the violin.

Organ—Same as piano.

Students not majoring in piano, will be examined concerning requirements to be met in piano. (See below.)

For graduation.—Students must earn 180 credits and 180 honor points exclusive of physical education. They must earn 30 credits in practical music, 18 of which shall be the minimum requirement for their major instrument. Students who are not majoring in voice shall be required to take one year of voice, two credits per quarter, and must take this subject during the freshman year. Students not majoring in piano shall be required to take one year of piano, A-B-C, two credits per quarter, exemption dependent upon entrance examination. (The credits in this subject cannot apply to a major in piano.)

COLLEGE OF EDUCATION

FOUR-YEAR CURRICULUM IN PUBLIC SCHOOL MUSIC

*Freshman Year*¹

Course No.	Title	Credits
Comp. 4-5-6 or Eng. A-B-C	Freshman Composition	9
Mus. 1-2-3	Freshman English or exemption from the requirement	15
Mus. 7-8-9	Harmony	9
Mus.Ed. 1-2-3	Ear Training and Solfeggio	3
Mus. Ed. 7-8-9	Orchestral Instruments	3
	Musical Appreciation	3
	Practical Music	12
	Electives	6

*Sophomore Year*¹

Course No.	Title	Credits
Psy. 1-2	General Psychology	6
Mus. 103-104-105	Analysis	3
Mus.Ed. 29-30-31	Elementary and Junior High School Methods ²	9
Mus.Ed. 4-5-6	Orchestral Instruments	3
Mus. 92	Technique of Vocal Instruction (Spring quarter)	2
Mus. 106-107-108	History of Music	9
Ed.Psy. 55	Educational Psychology	3
	Practical Music	6
	Orchestra or Chorus ³	3

Junior Year

Course No.	Title	Credits
Mus.Ed. 32-33-34	High School Methods ⁴	9
Mus.Ed. 51-52-53	Instrumentation	6
Mus. 112-113-114	Ensemble	6
	Practical Music	6
	Orchestra or Chorus ³	3
	Electives	15

Senior Year

Course No.	Title	Credits
Mus.Ed. 64-65-66	Orchestra Conducting	6
Ed.Ad. 65	The High School	3
Mus.Ed. 81-82-83	Supervision and Teaching	6
	Practical Music	6
	Education Electives ⁵	6
	General Electives	18

¹ During the freshman and sophomore years students must secure the required credits in physical education. Men must also register for military science.

² First two quarters Elementary School Methods; third quarter Junior High School Methods.

³ Except for students majoring in piano.

⁴ First two quarters, High School Methods; third quarter, Operetta Conducting.

⁵ To be selected from the list on p. 27.

Minor in Public School Music

Students in other departments who wish to earn a minor in Public School Music may do so by completing the following courses:

Course No.	Title	Credits
	Practical Music	6
Mus. 7-8-9	Ear Training and Solfeggio	3
Mus.Ed. 1	Orchestral Instruments	1
Mus.Ed. 7-8-9	Music Appreciation	3
Mus.Ed. 32-33	High School Methods	6

ROMANCE LANGUAGES

Major Adviser: F. B. Barton

French as a major subject:

Thirty-six credits in courses numbered above 4 including:

Course No.	Title	Credits
French 21-22-23	Survey of French Literature (or 24-25)	9 or 10
	and	
	One other literary course	3 to 9
French 49	French Pronunciation	3
French 53	French Composition	3
	and	
French 54-55	French Conversation	4
	or	
French 20	Oral and Written French	5
French 63	Advanced French Composition	3
French 103-104-105	French Syntax and Composition	3

French as a minor subject:

Eighteen credits in courses numbered above 4.

SCHOOL HEALTH WORK

Major Adviser: H. S. Diehl

This course is designed to prepare students to develop comprehensive health programs in school systems. In the smaller systems such persons may teach health education and allied subjects, such as biology, in high school and supervise the health work in the elementary schools. 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.

Teachers of experience who are graduates of two-year courses in teachers colleges will be allowed the usual 90 credits toward the completion of the course. Graduates or students in nursing, physical education, home economics, elementary education, and others will be allowed advanced credit, determined in each case by their previous training. The work of all students desiring advanced credit toward the completion of the course

will be evaluated and a program of studies worked out for each student on an individual basis.

Provision also is made whereby those who have completed the course and have had experience in the field may pursue a fifth year of graduate work, specializing in some phase of the school health problem such as physical education, school nursing, health instruction, etc.

Students in this course will be selected by the advisory committee on the basis of their ability and qualifications for the work.

Certification for teaching will be made in a minor field such as natural science or physical education.

FOUR-YEAR CURRICULUM IN SCHOOL HEALTH WORK¹

Freshman-Sophomore Years

Course No.	Title	Credits
Comp. A-B-C or 4-5-6	Freshman English or Composition	15 or 9
Hist. 1-2	Modern World	10
Bot. 1	General Botany	4
Chem. 1,2,3 (or 4-5)	General Inorganic Chemistry	12 or 8
P.M.&P.H. 3	Personal Hygiene and Elementary Sanitation	2
Soc. 1	Introduction to Sociology	5
Psy. 1-2	General Psychology	6
Zool. 1-2	General Zoology	6
Anat. 3	Human Anatomy	5
Physiol. 4	Human Physiology	4
Bact. 41	General Bacteriology	5
Rhetoric 22(UF)	Public Speaking (UF)	3
H.E. 70	Nutrition Survey	2
P.M.&P.H. 2	First Aid	1
Phys.Ed. 1-2-3	Freshman Physical Education ¹	3
Phys.Ed. 22(23)	Elementary Swimming }	2
Phys.Ed. 20	Sophomore Basket-Ball }	
Phys.Ed. 21	Sophomore Baseball }	
Total required credits		81 to 83.

Approved electives to total 90 credits exclusive of required physical education courses are required.

¹ Men interested in this curriculum may take the required number of credits in physical education in their minor course in athletic coaching. Selection of the proper courses will be made in consultation with an adviser in the Department of Physical Education for Men.

Junior-Senior Years

Course No.	Title	Credits
Phys.Ed. 43-44-45	Theory and Function of Play ¹	4
Phys.Ed. 64	Basket-Ball with Methods and Technique	1
Phys.Ed. 79-80-81	Anatomy and Kinesiology	6
P.M.&P.H. 53	Elements of Preventive Medicine	3
P.M.&P.H. 59	Social Hygiene	1
P.M.&P.H. 61	Mental Hygiene	3
P.M.&P.H. 69	School Nursing—Principles, Techniques and Practices	4
P.M.&P.H. 74	Health Instruction Methods and Materials	4
P.M.&P.H. 75	Practice Teaching in Health Education	Ar
P.M.&P.H. 80	Health Supervision of School Child	3
P.M.&P.H. 106	School in Relation to Public Health Organizations	2
Ed.Psy. 55	Educational Psychology	3
Ed.Ad. 65	The High School	3
Ed.Ad. 75	The Elementary School	3
or		
Ed.T. 181	Technique of Elementary Instruction	3
Ed.Ad. 124	Public School Administration	3
Ed.Ad. 150	Supervision and Improvement of Instruction	2
Ed.T. 15	Technique of H. S. Instruction	3
Ed.T. 62-63-64	Special Methods and Practice Teaching	9
H.E. 171	Child Nutrition	3
Soc. 49	Occurrence of the Socially Inadequate	3
Soc. 52	Elem. Case Work	3
Soc. 90-91	Elem. Field Work	4
C.W. 130	Development of Young Child	3
C.W. 170	Parental Education	3
Bot. 101	Elementary Biometry	3
Total required credits		75
Approved electives		15
		90

Recommended Electives

Course No.	Title	Credits
Ed.Ad. 133-134	Guidance in Secondary Schools	4
or		
Ed.Ad. 169	Extra-Curricular Activities	2
Ed.Psy. 134	Mental Testing	
or		
Ed.Psy. 143-144	Individual Mental Examination	4
Ed.Psy. 159	Psychology of Personality	2
Ed.Psy. 146-147	Child Guidance	4
H.E. 170	Nutrition of Family	3
Bact. 101	Special Bacteriology	4
Bact. 116	Immunity	3
Anat. 135	Physical Development of Child	2

¹ Men interested in this curriculum may take the required number of credits in physical education in their minor course in athletic coaching. Selection of the proper courses will be made in consultation with an adviser in the Department of Physical Education for Men.

Graduate Work

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 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.

SOCIAL STUDIES

Students who desire to specialize in the group of Social Studies are advised to follow either of the following options:

1. Major in history, minor in social science. Students majoring in history who expect to prepare themselves to handle high school courses in social science should, in addition to meeting other requirements for graduation from the College of Education, secure credits as follows: History at least 45 credit hours (see statement under History). Political Science 1, 2, and 11 or 15. Economics 6-7. Sociology 1, 6, and 14. Geography 11 and 41 are strongly urged. A minimum of 15 credits in one and 10 credits in two of these departments is required.

2. Major in social science, minor in history. Students desiring to secure a major in social science with a minor in history should take the following courses: Economics 6-7, and more advanced work. Political Science 1, 2, 11 or 15 and one course in foreign governments or relations. Sociology (see departmental statement). History 7-8 and enough more to constitute a minor. Enough additional credits should be earned in one of these departments to satisfy major requirements in that department. Geography 11, 41, 43 or 71 are strongly urged.

FIVE-YEAR COURSE LEADING TO THE DEGREE OF MASTER OF ARTS

Since in many cases students will find it difficult to secure adequate general training and at the same time pursue all of the special courses in history and social science which are desirable to follow, a five-year course leading to the degree of bachelor of arts and master of arts is recommended.

JUNIOR COLLEGE

*Freshman Year*¹

Course No.	Title	Credits
Comp. 4-5-6 or	Freshman Composition	9
English A-B-C	Freshman English (or exemption from requirement)	15
	Language (see requirements)	10
	Science	10
Hist. 1-2	Modern World	10

¹ During the freshman and sophomore years the student must secure 5 credits in physical education. Men must also register for military science.

*Sophomore Year*¹

Course No.	Title	Credits
Hist. 7-8	American History	10
Psy. 1-2	General Psychology	6
Pol.Sci. 1	American Government	5
Pol.Sci. 2	State Government	5
	Social studies group and electives	15

COLLEGE OF EDUCATION

Junior Year

Course No.	Title	Credits
Econ. 6-7	Principles of Economics	10
Hist. 105	History of Rome	5
or		
Hist. 133	Near East: Old Orient	3
Hist. 119	Renaissance and Reformation	5
or		
Hist. 120	Medieval Civilization	5
Soc. 1	Introduction to Sociology	5
Soc. 6	Social Interaction	3
Soc. 14	Rural Sociology	3
Ed.Psy. 55	Educational Psychology	3
Ed.T. 15	Technique of High School Instruction	3
Ed.Ad. 65	The High School	8
	Electives ²	

Senior Year

Course No.	Title	Credits
Ed.T. 66-67-68	Special Methods and Practice Teaching	9
Econ. 3	Mechanics of Exchange	5
Econ. 141	Monetary and Banking Policy	3
Pol.Sci. 11	Municipal Government	5
Pol.Sci. 15	Elements of Political Science	5
	History (Intensive course, see departmental statement)	5
	Sociology (See departmental statement)	9

GRADUATE SCHOOL

Fifth Year in the Graduate School

Students who satisfactorily meet the requirements of the Graduate School (see Graduate School bulletin) may secure the Master's degree with a major in social studies and a minor in education. Programs should be arranged in consultation with a major adviser in the department.

¹ During the freshman and sophomore years the student must secure 5 credits in physical education. Men must also register for military science.

² Electives totaling 8 credits should be selected from the list of education courses on p. 27.

SOCIOLOGY AND SOCIAL WORK

Major Adviser: F. S. Chapin

*Sociology As a Major Subject*¹*a. Major in Social Theory:*²

Course No.	Title	Credits	Course No.	Title	Credits
Soc. 1	Introduction to Sociology ..	5	Soc. 100	Social Psychology	3
Soc. 6	Social Interaction	3	Soc. 101 ³	Social Organization	3
Soc. 14	Rural Sociology	3	Soc. 102 ³	Social Control	3
Soc. 53	Elements of Criminology ..	3	Soc. 110	Rural Organization	3
or			Soc. 114	Rural Social Institutions	3
Soc. 45	Social Statistics	5	or		
Soc. 49	Occurrence of the Socially Inadequate	3	Soc. 140	History of Social Theory	3
Soc. 119	The Family	3	Soc. 121	Advanced Statistical Methods	3
or			or		
Soc. 120	Social Progress	3	Soc. 141	Contemporary Social Theory	3

Total 36 or 37 credits.

*b. Major in Applied Sociology:*⁴

Course No.	Title	Credits	Course No.	Title	Credits
Soc. 1	Introduction to Sociology ..	5	Soc. 119	The Family	3
Soc. 14	Rural Sociology	3	or		
Soc. 45	Social Statistics	5	Soc. 134	Legal Protection of the Child	3
Soc. 49	Occurrence of the Socially Inadequate	3	Soc. 110	Rural Organization	3
Soc. 52 ⁴	Elementary Case Work ...	3	or		
Soc. 60	Legal Protection of the Child	3	Soc. 114	Rural Social Institutions	3
Soc. 90	Elementary Field Work ...	2	or		
Soc. 91	Elementary Field Work ...	2	Soc. 128 ⁵	Principles of Administration Applied to Social Work	2
Soc. 100	Social Psychology	3	or		
Soc. 112	The Rural Social Survey..	2	Soc. 130 ⁵	Advanced Case Work ...	2
or					
Soc. 122-123	Methods of Social Investigation	6			

Total 36 or 37 credits.

¹ Students are advised to take Psy. 4-5 or 7. Students expecting to major in Speech should consult a major adviser as early as possible in their junior college course.

² Soc. 116, The Newspaper As a Social Institution; or Soc. 160, Population Problems, may be substituted, upon the recommendation of the adviser, for any three-credit course which appears in this curriculum.

³ Soc. 103, Sociology of Conflict, may be substituted for this course.

⁴ Soc. 70, Group Work in the Community, and Soc. 71, Elementary Field Training in Group Work, may be substituted for Soc. 52, Soc. 90, and Soc. 91.

⁵ Soc. 126, Technique of Leadership, may be substituted for this course.

Sociology As a Minor Subject

Course No.	Title	Credits
Soc. 1	Introduction to Sociology	5
Soc. 6	Social Interaction	3
or		
Soc. 14,	Rural Sociology, and 4 other courses	11 or 12
Total 19 or 20 credits.		

NOTE.—Students majoring in sociology must complete two teaching minors in addition to the required professional courses. Teachers who already hold a teacher's certificate may be relieved of this requirement upon petition.

SPEECH

Major Adviser: F. M. Rarig

Speech as a major subject:¹

Course No.	Title	Credits
Comp. 11-12	Description; Narration	6
Speech 41-42-43	Fundamentals of Speech	9
or		
Speech 45-46	Fundamentals of Speech	10
Speech 55-56	Argumentation and Debate	6
Speech 61	Speech Correction	4
Speech 67	Phonetics	3
Speech 71-72	Elements of Play Production	6
Speech 81-82	Interpretative Reading	6
Total		43 or 44

Speech as a minor subject:

A minimum of 25 credits including Speech 41-42-43 or 45-46; 61 and 67; 55-56-57 or 71-72-73 or 81-82-83.

Speech Correction as a minor subject:¹

Course No.	Title	Credits
Speech 41-42-43	Fundamentals of Speech	9
or		
Speech 45-46	Fundamentals of Speech	10
Speech 61	Speech Correction	4
Speech 67	Phonetics	3
Speech 162-163	Advanced Speech Correction	6
Psy. 144-145	Abnormal Psychology	6
Total		28 or 29

All students majoring or minoring in speech must present satisfactory evidence of interest and effective participation in one or more activities, such as debating, dramatics, oratory, public reading, or public speaking.

Because of the close relation between English and speech in the high schools of Minnesota, students majoring in speech should have one of their minors in English.

¹ Students are advised to take Psy. 4-5 or 7. Students expecting to major in Speech should consult a major adviser as early as possible in their junior college course.

Students intending to take further work in speech correction, specializing in that field of speech alone, should include in their undergraduate course Physiology 4.

Students majoring in speech register for practice teaching in Ed.T. 52-53-54.

TEACHERS OF SUBNORMAL CHILDREN

Major Adviser: J. G. Rockwell

Students will complete the first two years of this course in the Junior College.

Students who complete the freshman and sophomore years of this course, who have had two years of teaching experience in elementary schools, and who complete a minimum of six credits in approved courses of the junior and senior years, will qualify for a special teaching certificate required of teachers of subnormal children in special classes for which state aid is received. All students who have not had the equivalent previously must take the courses in practice teaching and handwork to qualify them for this special certificate.

Unclassed students with proper prerequisites may pursue courses for which they are qualified in the junior and senior years, on the basis of previous training and experience.

FOUR-YEAR CURRICULUM FOR THE TEACHERS OF SUBNORMAL CHILDREN

JUNIOR COLLEGE

Freshman Year

Course No.	Title	Credits
Eng. A-B-C	Freshman English	15
or		
Comp. 4-5-6	Freshman Composition or exemption from the requirement ...	9
ArtEd. 1-2-3	Fundamental Principles of Design	9
Zool. 1-2	General Zoology	10
Soc. 1	Introduction to Sociology	5
	Electives	6
	Physical Education	

Sophomore Year

Course No.	Title	Credits
Psy. 1-2	General Psychology	6
Psy. 4-5	Psychology Laboratory	4
Hist. 1-2	Modern World	10
Ed.Psy. 55	Educational Psychology	3
Ind. 11	Special Class Woodwork	2
ArtEd. 37	Basketry	2
ArtEd. 32	Cardboard and Paper Construction	1
H.E. 57	Weaving on Table Looms	3
	Electives	12
	Physical Education	

COLLEGE OF EDUCATION

Junior Year

Course No.	Title	Credits
Ed.Psy. 134-135-136	Mental Tests and Problems in Mental Testing	6
Ed.T. 181	Technique of Elementary Instruction	3
Ed.T. 143-144	Teaching of Reading in Elementary School	4
Ed.Ad. 155	Supervision of Arithmetic in the Elementary School	2
Phys.Ed. 43-44-45	Theory and Function of Play	4
Ed.Psy. 184	Mental Deficiency	2
	Electives	

Senior Year

Course No.	Title	Credits
Ed.T. 17	Practice Teaching	5
Ed.Psy. 111	Measurements in the Elementary School	3
Soc. 49	The Occurrence of the Socially Inadequate	3
	Elementary Case Work	3
	Child Welfare	3
	Electives	

THEORY AND PRACTICE OF TEACHING

Major Advisers: Dora V. Smith, J. G. Umstatted

GRADUATE WORK

FIFTH YEAR FOR ENGLISH TEACHERS IN THE THEORY AND PRACTICE OF TEACHING

English teachers may secure a Master's degree with a major in the department of theory and practice of teaching and a supporting minor in English. Courses applicable to the teaching of English from which the student may profitably choose are as follows: Ed.T. 193, 195, 110, 122, and 196-197-198; Ed. 208; Ed.Ad. 113 and 169; Ed.Psy. 133 and 158. The seminar, Ed.T. 222-223-224, is required without credit for all students with a major or minor in theory and practice of teaching. Programs should be arranged in consultation with a major adviser in the department.

VISITING TEACHERS

Major Adviser: F. S. Chapin

JUNIOR COLLEGE

Freshman Year

Course No.	Title	Credits
Eng. A-B-C	Freshman English	15
or		
Comp. 4-5-6	Freshman Composition	9
Hist. 1-2	Modern World	10
	or	
	Foreign Language	10
Zool. 1-2	General Zoology	10
Soc. 1	Introduction to Sociology	5
Pol.Sci. 1	American Government	5
Phys.Ed. 1-2-3	Physical Education	5

COLLEGE OF EDUCATION

Sophomore Year

Course No.	Title	Credits
Hist. 7-8	American History	10
Econ. 6-7	Principles of Economics	10
Psy. 1-2	General Psychology	6
Pol.Sci. 2	State Government	5
Soc. 6	Social Interaction	3
Soc. 45	Social Statistics	5
Soc. 49	Occurrence of the Socially Inadequate	3
	Physical Education	2

COLLEGE OF EDUCATION

Junior Year

Course No.	Title	Credits
Ed.Psy. 55	Educational Psychology	3
Ed.T. 15	Technique of High School Instruction	3
Soc. 52	Elementary Case Work	3
Soc. 53	Elements of Criminology	3
Soc. 70	Group Work in the Community	3
Soc. 90-91	Elementary Field Training	3
H.E. 70-71-72	Nutrition	9
	or	
	Courses in Child Welfare	9
	Education Electives ¹	5 or 6

Senior Year

Course No.	Title	Credits
	Education Electives ¹	11 or 12
Econ. 161-162	Labor Problems and Labor Movements	6
	or	
Psy. 144-145	Abnormal Psychology	6
Soc. 60	Social Protection of the Child	3
Soc. 92	Elementary Field Training	2
Soc. 128	Principles of Administration Applied to Social Work	2
Soc. 130	Advanced Case Work	2
Soc. 134	Legal Protection of the Child	2
Soc. 138-139	Mental Case Work	6
Soc. 153-154-155	Advanced Field Training	9

ZOOLOGY

Major Adviser: J. E. Wodsedalek

Zooology as a major subject:

Zool. 1-2, General Zoology. 10 credits and a minimum of 20 additional credits in the department. Medical Physiology (Course 4) is included among the electives.

Zooology as a minor subject:

Zool. 1-2, General Zoology and at least 10 additional credits chosen from the following: Genetics and Eugenics, General Physiology, General Ecology, Histology, Entomology, General Embryology, Ornithology, and Human Physiology (Medical Physiology. 4).

¹ Electives should be selected under advisement.

DESCRIPTION OF COURSES

GENERAL COURSES

- Ed.50. Art Appreciation. The enjoyment of the visual arts. Illustration of governing principles by practical experience. No technical requirements. Contact for superintendents and supervisors and teachers in the general field with this so-called "special subject."
- Ed.208. Methods in Educational Research. A study of the methods employed in the investigation and report of educational problems. Designed to aid students in the preparation of theses. Suggested for all candidates for graduate degrees.
- Ed.228-229-230. Problems of College Education:
Ed.228. Problems of Student Personnel.
Ed.229. Problems of Curriculum and Instruction.
Ed.230. Problems of Organization and Administration.

ADMINISTRATION AND SUPERVISION

- Ed.Ad.24. Public School Administration. The organization and administration of public schools in relationship to the teacher and other staff members. For teachers.
- Ed.Ad.65. The High School. Development of secondary education in the U.S.; types of secondary schools; recent tendencies in reorganization; the aims and functions of secondary education; courses of study as related to aims; curriculum organization and programs of studies.
- Ed.Ad.65a. The High School. For students majoring in administration. (See Ed.Ad.65T.)
- Ed.Ad.75. The Elementary School. A systematic study of the modern elementary school: development; function; objectives; relation to junior high school and pre-school education; survey of its special features; organization; the curriculum; the function of the newer methods; the staff; articulation and co-ordination problems.
- Ed.Ad.113-114. High School Curriculum. A study of methods of curriculum making, types of programs of study, curricula, subjects of study, constants, variables, electives, distribution of subject-matter by years and units.
- Ed.Ad.115. Organization of the Elementary School. Problems relating to the organization for instruction and classification of pupils in elementary schools with critical examination of current practices.
- Ed.Ad.119. The Elementary School Curriculum. A study of the principles underlying the selection and organization of subject-matter for courses in the elementary school; survey of scientific methods of curriculum making; examination of curricula, syllabi, and texts in the light of their function; survey of the findings of research by subjects.
- Ed.Ad.119T-120T. The Elementary School Curriculum. (Same as above for teachers. Offered every other year on Saturday mornings.)

- Ed.Ad.121. Educational Advising of Women and Girls. A course designed to acquaint students with the problems of educational advising of girls and young women, particularly those of high school age. Open to seniors and graduates, and juniors by permission of the instructor.
- Ed.Ad.123. Supervision of High School Instruction. The present status of high school supervision; its proper scope and function. A course combining consideration of principles and their application to improving high school instruction in the academic and special subjects.
- Ed.Ad.124. Public School Administration. The organization, administration, and general support of public schools in states and local school districts.
- Ed.Ad.125. Techniques in Administration. Standard practices regarding child accounting problems, records and reports; procedures having to do with personnel and school board relations and rules and regulations; standard office practices, including textbook and supply management.
- Ed.Ad.126. School Plant Management. Plant program planning and financing, including operation and maintenance of public school buildings.
- Ed.Ad.128. Special Problems in Educational Administration. This course is designed primarily for superintendents and principals qualified to make intensive studies of specific problems related to the administration of a school system.
- Ed.Ad.129. Educational Publicity Materials. Analysis of current and desirable practices in educational publicity. Planning in detail a publicity program and current publicity materials for a public school system.
- Ed.Ad.130. Educational Publicity Agencies. Relationship of superintendent to community agencies directly or indirectly interested in public education. Problems of personal contacts, public speaking, parent-teacher and similar organizations, board meetings as a publicity agency.
- Ed.Ad.133. Guidance in Secondary Schools. Emphasizes practices in educational and vocational guidance in junior and senior high schools, considering such phases as giving information about vocations, utilizing test results and school marks, and organizing the staff for guidance.
- Ed.Ad.150. Supervision and Improvement of Instruction. An analysis of the functions and duties of a supervisor as related to the improvement of instruction; specific supervisory technique; objective analysis of classroom activity; concrete applications to present day problems; case studies.
- Ed.Ad.151. Supervision: Uses of Educational Tests in Improving Instruction. Objective reevaluation of the results of teaching; diagnosis of pupil difficulty; remedial work; tests as aids to teaching; following up a testing program.
- Ed.Ad.152. Supervision—The Adjustment of Schools to Individual Differences. The adaptation of the school, the curriculum, and classroom procedures to the abilities and interests of pupils. Typical provisions; classification; emphasis upon classroom procedures; survey of the evidence.

- Ed.Ad.153. Supervision of English in the Elementary Schools. Improvement of instruction in language, grammar, spelling, and handwriting; the results of scientific investigation; use of standardized and informal tests; remedial work.
- Ed.Ad.154. Supervision of Social Sciences in the Elementary Schools. The scientific work being done on the course of study, in geography, history, science, and related fields; improvement of instruction in social sciences in the elementary schools.
- Ed.Ad.155. Supervision of Arithmetic in the Elementary Schools. The improvement of instruction in arithmetic; the evaluation of the course of study; standardized drill exercises; diagnosis of specific pupil difficulty and remedial work; tests as aids of teaching.
- Ed.Ad.156. Practice in Supervision—Observation and Field Work. Classroom visitation in the university elementary demonstration school, the University High School and other schools in or near the Twin Cities, followed by conferences. The application of supervisory techniques and follow-up; special projects in supervision.
- Ed.Ad.157. Practice in Supervision. Problems and practice in the supervision of instruction in the elementary schools of Minneapolis and St. Paul.
- Ed.Ad.158. Organization for Supervision. The organization and the administration of a public school system for supervision, treating specifically the delegation and co-ordination of the supervisory responsibilities of all staff members associated in these activities.
- Ed.Ad.159. Supervision of Reading. The improvement and supervision and instruction in oral and silent reading; the testing program; remedial work; evaluation of courses of study and textbooks; results of scientific investigations; special problems for study.
- Ed.Ad.160. Supervision of Elementary Subjects. A course considering the application of principles of supervision to improving instruction in the subjects of the elementary school.
- Ed.Ad.161. Special Problems in School Supervision. This course is designed primarily for principals, superintendents, and supervisors qualified to make intensive studies of specific problems related to the supervision of schools.
- Ed.Ad.164. High School Administration. Principles and techniques of the organization and administration of secondary school units; housing; selection and assigning of the staff; schedule making; public relations and publicity; organization of guidance and of extra-curricular activities; pupil, equipment, and internal fund accounting and related problems of administration; government; problems of administration and organization related to instruction.
- Ed.Ad.167-168. The Junior High School. An introduction to the theory and practice of junior high school education; sources of the movement for reorganization; purposes, functions, and limitations; types of reorganization; fundamental problems of reorganization, and administration and teaching; reorganization of subject-matter in grades 7, 8, and 9.

- Ed.Ad.169. Extra-Curricular Activities. Types of activities in junior and senior high schools; aims and values; practices in organizing, administering, and supervising; methods of evaluation.
- Ed.Ad.170. Special Problems in Secondary Education. Planned primarily for those at work in high schools who are qualified to make intensive studies relating to administration and supervision of secondary education. Consult instructor before registering.
- Ed.Ad.172. Curriculum and Course of Study Construction. A study of the techniques employed at the public school and college levels. Class and individual projects according to needs and interests.
- Ed.Ad.175. Financial Aspects of Public School Business Administration. Financial program planning, budgeting, accounting, cost finding, income and expenditure control; and the preparation and analysis of financial reports.
- Ed.Ad.178-179. School Surveys. A study of the literature and methods of school surveys, as a basis for the investigation of practical problems in school administration and supervision.
- Ed.Ad.180. Practice in High School Administration. Practical experience in problems of administration, pupil personnel, curriculum administration, extra-curricular activities, staff problems, program and schedule making, etc. Consult instructor before registering.
- Ed.Ad.184. Supervision of Practice Teaching. A course primarily for teachers engaged in the direction of practice teachers in secondary education.
- Ed.Ad.185. The Professional Education of Teachers. A study of the present status and of the problems that relate to the institutional training of teachers. Emphasis upon: historical evolution of current practices; institutional organization and relationship; curricula; the building of professional curricula; recent investigations and findings. Intended for critic teachers, practice teaching supervisors, directors, and administrators in departments, schools and colleges of education, and high school teacher training directors.
- Ed.Ad.186. Special Problems in Teacher Training. Planned for those who have a special interest in this field. An intensive study of specific problems. Consult instructor before enrolling.
- Ed.Ad.205-206-207. Seminar in Educational Administration.
- Ed.Ad.218-219-220. Seminar in Secondary School Problems.
- Ed.Ad.225-226-227. Seminar in Elementary School Problems.

AGRICULTURAL EDUCATION

- Agr.Ed.11. Principles of Vocational Education. The fundamental principles upon which education is based. Emphasis is placed on those phases which are most closely related to vocational education.
- Agr.Ed.21. Vocational Education. A short history of vocational education; present status in Europe and the United States; manual training and home arts in an educational system; place of agriculture in the public schools with special reference to Minnesota.

- Agr.Ed.41. *Apprentice Teaching.* An introductory course in teaching, including observation of class work, apprentice teaching, and special conference discussions of problems relating to teaching. Intended to initiate the student into the routine of classroom procedure. Professional readings. (Not offered in 1930-31.)
- Agr.Ed.42. *Supervised Teaching Experience.* Preparation of lesson plans and actual teaching of classes under careful supervision in recitation and laboratory; criticism and discussion of plans, methods, and results of student teaching. Review and discussion of assigned professional readings.
- Agr.Ed.64. *Survey of Agriculture.* A course in general agriculture designed to give students practical familiarity with fundamental principles and basic facts, best procedures, literature, and important problems of agriculture in this region.
- Agr.Ed.75. *Visual Presentation.* To prepare persons for presenting materials by means of slides, films, charts, etc. Students assist in assembling materials for their own use and in acquiring skill and technique in preparation and operation of various mediums.
- Agr.Ed.81. *Extension Work.* Federal, state, and local extension aims, organization. Assembling and use of extension data and equipment. Development of extension methods especially as applied to the work of Minnesota.
- Agr.Ed.82. *Agricultural Extension Field Work.* Actual field practices in extension work on part salary in addition to credits. Number admitted to course limited by positions available. Usually will cover summer quarter, may extend into fall quarter.
- Agr.Ed.131. *Methods in Teaching High School Agriculture.* Fundamentals of method in teaching as related to teaching agriculture in high school. Organizing subject-matter of daily work; selection and manipulation of devices. Classroom and laboratory method. Specific plans for teaching secondary agriculture. (Not offered in 1930-31.)
- Agr.Ed.135. *The Curriculum in Vocational Agriculture.* A study of curriculum organization, determination of subject-matter, organization of subject-matter, job analysis, course construction, texts, and references.
- Agr.Ed.141. *Supervised Practice in Vocational Agriculture.* A special methods course dealing with the selection, planning, supervising, and summarizing of the practical work in agriculture. Special emphasis on the problem method of teaching, and the use of the farm and community for teaching purposes.
- Agr.Ed.151. *Organization and Management.* Organization and management of work in secondary schools, particularly in Minnesota, with special reference to agricultural work, courses of study, programs, equipment, laboratory and class management, extension work, plots, and co-ordination of work. (Not offered in 1930-31.)
- Agr.Ed.154. *Rural Education and Community Life.* The rural school as a community center, and ways and means of organizing educational and recreational activities, such as clubs, festivals, fairs, and other desirable features of rural community life. (Not offered in 1930-31.)

- Agr.Ed.161. Vocational Education in Agriculture. A study of the principles developed and established in agricultural education. The principles developed in other vocational education and their relation to agricultural education.
- Agr.Ed.162. The Basis of Vocational Teaching Technique. A course which includes an analysis of the philosophical, psychological, and other bases of teaching technique from the viewpoint of the teacher of vocational agriculture.
- Agr.Ed.164. Fundamentals of Agriculture. Basic principles of agricultural science and elements of practical agriculture. Emphasis on concrete problems in soils, crops, and animal husbandry, as related to classroom instruction and to school and home projects.
- Agr.Ed.171. Problems in Procedure. For agriculture teachers. Emphasizes working out problems in detail in order that the processes as formulated can be used in teaching the following year by those enrolled. Discussions, readings, papers, laboratory.
- Agr.Ed.176. Problems in Visual Presentation. Special attention to use of visual aids in teaching agriculture. The development of proper visual methods by means of research.
- Agr.Ed.181-182-183. Teaching Agriculture. A study of all activities of the teacher in conducting a high school agriculture department in Minnesota including all day, part time, evening, and elementary classes, and community activities. Observation, participation, reading, preparing plans, criticisms, discussions, reports.
- Agr.Ed.191-192-193. Seminar in Agricultural Education. Critical studies of important problems in agricultural education; opportunity for individual investigation and research; review and interpretation of current educational literature.

ART EDUCATION

DESIGN

- ArtEd.1-2-3. Fundamental Principles of Design. Elementary problems involving space breaking, value relations, the decorative use of nature material, creative use of symbols; application to problems developed in the handicrafts, and to the home.
- ArtEd.20-21-22. Principles of Harmony in Form and Color. Experience with color. Color theories discussed and exemplified, with analysis of color harmonies. Application of color harmonies in original designs with reference to execution in handicrafts and by industrial processes.
- ArtEd.50-51. Commercial and Industrial Design. Advertising design and lettering; design for industry. Subject-matter appropriate for high school art teaching, with emphasis on governing principles.
- ArtEd.55-56-57. Fundamental Art Principles. Planned for teachers of subjects other than art.
- ArtEd.153-154. Design for the Consumer. 153—Problems of house planning, decoration, and furnishing; 154—Problems of costume selection and designing, settings and costumes in stage design. Subject-matter

appropriate for art teaching in high schools and colleges. Emphasis on art principles; art history an important part of this course; original research problems and applications in the field.

DRAWING

- ArtEd.4,5,6. Still Life. Drawing from objects in charcoal and pencil. Emphasis on form, value relations, perspective and composition.
- ArtEd.7,8,9. Sketch in Charcoal and Pencil from the Posed Figure. Action and memory drawing. Emphasis on action, form, and value relations.
- ArtEd.10-11-12. Graphic Composition. Drawing from imagination. Stimulation by poetry and music.
- ArtEd.23,24,25. Water Color Drawing. Emphasis on color, form, and technical handling.
- ArtEd.26,27,28. Pencil and Pen Techniques. Drawing in these media. Fundamental to problems in commercial art.
- ArtEd.29,30,31. Sketch from Pose. Rhythmic expression; memory drawing; blackboard experience.
- ArtEd.60,61,62. Advanced Water Color.
- ArtEd.63,64,65. Advanced Techniques.
- ArtEd.66,67,68. Advanced Sketch.

HANDICRAFTS

- ArtEd.32. Cardboard and Paper Construction. Subject-matter for public school work.
- ArtEd.33. Bookbinding. Sequence of problems from simplest construction to the book sewed on cords or tapes. Problems with reference to grades, high schools, and for use in occupational therapy.
- ArtEd.35. Clay Modeling. Imaginative and decorative design carried out in plastic media.
- ArtEd.37. Basketry, with reference to use in the grades and in occupational therapy.
- Art.Ed.38. Elementary Weaving and Allied Crafts.
- ArtEd.39. Advanced Basketry.
- ArtEd.40. Advanced Weaving.
- ArtEd.41. Elementary Pottery. Hand building.
- ArtEd.42-43. Advanced Pottery. Work on wheels, castings, firing, and glazing.
- ArtEd.44. Application of Design to Fabrics. By means of block printing, stenciling, batik, and other dyeing processes.
- ArtEd.45. Application of Design in Needlecraft. Problems appropriate for public school work. Peasant stitches.
- ArtEd.46. Metal Work. Fundamental processes of shaping, sawing, saw piercing, riveting, and soldering.

ART HISTORY AND APPRECIATION

- ArtEd.70. Art of the Italian Renaissance.

See Note under statement of requirements for the art major.

THEORY AND PRACTICE OF ART TEACHING

- ArtEd.80,81,82. Types of Art Instruction. A special methods course with especial reference to the problems needed in practice teaching in the Minneapolis public schools. Attendance upon art supervisor's meetings and visits to the supervisory office.
- ArtEd.83. Problems in Art Education. A survey of art teaching practices; study of governing principles; history and philosophy of art teaching; making of courses of study for public school application.
- ArtEd.85,87,88. Practice Teaching in Art. Actual experience under public school conditions.
- ArtEd.189. Application of Esthetic Theories in Public School Art Education. An integration course. Original research problems.

EDUCATIONAL PSYCHOLOGY

- Ed.Psy.55. Educational Psychology. A survey of fundamental facts of human behavior, involved in educational activities. Particularly designed for high school teachers. Open to juniors and seniors.
- Ed.Psy.56. Educational Psychology for Elementary School Teachers. This course is similar to Ed.Psy.55 but particularly adapted to the needs of the elementary school teacher.
- Ed.Psy.56-57. Educational Psychology for Elementary School Teachers. Same as Ed.Psy.56.
- Ed.Psy.60. Introduction to Statistical Methods. To supply the statistical techniques necessary for an understanding of educational literature and for the pursuit of studies in education and related fields. The course includes a study of measures of central tendency, variability, and correlation.
- Ed.Psy.111-112. Educational Measurements in the Elementary School. The typical educational problems involving educational scales and standard tests. Nature of tests, methods of use, analysis of results obtained, and programs of remedial educational procedure based on the results of the tests.
- Ed.Psy.113-114-115. Psychology of Elementary School Subjects. A discussion of the research studies in the field of the psychology of elementary school subjects.
- Ed.Psy.116-117. Advanced Statistical Methods in Education. A survey of statistical studies in education with special reference to the methods employed and the reliability of the results obtained.
- Ed.Psy.133. Systematic Educational Psychology. Advanced course covering the field of psychology as related to education. Open to seniors and graduate students.
- Ed.Psy.134. Mental Tests. A laboratory study of group mental tests used in the kindergarten, elementary school, high school, and college with special emphasis upon their reliability and validity as instruments for educational guidance.
- Ed.Psy.135-136. Problems in Mental Testing. A study of the practical problems of mental testing in the public schools with special reference

to the administration of group mental tests. Projects involving testing and classification of pupils.

- Ed.Psy.138-139. Experimental Educational Psychology. A laboratory course designed to train students in the use of experimental methods in the study of educational problems, particularly in the field of the psychology of learning. It is suggested that this course supplement either 133 or 190, 191, 192, 193-194.
- Ed.Psy.141. Psychology of Speech Disorders.
- Ed.Psy.143-144. Individual Mental Examination. For teachers of sub-normal children. Demonstration and practice in mental diagnosis. Careful study will be made of different groups and systems of mental tests, and other clinical methods with discussion of general theory involved.
- Ed.Psy.145. Special Problems in the Field of Individual Mental Testing.
- Ed.Psy.146-147. Child Guidance. Specific problems in school adjustment dependent upon physical and emotional factors of the child, the home, and the environment. Case records giving family and personal histories, physical condition, psychometric rating, and personality presented. Class discussion of the recommendations.
- Ed.Psy.149-150-151. Psycho-Educational Clinic. Conducted in co-operation with existing clinics and agencies in the Twin Cities. Students will receive practice in giving psychological examinations, in case study, and in scientific interpretation of data.
- Ed.Psy.153-154-155. Research Problems. Intended for properly prepared students who desire to pursue special investigation in the field of educational psychology.
- Ed.Psy.157. Psychology of Child Development. The physical, mental, social, and emotional development of children from birth to adolescence.
- Ed.Psy.158. Psychology of Adolescence. A study of the physical and mental changes that characterize the transition from childhood to adult life. Implications for educational guidance during the period of secondary education.
- Ed.Psy.159. Psychology of Personality. Theoretical basis. Survey of methods for the measurement and study of character and the emotions. Relation to school success and other factors in the school situation. Genetic development of personality traits in childhood and adolescence.
- Ed.Psy.181. Practice in Personnel Work. Course designed to give properly qualified students practical experience in the use of psychological and related methods in dealing with school children.
- Ed.Psy.183. Psychology of Gifted Children. A study of the physical and mental traits of gifted children and the methods of their education.
- Ed.Psy.184. Mental Deficiency. Survey of mental deficiency in children and adults. Physical traits, including study of brain defects, causes and heredity; psychology of mental deficiency; social problems of feeble-mindedness. Subjects treated with reference to the training of defectives.

- Ed.Psy.189. The Human Organism. The development of the human organism in relation to educational practice.
- Ed.Psy.190. Original Nature of Man. Advanced work in genetic psychology, man's unlearned behavior, and inherited capacities.
- Ed.Psy.191. Individual Differences. A study of group and individual differences and their relations to educational practice.
- Ed.Psy.192. Recent Literature in Educational Psychology. Readings and reports on problems in educational psychology.
- Ed.Psy.193-194. Psychology of Learning. A study of the experiments in learning in the laboratory and in the classroom.
- Ed.Psy.197-198-199. Seminar: Problems of Subnormality. Phases of subnormality studied intensively. Review of important literature and original investigation. Students required to make reports on assigned topics and submit a paper on some problem at the close of the quarter.
- Ed.Psy.201-202-203. Seminar in Educational Psychology. A research course for graduate students. Required of all students writing theses in educational psychology. Does not carry credit as course work.

HISTORY AND PHILOSOPHY OF EDUCATION

- H.Ed.1. Brief Course in History of Education. Current school problems and educational theories in the light of their history. Emphasis upon modern times and those aspects of education of most immediate concern to high school teachers.
- H.Ed.3. Educational Sociology. A study of the social aspects of the teacher's work and of education as a means of solving social problems and directing the evolution of institutions.
- H.Ed.5. Public Education in the United States. A survey of factors determining public education in the United States, followed by a study of the development of educational theory and the rise of state systems.
- H.Ed.101. Historical Foundations of Modern Education. Historical analysis and interpretation of the more important elements in modern education derived from the Hebrews, Greeks, Romans, Middle Ages, and Renaissance.
- H.Ed.102. History of Modern Secondary and Higher Education. A survey of existing types of American and European secondary and higher schools, followed by a historical study of their origin, aims, growth.
- H.Ed.103. History of Modern Elementary Education. The institutions, theories, and problems of modern elementary education in the light of their history. Emphasis upon the rise of state systems and upon the history of modern educational reform. Not open to students who have had H.Ed.1.
- H.Ed.114. Sociological Philosophy of Education. A discussion of sociologically formulated ideals with an attempt to reach a positive philosophy of educational aims, methods, content and organization.
- H.Ed.129-130. Educational Classics. An intensive study of selected writings of educational leaders; first quarter, Plato, Aristotle, Quintilian,

- Comenius, Locke; second quarter, Rousseau, Pestalozzi, Herbart, Froebel, and Dewey. Students may register for either quarter.
- H.Ed.131-132. Comparative School Systems. A survey of the existing school systems of France, England, Germany, Denmark. Emphasis upon present problems. Special reference to educational conditions in the United States. Students may register for either quarter.
- H.Ed.140-141. Topics in the History of Education.
- H.Ed.187. Seminar in Educational Sociology. The sociological foundations of educational theory will be discussed with the investigation of specific problems. Lectures, readings, and problems.
- H.Ed.211-212-213. Seminar in History of Education. Historical investigation of educational problems. Designed to train students in methods of historical investigations; problems to be selected somewhat upon the basis of student's interest.

HOME ECONOMICS EDUCATION

- H.E.Ed.40. Child Training. A brief study of the physical and mental development of the child is followed by a discussion of the problems of training small children. Emphasis is placed on the pre-school child. Lectures, observations in the Nursery School, and reports.
- H.F.Ed.42. Special Methods of Teaching Home Economics. The psychological bases for teaching; methods of teaching applied to home economics. Required of all students preparing to teach.
- H.E.Ed.49. Observation and Teaching: General Home Economics. Observation of classes in day schools and evening schools; teaching under supervision of at least two phases of home economics; individual and group conferences on teaching problems.
- H.E.Ed.141. Vocational Education in Home Economics. The place and development of home economics in the vocational education program. Study of the problems of the all day, evening, and part time schools.
- H.E.Ed.142a. Educational Measurement in Home Economics. Problems of measurement in home economics; home economics tests and scales; construction and evaluation of objective tests.
- H.E.Ed.142b. Educational Measurement in Home Economics. A continuation of Course 142a, dealing with methods of interpretation and utilization of test data.
- H.E.Ed.143. Home Economics Curricula. The objectives of home economics in junior and senior high schools; recent surveys and other investigations used in determining curriculum content; home economics courses of study.
- H.E.Ed.147. Organization and Methods for Related Art Teaching. Organization of a related art course and methods of teaching art principles as applied to familiar objects and processes.
- H.E.Ed.149. Research Problems. A study of the methods used in collection, treatment, and interpretation of data in the field of home economics.
- H.E.Ed.242. Problems in Home Economics Education. Current problems in home economics education will be studied. Required of all candidates minoring in home economics education.

- H.E.Ed.243. Administration and Supervision of Home Economics. A study of the duties and problems of teacher trainers, city and state supervisors of home economics.
- H.E.Ed.245. Seminar in Home Economics Education. A research course for graduate students. Required of all students writing theses in Home Economics Education. Does not carry credit as course work.

INDUSTRIAL EDUCATION

Shopwork and drawing courses of wide variety are available in the College of Engineering, University and Farm campuses. Students may elect to pursue courses, day or evening, at the William Hood Dunwoody Industrial Institute without fees other than those paid to the University. All shop and drawing courses should be taken under special advice and may be either extensive or intensive in resultant preparation for teaching. Those transferring from other institutions should bear in mind the maximum of forty-five quarter credits, for shopwork and drawing combined, which is enforced in this department.

- Ind.10. Methods in General Shopwork. The selection and organization of content for multiple-activity courses. Teaching methods and devices, including the use of individual instruction sheets; consideration of shop plans and equipments.
- Ind.11. Special-Class Woodwork. This course is designed for primary grade teachers, teachers of subnormal children, teachers of art, etc. Lectures and shopwork. The manipulative experience is divided into three parts: flat piece work, assembled and movable parts, and toy furniture. Special attention to finishes. (Not open to those with credit in woodwork.)
- Ind.14. Methods in Mechanical Drawing. The selection and arrangement of course materials, methods of presentation, teaching plans and devices, evaluation of texts, problems of the drawing room, testing, grading, and records. *Not a course in drawing.*
- Ind.42. Course Organization. Makes definite use of occupational analyses; content of courses selected and arranged for common and special teaching situations; both general vocational classes and groups considered.
- Ind.44. Equipment and Management. Sources, purchases, costs, and inventories; installation, upkeep, and safe operation; storage and issue of tools and supplies; financial accounts, bills of material, and disposal of product; relation to curriculum, courses, and methods.
- Ind.50-51-52. Practice Teaching. Three quarters required. Arrangements make possible the assignment of students to classes in the University High School and in certain Twin City schools.
- Ind.60. Philosophy of Vocational Education. Definition and characteristics of vocational training; conservation of human and material resources; social and economic significance; occupational and social morale; development, results, and weaknesses; current theories.
- Ind.61. Practices in Vocational Education. Plans of organization and control; types of schools and classes; public versus corporation training; state and federal policies and aid; forms other than industrial education; teacher preparation; efficiency factors; the future outlook.

- Ind.65. Methods in Non-Vocational Subjects. Details of material and method in civics, industrial history, commercial geography, English, and other branches classified by the Smith-Hughes Law, as "non-vocational"; the needs of groups, course planning, special devices.
- Ind.66. Methods in Related Subjects. Theory, practices, and problems of related instruction; special reference to mathematics, drawing, science, and safety; group study and unit courses considered; usable methods and the means of supervision; incidental and scheduled teaching discussed.
- Ind.70. Methods in Shop Subjects. Methods of conducting shop classes, with and without reference to production work; lesson plans, demonstrations, drill, grading, reports, and records; the assigning of jobs in the light of aims and of pupil differences; standards of workmanship.
- Ind.80. General Industrial Training. Administration of the industrial offering for grades and high school in typical Minnesota towns; aims, offerings, schedules, teaching fitness, general management; consideration of the unifying opportunities within a department and a school; supervision problems and practices.
- Ind.90. Tests in Industrial Subjects. Acquaintance with such available tests of aptitude and achievement as are useful in industrial education; giving and scoring of tests, with interpretation of results; the application of known techniques in remedial teaching to the work of shop and drawing instructors. (Special fee for tests to be evaluated and retained by students.)
- Ind.105. Industrial Education. For superintendents, principals, and teachers not specializing in the field named; general and vocational phases considered; objectives, administration and supervision; programs and practices; laws, rulings, and standards for aid; significant literature; how to judge teachers, courses, and methods in the special field.
- Ind.110. Guidance in the Schools. The history of the educational and vocational guidance movement; typical public school means and methods; collection and use of occupational information; duties of the counsellor; organization and relationships.
- Ind.150-151-152. Problems in Vocational Education. Six credits offered. Survey of printed reports and theses; critical analysis; selection of thesis problems; formulation of work plans; reports of progress; organization and presentation.
- Ind.170. Administration of Day Schools. National, state, and local organization and types; buildings and equipment, promotion and advertising, co-operative relationships; teaching staff; pupil guidance, training, and placement.
- Ind.171. Administration of Evening Schools. Development of the after training of adults; agencies and scope of the movement; national and state legislation; qualifications of instructors; problems and difficulties; records and certification, fees and charges; buildings, equipment, and instruction facilities; general versus unit-course organization.
- Ind.172. Administration of Part Time Schools. A study of the new movement for part time education; social and economic background; organ-

ization of classes, study of special student groups, courses of study; typical schools; comparative state legislation and plans; Minnesota's problems.

INSTITUTE OF CHILD WELFARE¹

- 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 of young children. Observations in the Nursery School, lectures, and reports.
- C.W.60. The Nursery School and Parental Education Movement. To orient student with reference to the Nursery School and parental education. Consideration given also to the kindergarten and Montessori movement and to the physical and mental hygiene movement.
- C.W.80. Child Psychology. A survey of child development with special reference to nursery school and kindergarten education.
- C.W.90. Physical Development of the Young Child. The physical growth and development of the young child in its anatomical, physiological, and functional aspects.
- C.W.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. Opportunities for observation in the Nursery School and in clinics. With the co-operation of the Department of Pediatrics.
- C.W.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. Lectures, readings in the experimental literature, and reports.
- C.W.133-134²-135. 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.
- C.W.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.
- C.W.173-174.² 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.
- C.W.190-191.² Mental Examination of Pre-school Children. A study of the methods used in testing young children together with practice in such testing.

¹ The institute also offers Courses Ed.T.30-34, and Ed.T.85-90 listed under the Theory and Practice of Teaching.

² Two quarters must be completed before credit is received for any quarter.

- 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.
- C.W.233-234-235. Research in the Development of the Young Child.
- 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.

LIBRARY METHODS

- Lib.Meth.101. Bibliography. Trade and national bibliography of the United States, Great Britain, and Europe; book ordering methods.
- Lib.Meth.102. Cataloging. Elements of dictionary cataloging. Lecture, problems, and practice.
- Lib.Meth.103. Cataloging. Continuation of 102, with special attention to difficult books and administrative aspects of a catalog department.
- Lib.Meth.104. Classification. Classification by the Dewey Decimal System, subject headings, author numbers, shelf and accession records.
- Lib.Meth.105. Classification. Continuation of 104. Library of Congress and other classifications; classed catalogs; special adaptations of classification.
- Lib.Meth.107. School Library Administration. Administrative methods and problems of school libraries.
- Lib.Meth.108. Public Library Administration. Administration, equipment, finance, and extension work of public libraries.
- Lib.Meth.110. Library Binding. Economics of library binding. Materials, processes, records, book repair.
- Lib.Meth.111. Library Practice. Practice, under supervision, in Minneapolis and St. Paul libraries. The time and character of the practice will be arranged individually to suit student aptitudes, usually in the second and third quarters. Required of all students as prerequisite to a degree in library training.
- Lib.Meth.112. Reference. Reference books and other material with emphasis on methods of search and adaptation of material to needs of users.
- Lib.Meth.113. Reference—Continued. Specialized reference material, public documents and periodicals. Reference lists and reports on special problems.
- Lib.Meth.114. Selection of Books for Adolescents. Principles of selection and criticism of representative books. Study and preparation of book lists for adolescents in school and public libraries.
- Lib.Meth.117. Library Printing. Preparation of copy, editing, proof reading, layout of library publications. Criticism of typical printed material.
- Lib.Meth.118. Library Publicity. Preparation and use of print in library publicity. Library exhibitions, etc.
- Lib.Meth.119. Current Library Problems. Discussion of typical problems and conditions in American libraries.
- Lib.Meth.120. Current Library Problems. Further discussion of typical library problems, library buildings, library surveys, etc.

- Lib.Meth.121. Library Work with Children. Administration of children's rooms and book selection.
- Lib.Meth.122. Library Work with Children. Further discussion of administration of children's rooms and book selection.
- Lib.Meth.123. Selection of Books for Adults. Principles of selection and criticism of representative books. Criticism and preparation of book lists.
- Lib.Meth.124. Selection of Books for Adults. Further discussion of books and aids to book selection.
- Lib.Meth.125. Selection of Books for Adults.

PHYSICAL EDUCATION FOR MEN

- Phys.Ed.A,B,C. Elementary Physical Education. Elementary gymnastics, i.e., free exercises, marching tactics, apparatus work, gymnastic dancing, group games, physical efficiency tests. Majors in physical education must substitute this course for Phys.Ed.1-2-3.
- Phys.Ed.1-2-3. Freshman Physical Education. Mass activities, corrective exercise, apparatus work, swimming, athletics, games, and efficiency test.
- Phys.Ed.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.
- Phys.Ed.10-11-12. Minor Sports. Study of nature and function of play; use of leisure time; rules, theory, technique, and values of different sports. Fall: golf, soccer, handball, boxing; winter: winter sports, wrestling, tumbling; spring: swimming, indoor baseball, volley ball, tennis.
- Phys.Ed.13-14-15. Corrective work. By petition in place of Physical Education 1-2-3.
- Phys.Ed.16-17-18. Drill Substitution. By petition in substitution for Military Science.
- Phys.Ed.19-20-21. Gymnastics. Gymnastic marching, calisthenics, light and heavy apparatus work, and tumbling.
- Phys.Ed.22-23. Kinesiology. A discussion of the principles and mechanics of bodily movements; the relation of posture to health and efficiency; the effects of various exercises upon the tissues and organs of the body.
- Phys.Ed.24. Methods in Physical Education. Lectures and quizzes on terminology, technique of teaching and various methods of teaching physical education activities.
- Phys.Ed.28. Physical Examination and Normal Diagnosis. Methods of inspection to determine deviations from the normal, including posture, musculature, skin, genitals, and feet; tests of hearing and vision; inspection of nose, throat, and teeth; examination of heart and lungs; methods of taking principal measurements, such as height, weight, girth, strength tests, etc.
- Phys.Ed.29. Adaptation of Activities in Orthopedic Procedures.
- Phys.Ed.30. Athletic Training. Principles governing conditioning of men for various sports; diet, sleep, exercise, bathing, massage. Overtraining:

- its cause, diagnosis, prevention, and cure. Prevention and treatment of common athletic injuries.
- Phys.Ed.31. History of Physical Education. A historical survey of physical education from ancient times to the present. Special consideration of different systems of physical education and contemporary developments.
- Phys.Ed.32. Principles of Physical Education. Study of the aims and scope, and the biological aspects of physical education, with special reference to its place in education; comparative value of various activities; activities suitable to different sexes, ages, and varying conditions.
- Phys.Ed.33. Organization and Administration of Physical Education. Problems of organization, administration, and supervision. Correlation of various phases of work; health supervision, health instruction, required and elective courses, intramural and interinstitutional athletics. Construction, equipment, and care of gymnasias and fields. Athletic management.
- Phys.Ed.37. Football. Lectures on history, rules, theory, strategy, generalship, styles of attack and defense, methods of organizing practice and handling men, development of team spirit, officiating. Demonstrations and practice in the technique of fundamentals and position play.
- Phys.Ed.38. Basket-Ball. Lectures on rules, styles of offense and defense, the conditioning and handling of a team. Practice in fundamental technique of footwork, passing, guarding, dribbling, goal throwing, etc.
- Phys.Ed.39. Track Athletics. Instruction and practice in the standard track and field events. Lectures on the conduct of meets, rules of competition, officiating, track strategy, regulation of practice, and preparing contestants for competition.
- Phys.Ed.42. Baseball. Theoretical consideration of, and actual practice in, batting, base running, and methods of playing each position. Special attention to "inside baseball" and the development of team play.
- Phys.Ed.43-44-45. Practice Teaching. Six hours of practice per week in teaching gymnastics and corrective exercise; coaching, supervising, and officiating in all branches of athletics.

PHYSICAL EDUCATION FOR WOMEN

- Phys.Ed.1-2-3. Elementary Physical Training. An exploratory course in outdoor sports, gymnastics, folk dancing, apparatus, and individual gymnastics, with the aim of increasing skill in the activities and establishing standards of good body mechanics and habits of exercise. One additional hour for hygiene in the winter quarter where a close correlation is maintained with the gymnasium work. Shower bath fee \$2.50 per quarter.
- Phys.Ed.4. Preliminary Hygiene. One lecture a week. The most essential aspects of the care of personal health.
- Phys.Ed.7-8. Sophomore Physical Training. A course in gymnastics, apparatus, and games, meeting twice a week throughout the year in which the hygienic, educational, and recreational values of exercise are stressed.

- Phys.Ed.9. Sophomore Archery.
- Phys.Ed.10-11-12. Sophomore Orthopedic Gymnastics. For those not able to take regular class work. Exercises are individualized to meet the needs of each student.
- Phys.Ed.13-14-15. Sophomore Natural 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.
- Phys.Ed.16-17. Sophomore Games and Folk Dancing. Suitable in strength for C-D girls. Conducted outdoors when weather permits.
- Phys.Ed.18. Sophomore Tennis.
- Phys.Ed.19-20-21. Sophomore Major Sports. Hockey in autumn, basketball in winter, baseball in spring. Suitable in strength for A-B girls.
- Phys.Ed.22-23. Sophomore Elementary Swimming.
- Phys.Ed.24. Sophomore Horseback Riding. Lessons for beginning and advanced classes under competent instruction and supervised by a member of the Physical Education Department. Students registering for this course will pay for riding lessons at about \$1 per lesson and will be exempt from the physical education fee.
- Phys.Ed.25-26. Sophomore Intermediate Swimming.
- Phys.Ed.27. Sophomore Golf. For students who know the rudiments of golf. Instruction in the technique of the various strokes, etc. Class work will be held at the University Recreation Field. Students registering for this course will be held for the regular golf fee.
- Phys.Ed.27. Sophomore Golf. For beginners. Instruction and practice in the use of the driver, mid-iron, mashie, and putter. Instruction also in the fundamentals of golf, rules, and etiquette.
- Phys.Ed.28-29. Sophomore Advanced Swimming.
- Phys.Ed.30. Sophomore Life Saving and Water Sports.
- Phys.Ed.31. Sophomore Skating. Practice and technique of skating, including simple figure skating and form in speed skating.
- Phys.Ed.34. Elementary Swimming. For major students who cannot pass the elementary swimming test.
- Phys.Ed.37-38-39. Freshman Major Sports—Hockey, Basket-Ball and Baseball. Practice and study of rules.
- Phys.Ed.40. Freshman Major Personal Hygiene. Essential aspects of positive personal health and avoidance of disease.
- Phys.Ed.43-44-45. Theory and Function of Play. Graded games, folk dances, and track for school and playground, two hours. A consideration of the nature and function of play, three hours.
- Phys.Ed.48-49-50. Tennis and Posture Training. Indefinite Gymnastics, Track, Soccer, and Archery. Tennis in first term of fall quarter, posture training in second term of fall quarter, gymnastics, marching, and apparatus work in winter quarter, track, soccer, and archery in spring quarter.
- Phys.Ed.51-52. Gymnastics for Sophomore Majors. Gymnastics, marching, and apparatus work.
- Phys.Ed.54-55. Gymnastics for Junior Majors. Modified Swedish gymnastics, marching, and apparatus work.

- Phys.Ed.56-57. Swimming with Technique and Methods. Description of strokes, methods of teaching, practice in teaching and life saving.
- Phys.Ed.58-59. Advanced Folk Dancing with Technique. The racial characteristics of peoples are studied in order to approximate the spirit of their folk dances. The presentation of folk dances and the elements of pageantry are also developed. Practice twice a week, lecture once a week.
- Phys.Ed.60-61. Minor Sports with Technique and Methods. Soccer, volley ball, archery in fall quarter, tennis, and track in spring quarter. Description and methods of teaching, one hour; practical work, two hours.
- Phys.Ed.63-64-65. Hockey, Basket-Ball, Baseball with Technique and Methods. One hour technique and methods; two hours practice.
- Phys.Ed.66-67-68. 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.
- Phys.Ed.69-70-71. Advanced Interpretive Dancing with Technique. Technique and methods of teaching one hour, practical work two hours.
- Phys.Ed.72-73. Gymnastics for Senior Majors. Gymnastics, marching, apparatus work.
- Phys.Ed.75. History of Physical Education. A historical survey of physical education beginning with that of Greece and including contemporary developments.
- Phys.Ed.80-81. Anatomy and Kinesiology. Lectures and recitations on anatomical mechanism of movements; rôle of joint motion, muscular action, gravity, leverage, inertia, internal resistance in the production and modification of gymnastics and athletic movements and their effects.
- Phys.Ed.82. Physical Examination. Study of all the important anthropometric measurements, and practical application of them in the laboratory.
- Phys.Ed.83. Technique of Teaching and Principles of Gymnastics. A study is made of the educational philosophy underlying gymnastics, principles of progression, and methods of teaching gymnastics. Practice teaching is done within the group.
- Phys.Ed.85-86. Principles of Physical Education. A study of (1) the relation of physical education to education, (2) the relative values of the different phases of physical education, (3) general problems in teaching.
- Phys.Ed.87. School Hygiene and Technique of Teaching Personal Hygiene. A study of problems in school hygiene and sanitation with specific emphasis on the study of the methods of teaching personal hygiene in preparation for practical application in the schools through practice teaching and projects.
- Phys.Ed.88-89-90. Orthopedic and Remedial Gymnastics. Lectures, demonstrations, individual work with cases. Discussion held relative to the various defects met with the treatment outlined.
- Phys.Ed.91. Principles Underlying Dancing. The dance is studied for the effect on its development of such influence as allied arts, religion, etc. Interpretive dancing taught at this University is analyzed and its place in physical education determined.

Phys.Ed.92-93-94. Practice Teaching. Practice teaching in gymnastics, major sports, organized games, interpretive dancing, swimming. University, University High School, and public schools afford the practice material.

Phys Ed.97. Administration of Physical Education. Study of organization of physical education and health departments in city, state, and university; construction and equipment; professional ethics.

Activities for Which No Registration Is Required

Elective Sports. Fall: field hockey, volley ball; winter: basket-ball, ice hockey; spring: track, baseball, swimming.

General Swimming. For both beginning and advanced swimmers and divers. Shower bath tickets may be bought of the matron.

PREVENTIVE MEDICINE AND PUBLIC HEALTH

P.M.&P.H.2. First Aid. Laboratory demonstrations and practice. General care and observation of patients. Emergencies and first aid treatment.

P.M.&P.H.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.

P.M.&P.H.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.

P.M.&P.H.52. Health Care of the Family. (See Home Economics bulletin.)

P.M.&P.H.53. 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.

P.M.&P.H.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.

P.M.&P.H.58. 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.

P.M.&P.H.59. 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.

P.M.&P.H.60. 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.

- P.M.&P.H.61. *Mental Hygiene*. History of movements; social importance. Factors underlying emotional maladjustments and mental disease. Relation to social work, social agencies, and psychiatric practice. Illustrative case material.
- P.M.&P.H.62. *Principles and Special Fields in Public Health Nursing*. Development, principles of organization, administration, and supervision in public health nursing; methods of co-operative endeavor with social and health agencies. Development, scope of program, and analysis of services of the various special fields in public health nursing; health teaching as an essential factor in the promotion of individual and community well being.
- P.M.&P.H.64. *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.
- P.M.&P.H.65. *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.
- P.M.&P.H.66. *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.
- P.M.&P.H.67. *Field Practice in a Tuberculosis Sanatorium*. Observation and practical care of pulmonary, osseous, laryngeal tuberculosis; tuberculous enteritis; general sanatorious treatment; special treatment; exercise; laboratory; occupational therapy and the reading of literature on tuberculosis.
- P.M.&P.H.68. *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.
- P.M.&P.H.69. *School Nursing Procedures*. Its objectives, program, and techniques. Discussion of procedures usually carried on by the 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.
- P.M.&P.H.70. *Methods and Materials in Teaching Home Nursing and Child Care*. Theory and practice in the principles, content, and methods used in teaching home sanitation, home care of the sick, and prevention of illness to various lay groups in the community.
- P.M.&P.H.73. *Occupational Hygiene and Disease*.
- P.M.&P.H.74. *Health Instruction Methods and Materials*. Discussion deals with administrative problems of health teaching and with programs and the actual techniques and methods employed in the classroom.

- P.M.&P.H.75. Practice Teaching in Health Subjects. An opportunity is given for the advanced student to do practice teaching under supervision.
- P.M.&P.H.80. Health Supervision of the School Child. Intended for teachers interested in child health. Consideration of hygiene of physical and mental growth; health supervision of school children; special health classes and procedures, and sanitation of school plant.
- P.M.&P.H.106. Public Health Administration. The school in its relation to community health work. (See Graduate School bulletin.)
- P.M.&P.H.200. Research. (See Graduate School bulletin.)
- P.M.&P.H.210. Seminar in Preventive Medicine and Public Health.

PUBLIC SCHOOL MUSIC

- Mu.Ed.1-2-3.¹ Orchestral Instruments. Fall quarter, beginner's classes in violin, viola, cello, and bass; spring quarter, beginner's classes in flute, oboe, clarinet, and bassoon; winter quarter, beginner's classes in all brass and percussion instruments.
- Mu.4-5-6.¹ Orchestral Instruments—Advanced. Practical orchestral and band routine under baton of the director and members of class in Orchestra Conducting 64-65-66.
- Mu.Ed.7-8-9. Music Appreciation. Practical work in appreciation, with the phonograph, piano, and other instruments. Attendance at recitals, concerts, etc., required.
- Mu.Ed.29. Elementary School Methods—First Term, Primary Grades. This course is designed to meet the needs for music supervisors. Practical methods for the kindergarten, grades one, two, and three. Particular attention is given to the child voice, its care and development.
- Mu.Ed.30. Elementary School Methods—Second Term, Intermediate Grades. Methods of teaching vocal music in grades four, five, and six. Theory and practice of teaching combined in class work. Students are required to observe in the Minneapolis and St. Paul public schools.
- Mu.Ed.31. Junior High School Methods. Same as above for grades seven and eight. Particular attention to the problems of the changing voice. Organization and methods of conducting junior high school glee clubs, choruses, etc. Testing and classification of voices.
- Mu.Ed.32. High School Methods—First Term. Methods of teaching music in the modern high school. Materials and organization of the high school chorus. Students are required to observe in the Minneapolis, St. Paul, and University high schools.
- Mu.Ed.33. High School Methods—Second Term. Materials and methods of organizing and conducting the high school glee club. Application of methods of teaching by practical work with the class itself. Particular attention is given to choral expression and interpretation. Students are required to observe in the Minneapolis, St. Paul, and University high schools.

¹ A special fee of \$3 per quarter is charged for these courses.

- Mu.Ed.34. Operetta Conducting. Materials and methods of organizing and presenting operettas, pageants, cantatas, etc. An operetta is presented by the class itself, paying particular attention to the detail work from the director's standpoint.
- Mu.Ed.51-52-53. Instrumentation. Theoretical study of orchestral and band instruments. Observation of local organizations for timbre and color.
- Mu.Ed.64-65-66. Orchestra Conducting. Devoted to the theory and practice of general principles of conducting. Technique of the baton and elements of interpretation.
- Mu.Ed.81-82-83. Supervision and Teaching—First, Second, and Third Terms. A practical course in music supervision. Discussions concerning professional problems, relations, etc. A thesis is required, requiring research work in a particular field. Students are required to teach in the Minneapolis, St. Paul, and University high schools.

SOCIAL SERVICE—HOSPITAL

- S.S.60. Elements of Medical Social Work. An introduction to social problems met among the sick with a brief survey of the application of the social case work method of meeting these problems.
- S.S.61. Field Work (H.E.156). Practical work in respective specialized fields available for home economics students. Limited to groups of eight.
- S.S.62. Hospital Economics and Relationships. Lectures covering backgrounds, aims, and interdependence of groups. Emphasis on social, psychological, and ethical factors.
- S.S.63. Occupational Therapy. Lectures covering history, development, and relationships; institutional values.
- S.S.65. Application of Principles and Practices of Hospital Work. Selected medical-social problems as related to other professional groups.
- S.S.66. Preliminary Hospital Practice Training—Home Patients. Student is given opportunity to work with "home bound" patients under supervision.
- S.S.67. Preliminary Hospital Practice Training—Hospital or Field Work. Includes (1) visits to departments in different types of hospitals to give the student a broad idea of the place and function of occupational therapy in each and (2) assignment for an observation period in hospital or field work.
- S.S.68-69. Hospital Practice Training—Mental Disease. Student is given opportunity (under supervision) to do work in wards and workshop with cases of mental disease. Experience also includes recreation work with the patients. Student must be in residence at the institution.
- S.S.70. Preliminary Hospital Practice Training—Tuberculous Patients. Student is given opportunity to do bedside work with tuberculous patients in hospital or sanatoriums.
- S.S.71. Preliminary Hospital Practice Training—Orthopedic Patients. Student is given opportunity to do bedside and shop work (under supervision) with orthopedic patients or other work in related fields.

- S.S.72. Hospital Practice Training—General. Student is in residence at institution where work is given. Work includes experience in administration of a department such as: training of attendants; equipment and supplies; use of waste material; disposal of products; keeping of records and charts, etc. Assignment based on worker's previous experience and future interests.
- Ed.Psy.148. Problems of the Visiting Teacher. The function of the visiting teacher will be studied in relation to the personality, behavior, and scholastic difficulties of children. Lectures will be supplemented with an analysis of the experience of visiting teachers connected with the Commonwealth program for the prevention of delinquency.

SPECIAL EDUCATION

- Ed.Psy.195. Seminar on the Work of the Visiting Teacher. An intensive study of case histories of pupils referred by the schools to visiting teachers. Opportunity will be offered students to present case histories drawn from their experience.

THEORY AND PRACTICE OF TEACHING¹

UNDERGRADUATE COURSES

GENERAL METHODS

- Ed.T.15. Technique of High School Instruction. Types of classroom exercises: preparation of teaching plans; hygiene of instruction; methods of treating individual differences; classroom management; supervised study; marking systems, etc.; observation of high school work. Required of all students as prerequisite to practice teaching. For courses giving graduate credit see p. 110.

SPECIAL METHODS AND PRACTICE TEACHING—COMBINED COURSE²

The teachers' courses in methods of teaching and in practice teaching are combined into a one-year course in the following subjects:

- Ed.T.23-24-25. Geography. (For junior high schools.)
 Ed.T.49-50-51. English. (For junior high schools.)
 Ed.T.52-53-54. English. (For senior high schools.)
 Ed.T.56-57-58. Mathematics.
 Ed.T.62-63-64. Secondary School Science.
 Ed.T.66-67-68. History and Social Science.
 Ed.T.70-71-72. German.
 Ed.T.73-74-75. Latin.
 Ed.T.76-77-78. Romance Languages (French and Spanish).
 Ed.T.80-81-82. Commercial Subjects.

¹ For the specific requirements in the theory and practice of teaching in the special subjects, consult the special curricula. For list of major advisers see page 28.

² Arrangements for practice teaching in the academic subjects should be made through Mr. Charles W. Boardman, principal of University High School, before the close of the junior year. Such arrangements should be completed before the student registers for other courses.

PRACTICE TEACHING FOR SPECIAL STUDENTS

- T.16. Practice Teaching. Teaching under supervision in the University High School and in the Twin City schools. The course calls for one period daily at the school where the work is assigned. Registration in this course is limited to students who have completed special methods courses or have had teaching experience. Practice teaching in academic subjects is normally combined with Special Methods courses into a one-year Teachers' Course.
- T.17. Practice Teaching of Subnormal Children. Students will have opportunity to observe work with the special classes, and to teach under direction. Conducted in co-operation with the public schools of Minneapolis and St. Paul.
- T.46. Practice Teaching with Special Methods in Elementary Schools. Teaching under supervision in graded or rural schools in the vicinity of the University; discussion of special methods in their application to actual problems of teaching.

SPECIAL METHODS COURSES IN SENIOR HIGH SCHOOL SUBJECTS

- Ed.T.18. Teachers' Course in Zoology.
- Ed.T.19. Teachers' Course in Botany.
- Ed.T.20. Teachers' Course in Chemistry.
- Ed.T.21. Teachers' Course in English Composition.
- Ed.T.22. Teachers' Course in English Literature.
- Ed.T.35. Teachers' Course in Norwegian.
- Ed.T.37. Social Science for Senior High Schools. Selection, organization of content, preparation and presentation of data, methods of teaching.
- Ed.T.38. Methods and Problems in Secondary School Science. Organization and methods of secondary school sciences. Attention to general science, lesson planning, methods of presentation, assignments, measuring achievement.
- Ed.T.41. Teachers' Course in Swedish.
- Ed.T.47. Field Problems in High School Normal Training Departments. Observation of the organization and management of a training department; the department in relation to administration and supervision; program of studies; projects in the field.
- Ed.T.52-53-54. Special Methods and Practice Teaching in English. A one-year course. This course or Ed.T.49-50-51 is required of all students with a major in English.
- Ed.T.52. The Teaching of Composition in the Senior High School. Objectives of composition; selection of subject-matter and its relation to the problem—project method of assignment; problems of grading composition; problems of teaching grammar, punctuation, and spelling; oral composition. Practice teaching and observation are combined with this course except in special cases.
- Ed.T.53. The Teaching of Literature in the Senior High School. Objectives of literature teaching; differentiated method for appreciation and information; methods of handling different types such as fiction, drama,

poetry, and essay; survey courses; home reading; illustrative material. Practice teaching and observation are combined with this course except in special cases.

- Ed.T.56-57-58. Special Methods and Practice Teaching in Mathematics. A one-year course required of all students with a major in mathematics.
- Ed.T.62-63-64. Special Methods and Practice Teaching in Secondary School Science. A one-year course required of all students with a major in natural science.
- Ed.T.66-67-68. Special Methods and Practice Teaching in History and Social Studies. A one-year course required of all students with a major in history or the social studies.
- Ed.T.70-71-72. Special Methods and Practice Teaching in German. A one-year course required of all students with a major in German.
- Ed.T.73-74-75. Special Methods and Practice Teaching in Latin. A one-year course required of all students with a major in Latin.
- Ed.T.76-77-78. Special Methods and Practice Teaching in Romance Languages. A one-year course required of all students with a major in French or Spanish.
- Ed.T. 80-81-82. Special Methods and Practice Teaching in the Commercial Subjects. A one-year course required of all students in the specialized curriculum in commercial education.
- Ed.T.83. Teachers' Course in Journalism.

SPECIAL METHODS COURSES IN JUNIOR HIGH SCHOOL SUBJECTS

- Ed.T.14. Teaching Junior High School Mathematics. For students prepared to teach mathematics in the junior high school. Discussion of the course of study and methods of presentation.
- Ed.T. 23-24-25. Special Methods and Practice Teaching in Geography. The teaching of geography in junior high schools. A teacher's course in methods and practice teaching combined into a one-year course. Required of all students with a major in geography.
- Ed.T.39. Social Science for Junior High Schools.
- Ed.T. 49-50-51. Special Methods and Practice Teaching in English. The teaching of English in junior high schools. A one-year course. This or Ed.T. 52-53-54 required of all students with a major in English.
- Ed.T.49. The Teaching of Composition in the Junior High School. Aims of composition teaching in relation to pupil interests and general life needs. Importance of classroom presentation. Project motivation. Group method. Problems of measurement. The place of grammar, punctuation, and spelling.
- Ed.T.50. The Teaching of Literature in the Junior High School. Differentiated purposes in reading and literature. Methods of classroom presentation. Motivation by group and project methods in extensive reading. Testing. Illustrative materials.

METHODS IN THE ELEMENTARY SCHOOL

- Ed.T.42. Fundamental Educational Theories Relating to Instruction in the Elementary School. A study of current educational concepts as related to problems in the elementary school.

- Ed.T.43. The Teaching of English in the Elementary School. A consideration of the materials and the means for improving instruction in spelling, language and reading processes; emphasis on silent reading technique in Grades 1-6.
- Ed.T.44. Children's Literature. A study of the varied purposes of reading in the elementary school. Bases of selecting materials for extensive reading. Analysis of studies of children's interests. Extensive critical survey of old and new materials for children's reading.
- Ed.T.45. The Teaching of Geography and History in the Elementary School. The aims and purposes controlling instruction in geography and history in the elementary school; tendencies toward standardization, special emphasis on problem studies.

METHODS IN THE KINDERGARTEN AND NURSERY SCHOOL

- Ed.T.30. Principles of Kindergarten and Nursery School Education. The development, aims, and organization of kindergarten and nursery school education. A consideration of the curriculum and methods.
- Ed.T.31. Permanent Play Materials. A consideration of the various kinds and types of permanent play materials (blocks, dolls, trains, wagons, etc.) and their use by children of different ages.
- Ed.T.32. Plastic Materials. The materials used in constructive work, paper, crayons, paints, clay, woodwork, sewing, sand, etc. The student is given some opportunity for actual use of the materials and will gain considerable knowledge of the abilities of children of different ages.
- Ed.T.33. Rhythms, Games, and Music for the Young Child. A course designed to train the student in the handling of a music and rhythm period and in group games. The student will be expected to take part in the rhythms and music work in both the nursery school and the kindergarten.
- Ed.T.34. Story Telling for Young Children. A study of folk, fairy, here-and-now stories and poetry suitable for young children. The principles underlying story telling, the selection of the story, and versions. The educational importance of conversation with the child.
- Ed.T.85-86-87. Methods and Observation. Two hours each week will be spent observing in the nursery school or in the kindergarten. There will be written reports of the observations and a class discussion of one hour in alternate weeks.
- Ed.T.88-89-90. Practice Teaching in Kindergarten or Nursery School. Students must choose either nursery school or kindergarten practice teaching. If they desire, students may do practice teaching in both schools by putting in additional hours, but they can receive credit for only one. Practice will be arranged to give the student a varied experience, and each student will be assigned one child for intensive study throughout the year.

SPECIAL METHODS IN SPECIAL SUBJECTS

For courses in the theory and practice of teaching in the special subjects see special curricula.

COURSES OPEN TO GRADUATE STUDENTS

- Ed.T.110. Educational Diagnosis in Secondary Education. The application of educational measurements to the solution of the problems of high school instruction. Analysis of the specific learning process involved in the various high school subjects; a critical survey of the means of diagnosing and alleviating high school pupils' learning difficulties; the use of educational measurements in improving high school teaching.
- Ed.T.118. Problems in Junior High School English.
- Ed.T.122. Literature for Adolescents. Background for pupil guidance in extensive reading in junior and senior high schools; analysis of studies of adolescent choices in literature; principles of selection; critical reading in broad field of literary, biographical, historical, scientific, and vocational interests of boys and girls.
- Ed.T.143-144. The Teaching of Reading. A study of the objectives, the materials, and teaching procedures in lower, intermediate, and upper grades in the light of the contributions of research; survey of current practices and curricula; class and individual projects; observation of reading techniques and materials in the demonstration school.
- Ed.T.150. Teaching and Administration in Teachers' Colleges. In this course emphasis is placed on the historical development, the present status, and the prospects of future development. An intensive study is made of curricula, departmental organization, and practice teaching. Emphasis is placed also on the supervision of instruction.
- Ed.T.181. Technique of Elementary School Instruction. A critical study of the various types and methods of elementary classroom activity with emphasis upon the techniques and the function of the so-called newer methods. Observation in the demonstration school; class projects; survey of investigations and of the philosophic theories which are affecting progressive practice.
- Ed.T.188. Advanced Course in Methods of Teaching Modern Languages. An advanced course of the seminar type in methods of teaching modern foreign languages. Designed primarily for experienced teachers and graduate students. Lectures, readings, discussion.
- Ed.T.193. Foundations of Secondary School Methods. A study of the investigations which form the bases of the technique of high school instruction and the application of their results to subject-matter and to classroom procedure. Each member will work primarily in the field of his teaching choice, with a final synthesis by the class as a whole.
- Ed.T.195. Advanced Course in Methods of Teaching English. Evaluation of present practices in methods and content of junior and senior high school English courses in the light of the known results of scientific investigations in that field.
- Ed.T.196-197-198. Special Problems in Techniques of Secondary School Instruction.
- Ed.T.222-223-224. Seminar in Techniques of Secondary School Instruction. No credit. Required of students working on theses.
- See also Ed.228-229-230 under General Courses, page 84.
- For graduate courses in the theory and practice of teaching in special subjects see the respective departmental course descriptions.

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Minnesota

The College of Education
Part II
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1931-1932



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1931							1932													
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UNIVERSITY CALENDAR

1931-32

Fall Quarter

1931			
September	17	Thursday	Payment of fees closes, except for new students
September	21	Monday	Entrance tests
September	21-22		Registration for Freshman Week of all new students entering freshman class
September	21-25		Examinations for removal of conditions
September	22-25		Physical examinations
September	22-25		Registration period, ¹ College of Science, Literature, and the Arts
September	23-26		Freshman Week
September	24-25		Registration days ¹ for College of Education and all colleges not included above except the College of Engineering and Architecture, and School of Chemistry
September	25	Friday	Payment of fees for new students closes
September	28	Monday	Fall quarter classes begin, 8:30 a.m. ²
October	15	Thursday	Senate meeting, 4:30 p.m.
October	31	Saturday	Homecoming Day
November	4	Wednesday	Mid-quarter grades due
November	11	Wednesday	Armistice Day Convocation
November	26	Thursday	Thanksgiving Day; a holiday
December	3	Thursday	State Day Convocation
December	14-19		Final examination period
December	17	Thursday	Commencement Convocation
December	19	Saturday	Senate meeting, 4:30 p.m.
December	26	Saturday	Fall quarter ends, 6:00 p.m.
December	26	Saturday	Payment of fees closes for all students in residence fall quarter ³

Winter Quarter

1932			
January	2	Saturday	Entrance tests
			Registration day for new students in all colleges
			Payment of fees for new students closes
			Registration and payment of fees close at 3:00 p.m.
January	4	Monday	Winter quarter classes begin, 8:30 a.m. ²
February	9	Tuesday	Mid-quarter grades due
February	12	Friday	Lincoln's Birthday; a holiday (except for extension)
February	18	Thursday	Charter Day Convocation
February	22	Monday	Senate meeting, 4:30 p.m.
February	22	Monday	Washington's Birthday; a holiday (except for extension)
March	14-19		Final examination period

See footnotes on page 4.

COLLEGE OF EDUCATION

March	17	Thursday	Commencement Convocation Payment of fees closes for all students ² in residence winter quarter
March	19	Saturday	Winter quarter ends, 6:00 p.m. No spring recess for members of the junior and senior classes in Medicine.

Spring Quarter

March	26	Saturday	Entrance tests Registration day for new students in all colleges Payment of fees for new students closes Registration and payment of fees close at 3:00 p.m.
March	28	Monday	Spring quarter classes begin, 8:30 a.m. ²
May	4	Wednesday	Mid-quarter grades due
May	12	Thursday	Cap and Gown Day Convocation
May	19	Thursday	Senate meeting, 4:30 p.m.
May	30	Monday	Memorial Day; a holiday
June	4 & 7-11		Final examination period
June	5	Sunday	Baccalaureate service
June	6	Monday	Sixtieth annual commencement
June	11	Saturday	Spring quarter closes, 6:00 p.m.

Summer Quarter

June	13-14		Registration, first term
June	15	Wednesday	Summer quarter classes begin, 8:00 a.m.
July	4	Monday	Independence Day; a holiday
July	21	Thursday	Commencement Convocation
July	23	Saturday	Registration and payment of fees for second term closes at 12 m. First term closes
July	25	Monday	Second term classes begin, 8:00 a.m.
August	27	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 30, bulletin of general information.

¹ Registration subsequent to the date specified will necessitate the approval of the college concerned. See also penalty fees for late registration, page 49, bulletin of general information. No student will be allowed to register in the University after one week from the beginning of the quarter excepting in unusual cases wherein special circumstances shall justify the appropriate committee of the college concerned permitting registration at a later date.

² First hour classes begin at 8:15 a.m. at University Farm.

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

SUPPLEMENT TO PART I, 1931-32

GENERAL INFORMATION

ADMISSION

Admission with advanced standing.—Students with advanced standing who wish to enter the College of Education are admitted on probation if the average of the grades presented for admission is below that of the average mark required for graduation in the college from which they enter.

Students in Home Economics.—Students expecting to receive certificates to teach upon graduation shall be registrants in the College of Education beginning with the junior year. Students in the College of Agriculture, Forestry, and Home Economics desiring a teacher's certificate in home economics shall in addition to their registration in that college register also in the College of Education. No formal application for transfer is necessary if such transfer is made at the beginning of the junior year. At least 90 credits and honor points equal to the number of credits are required for admission to the junior class.

INDEPENDENT STUDY COURSE

An Independent Study Course¹ will be offered during the year 1931-32.

1. The purpose of this course will be to offer students of ability the opportunity to direct their own training to a greater degree than is now afforded by the prevailing methods of class instruction.

2. The course will be open by choice to those students who by tests of general ability and previous scholastic achievement give evidence of the capacity for self-direction. Continuance in the course will be conditioned by continued evidence of worthiness of such enrolment.

3. This course will be in lieu of the present requirements of Educational Psychology, 3 credits (Ed. Psy. 55); Technique of High School Instruction, 3 credits (Ed. T. 15); The High School, 3 credits (Ed. Ad. 65). The field of work to be covered will be approximately that now embraced in the three courses. Students who satisfactorily complete this Independent Study Course will be given nine credits and will be relieved of the special course requirements named above.

4. Students electing the Independent Study Course will be relieved from certain formal requirements but not from the mastery of a minimum content.

¹ Previously designated as Limited Honors Course, College of Education bulletin, 1930-32.

GRADUATE WORK IN EDUCATION

Graduate work in education leading to the degree of master of arts or doctor of philosophy may be pursued in the Graduate School. Students who desire to undertake graduate work with education as a major must have had at least 6 credits in psychology, and in addition to this, a total of not less than 18 credits in education which shall include Ed. Psy. 55 and Ed. Psy. 60 or the equivalent. Students who desire to undertake graduate work with education as a minor must have at least 6 credits in psychology, and, in addition to this, a total of not less than 18 credits in education.

All courses bearing numbers of 100 and above are open for credit to graduate students. Before attempting to make out their programs, graduate students in education should consult the dean of the College of Education and the dean of the Graduate School.

Graduate courses may be pursued during summer quarter. The work for the Master's degree may ordinarily be completed in four summer quarters. For full statement of regulations, consult Graduate School bulletin.

MAJORS AND MINORS

Major and minor work for advanced degrees may be arranged from courses listed below under the following groupings:

Doctor's Degree

Major.—Majors may be designated as follows:

1. Educational administration and supervision
2. Educational psychology
3. Education (Under this designation the student, with the approval of his adviser, may select a group of courses from among those listed below, excluding the field of his minor, centering about his special interest in education. The following are typical centers of interest: agricultural education, elementary education, history of education, home economics education, industrial education, techniques of instruction, secondary education, higher education.)

Minor.—Minors may be designated as follows:

1. Educational administration and supervision
2. Educational psychology
3. Education (Under this designation the student, with the approval of his adviser, may select a group of courses from among those listed below, excluding the field of his major, centering about his special interest in education. Typical centers of interest are listed above under Major.)
4. Any other field of study offered in the University of Minnesota in which satisfactory courses of graduate character are available, and which is obviously related to the major field.

5. Students majoring in fields other than education may choose education or any of its subdivisions enumerated above as a minor when it appears that such a minor is appropriately related to the major field.

Master's Degree

Major.—Majors may be chosen as follows:

1. Educational administration and supervision
2. Educational psychology
3. Education (Under this designation the student, with the approval of his adviser, may select a group of courses from among those listed below, excluding the field of his minor, centering about his special interest in education. The following are typical centers of interest: agricultural education, elementary education, history of education, home economics education, industrial education, techniques of instruction, secondary education, higher education.)

Minor.—Minors may be chosen as follows:

1. Educational administration and supervision
2. Educational psychology
3. Education (Under this designation the student, with the approval of his adviser, may select a group of courses from among those listed below, excluding the field of his major, centering about his special interest in education. Typical centers of interest are listed above under Major.)
4. Any other field of study offered in the University of Minnesota in which satisfactory courses of graduate character are available, and which is obviously related to the major subject.
5. Students majoring in fields other than education may choose education or any of its subdivisions enumerated above as a minor when it appears that such a minor is appropriately related to the major field.

SPECIALIZED CURRICULA

LIBRARY METHODS

Students expecting to follow the four-year curriculum for school librarians should register in the Junior College of the College of Science, Literature, and the Arts during their freshman and sophomore years.

PUBLIC SCHOOL MUSIC

Major Advisers: Carlyle Scott, A. Pepinsky, A. N. Jones

The curriculum in Public School Music is designed to prepare supervisors and teachers of music in the elementary and secondary schools, and leads to the degree of bachelor of science and the Minnesota "high school standard special" certificate for teaching in elementary and high schools.

All freshmen desiring to major in this department are asked to consult the College of Education bulletin, Part I, for entrance requirements and

will follow the curriculum given below. Advance students will follow the curriculum outlined in the College of Education bulletin, for 1930-32, Part I, pages 71-72. Individual adjustments can be made upon the recommendation of the adviser and the chairman of the Students' Work Committee. For courses in Music, see p. 94.

Major—for a teacher's certificate.—Music and Music Education, 90-96 credits including Mu. Ed. 1-7, 35-38, 54-59, 67-77, inclusive; practical music (major—individual lessons), 18 credits; practical music (minor—for instrumental majors), Mu. Ed. 8-9-10 or 6 credits in Music 12; practical music (minor for all except piano majors), 6 credits in Music A-B-C, exemption depending upon entrance examination; English, 9 credits; physical education, for women 5 credits, for men 6 credits; teaching minor (in some academic subject) 18-30 credits; education, 18 credits, including Ed. Psy. 55, Ed. Ad. 65, Ed. T. 15 and 9 credits in methods and practice teaching in the minor; academic electives in two fields other than the minor, 20 credits; general electives other than music to make a total of 186 credits for men, 185 credits for women.

Minor—for a minor recommendation in music.—Students desiring to minor in music must pass an entrance examination in practical music, as stated in the College of Education bulletin, Part I. Practical music, 6 credits in field tested; practical music in another field, 2-6 credits; Mu. Ed. 1, 2, 3, 72, and 73; and electives from any of the following courses selected with the approval of adviser in Music Education to make a total of 30 credits: Mu. Ed. 4, 5; 57 or 58; 74 or 75; 7 or 54; 59.

Fees.—For statement of fees see pp. 37 and 94.

FOUR-YEAR CURRICULUM IN PUBLIC SCHOOL MUSIC

Freshman Year

Course No.	Title	Credits
Comp. 4-5-6	Freshman Composition	9
	Applied Music (Major)	6
	Applied Music (Minor)	6
Mu. Ed. 1	Appreciation	3
Mu. Ed. 2	History of Music	3
Mu. Ed. 3	Ear Training and Solfeggio	2
	Physical Education	3
	Electives ¹	16

Sophomore Year

Course No.	Title	Credits
	Applied Music (Major)	6
Psy. 1-2	General Psychology	6
Ed. Psy. 55	Educational Psychology	3
Mu. Ed. 4-5	Harmony	6
Mu. Ed. 6	Accompanying and Sight Reading	2
Mu. Ed. 7	Chorus	1
Mu. Ed. 35-36-37	Applied Instrumental Technique	6
Mu. Ed. 38	Form and Analysis	2
	Physical Education	2 or 3
	Electives ¹	12 or 13

¹ Electives should be chosen under advisement in order to meet the special group requirements of the curriculum.

Junior Year

Course No.	Title	Credits
	Applied Music (Major)	6
Mu.Ed. 57	Elementary School Methods	3
Mu.Ed. 58	High School Methods.....	3
Mu.Ed. 59	Operetta Conducting	3
Mu.Ed. 67	Chamber Music (Instrumental).....	2
Mu.Ed. 68	Chamber Music (Vocal).....	2
Mu.Ed. 69	Instrumentation	3
Mu.Ed. 54-55-56	Orchestra	3
Mu.Ed. 7	Chorus	1
Ed. Ad. 65	The High School.....	3
Ed.T. 15	Technique of High School Instruction.....	3
	Electives ¹	13

Senior Year

Course No.	Title	Credits
Mu.Ed. 71	Comparative Methods	2
Mu.Ed. 72	Survey of School Materials (Instrumental).....	2
Mu.Ed. 73	Survey of School Material (Vocal).....	2
Mu.Ed. 74	Orchestra Conducting	2
Mu.Ed. 75	Choral Conducting	2
Mu.Ed. 76	Supervision	3
Mu.Ed. 77	Practice Teaching	6 or 9
	Practice Teaching (Minor).....	9
	Electives ¹	14 or 17

DESCRIPTION OF COURSES

- Mu.Ed.1. Music Appreciation. A course designed to acquaint the student with the literature of music, and to assist in the more intelligent listening and appreciation thereof. Attendance at musicales and concerts is strongly urged.
- Mu.Ed.2. History of Music. A general course in the history of music, designed to correlate in part with Music Appreciation. This course covers the field of music history from its beginnings to the present.
- Mu.Ed.3. Ear Training and Solfeggio. A study of tonal relationships through aural appreciation, including tonality, melodic idioms, phrase balance, and rhythmic structure. Writing phrases in two and four voices with accurate notation. Sight singing of old chorals and excerpts from the best musical literature.
- Mu.Ed.4-5. Harmony. The study of chords, their construction, relations, and progressions. Written exercises on bases, the harmonization of given melodies.
- Mu.Ed.6. Accompanying and Sight Reading. A laboratory course aimed to develop proficiency in the art of accompanying and sight reading.
- Mu.Ed.7. Chorus. A demonstration class, organized as a laboratory for public school music students, stressing the essentials of choral singing, in as nearly a typical public school situation as possible.
- Mu.Ed.8-9-10. Voice. (Class lessons.) Not offered in 1931-32.

¹ Electives should be chosen under advisement in order to meet the special group requirements of the curriculum.

- Mu.Ed.35-36-37. *Applied Instrumental Technique*. This laboratory course is divided into three quarters, strings, brass (and percussion), and woodwinds, respectively. It incorporates the theory and technical development of the instruments, and elementary instruction in the playing of the chosen vehicle of expression, with special attention to the routine of class instruction.
- Mu.Ed.38. *Form and Analysis*. The study of musical architecture, and relationship of its individual elements and driving forces, which assemble the parts to a unit art work. Differentiation between form analysis and content analysis, and correlation of these principles.
- Mu.Ed.54-55-56. *Orchestra*. A laboratory for the study of the literature of larger instrumental ensembles. Materials adaptable to school needs, chosen from the more popular symphonies, symphonic poems, overtures, and concertos, are presented for practice, stressing routine, discipline, and appreciation of literature.
- Mu.Ed.57. *Elementary School Methods*. Practical methods of teaching music in the kindergarten, and grades one to six, inclusive. Particular attention is given to the child voice, its care and development. Students are required to observe music teaching in the Minneapolis and St. Paul grade schools.
- Mu.Ed.58. *High School Methods*. Organization and methods of teaching chorus and voice classes, appreciation and theoretical music in the modern high school. Particular attention to the changing voice. Students are required to observe in the Minneapolis, St. Paul, and University high schools.
- Mu.Ed.59. *Operetta Conducting*. Materials and methods of presenting and organizing high school operettas, pageants, cantatas, etc. An operetta is presented by the class, paying particular attention to the details of the work from the director's standpoint.
- Mu.Ed.67. *Chamber Music (Instrumental)*. A laboratory course for the study of the more intimate type of ensemble playing. The class is divided into groups, forming combinations (from trio to octet), containing strings, woodwinds, and brass, with and without the pianoforte. Suitable material to be presented and discussed from historic and esthetic viewpoint.
- Mu.Ed.68. *Chamber Music (Vocal)*. A laboratory course in the smaller vocal forms, including trios, quartets, sextets, and octets. The class is divided into these combinations, the materials prepared and presented in class, with discussions of methods of organization, materials, and procedures.
- Mu.Ed.69. *Instrumentation*. This course involves a theoretical study of orchestral and band instruments, in combination. The physics of tone color is explained. Revision of materials suitable for school use, and discussion of capacity and capability of school performance on the various instruments are undertaken.
- Mu.Ed.70. *Vocal Technique*. A course in which principles of teaching, breathing, voice placing, and development of vocal technique are discussed and demonstrated.
- Mu.Ed.71. *Comparative Methods*. An analysis of the various techniques

- of music teaching and supervision, stressing the learning processes, psychology of method, and standards of attainment of each.
- Mu.Ed.72. Survey of Materials (Instrumental). A laboratory course in materials used by the music department of public schools, paying particular attention to the psychology of program building. A survey of the well-known and newer publications in the field of public school music.
- Mu.Ed.73. Survey of Materials (Vocal). A laboratory course for the study of instrumental materials available for school work. Newer publications will be analyzed and adaptability of recognized works to concrete cases of instrumental difficulties will be discussed. Esthetics of program selection will also be treated.
- Mu.Ed.74. Orchestra Conducting. This course is a laboratory for practice in orchestra and band conducting. The class is in itself the ensemble, and the responsibility of conducting is rotated among the members. Technique of the baton, interpretation, seating arrangement, and auditorium acoustics are discussed.
- Mu.Ed.75. Choral Conducting. A practical course in choral conducting. The class is used as a laboratory for student conducting. Essentials of expression and interpretation are demonstrated in class.
- Mu.Ed.76. Supervision. Principles of music supervision, including the problems of the new teacher and supervisor, and an analysis of the various extra-curricular duties relevant to such a position. A thesis with research work in a particular field is required.
- Mu.Ed.77. Practice Teaching. Practice teaching is done in both grade and high schools in Minneapolis or St. Paul.

VISITING TEACHERS

Major Adviser: F. S. Chapin

JUNIOR COLLEGE

Freshman Year

Course No.	Title	Credits
Eng. A-B-C	Freshman English	15
or		
Comp. 4-5-6	Freshman Composition	9
Hist. 1-2	Modern World	10
	or	
	Foreign Language	10
Zool. 1-2	General Zoology	6
Pol.Sci. 1-2	American Government and Politics.....	10
Phys.Ed. 1-2-3	Physical Education	3

Sophomore Year

Course No.	Title	Credits
Hist. 7-8	American History	10
Econ. 6-7	Principles of Economics.....	10
Psy. 1-2	General Psychology	6
Soc. 1	Introduction to Sociology.....	5
Soc. 6	Social Interaction	3
Soc. 45	Social Statistics	5
Soc. 49	Occurrence of the Socially Inadequate.....	3
	Physical Education	2

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Junior Year

Course No.	Title	Credits
Ed.Psy. 55	Educational Psychology	3
Ed.Ad. 65	The High School.....	3
Ed.T. 15	Technique of High School Instruction.....	3
Soc. 52	Elementary Case Work.....	3
Soc. 53	Elements of Criminology.....	3
Soc. 70	Group Work in the Community.....	3
Soc. 91-92	Elementary Field Training	8
H.E. 90	Home Management Problems for Social Workers.....	3
	Electives ¹	16

Senior Year

Course No.	Title	Credits
Econ. 161	Labor Problems and Trade Unionism.....	} 5
Soc. 128	Principles of Administration Applied to Social Work.....	
	or	
Psy. 144-145	Abnormal Psychology	6
Soc. 60	Social Protection of the Child.....	3
Soc. 129	Selected Problems in Social Case Work.....	3
Soc. 130	Advanced Case Work.....	3
Soc. 134	Legal Protection of the Child.....	2
Soc. 138-139	Mental Case Work.....	6
Soc. 153-154-155	Advanced Field Training.....	9
	Electives ¹	13 or 14

¹ Electives should be selected under advisement in order to incorporate requirements A-B-C of the prescribed course of study for teachers of secondary school subjects. See College of Education bulletin, Part I, pp. 26-27.

PROGRAM

GENERAL COURSES

No.	Title	Hour	Day	Bldg.	Instructor
Ed.50	<i>Art Appreciation</i>	<i>Not offered</i>			
	(2 cred.; jr., sr.; no prereq.; Lect.)				
Ed.208f	Methods in Ed. Research.....	I,II	S	Ar	Mr. Johnson
	(2 cred.; grad.)				
Ed.228f- 229W-230S	Problems of College Education..	Ar	Ar	Ar	Mr. Haggerty
	(6 cred.; grad.)				
Ed.X§	Independent Study Course.....	IV	W	Ar	Mr. Umstatted
	(10 cred.; jr., sr.; prereq., 6 cred. in psychology)				

ADMINISTRATION AND SUPERVISION*

Major Advisers: L. J. Brueckner, H. R. Douglass, Fred Engelhardt

No.	Title	Hour	Day	Bldg.	Instructor
Ed.Ad.65as	The High School.....	II	MWF	210OL	Mr. Boardman
	(3 cred.; jr., sr.; prereq., Ed. Psy. 55 or parallel) (Limited to students in special curricula for superintendents and high school principals)				
Ed.Ad.65f	The High School.....	III	TThS	210OL	Mr. Douglass
	(3 cred.; jr., sr.; prereq., Ed. Psy. 55 or parallel)				
Ed.Ad.65w	The High School.....				
	(See Ed.Ad.65f)				
	Sec. 1	II	TThS	210OL	Mr. Benjamin
	2	III	TThS	210OL	Mr. Douglass
Ed.Ad.65s	The High School.....	I	TThS	210OL	Mr. Douglass
	(See Ed.Ad.65f)				
Ed.Ad.75s	The Elementary School.....	IX-X	M	206Ed	Mr. Cooper
	(2 cred.; jr., sr.; prereq., Ed. Psy. 55)				
Ed.Ad.113f	High School Curriculum.....	II	MWF	210OL	Mr. Benjamin
	(3 cred.; sr., grad.; prereq., 10 hrs. in ed. incl. Ed.Psy.55)				
Ed.Ad.115W	Organization of the Elementary School	III-IV	S	111Ed	Mr. Cooper
	(2 cred.; jr., sr., grad.; prereq., 10 hrs. in ed.)				
Ed.Ad.119f	Elementary School Curriculum..	III-IV	S	100OLa	Mr. Peik
	(2 cred.; sr., grad.)				
Ed.Ad.119T-120T	<i>Elementary School Curriculum...</i>	<i>Not offered</i>			
	(4 cred.; sr., grad.)				
Ed.Ad.121W	Educational Advising of Women and Girls	VIII	MWF	Ar	Miss Blitz
	(3 cred.; jr., sr., grad.; prereq., 15 qtr. cred. in ed. and psy.)				

* See Industrial Education 105 and 110, p. 25.

§ Previously designated as Limited Honors Course. The independent study group will not meet each week but the fourth hour on Wednesday is reserved for conference.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
Ed.Ad.123w	Supervision of High School Instruction (3 cred.; sr., grad.; prereq., 10 hrs. in ed.)	II	MWF	100OLa	Mr. Boardman
Ed.Ad.124f	Public School Administration. (3 cred.; sr., grad.; prereq., 10 hrs. in ed.)	IX	MWF	210OL	Mr. Engelhardt
Ed.Ad.125w	Techniques in Administration. (3 cred.; sr., grad.; prereq., Ed. 124)	IX	MWF	210OL	Mr. Engelhardt
Ed.Ad.126s	School Plant Management. (3 cred.; sr., grad.; prereq., Ed. 124, 125)	X	MWF	210OL	Mr. Engelhardt
Ed.Ad.128f,w,s	Special Problems in Ed. Adm. (1 or 2 cred.; prereq., Ed. 124, 125, 126)	Ar	S	224OL	Mr. Engelhardt
Ed.Ad.129	<i>Educational Publicity Materials. . .</i>	<i>Not offered</i>			
Ed.Ad.130	<i>Educational Publicity Agencies. . .</i>	<i>Not offered</i>			
Ed.Ad.133w	Guidance in Secondary Schools (2 cred.; sr., grad.; prereq., 10 hrs. in ed. including Ed.Psy.55)	I,II	S	205aEd	Miss Merrill
Ed.Ad.150f	Supervision and Improvement of Instruction (3 cred.; sr., grad.; prereq., 15 or equiv.)	III	MWF	100OLa	Mr. Brueckner
Ed.Ad.151w	Supervision: Uses of Educational Tests in Improving Instruction (2 cred.; sr., grad.; prereq., 15 or equiv.)	III-IV	S	205aEd	Mr. Brueckner
Ed.Ad.152w	Supervision: The Adjustment of Schools to Individual Differences (2 cred.; sr., grad.; prereq., 15 hrs. in ed.)	IX, X	Th	210OL	Mr. Peik
Ed.Ad.153s	Supervision of English in the Elementary Schools (2 cred.; sr., grad.; prereq., 15 or equiv.)	IX, X	T	100OLa	Mr. Brueckner
Ed.Ad.154s	Supervision of Social Sciences in the Elementary Schools. (2 cred.; sr., grad.; prereq., 15 or equiv.)	III, IV	S	100OLa	Mr. Brueckner
Ed.Ad.155f	Supervision of Arithmetic in the Elementary Schools (2 cred.; sr., grad.; prereq., 15 or equiv.)	III-IV	S	205aEd	Mr. Brueckner
Ed.Ad.156w†	Practice Supervision — Observation and Field Work. (3 cred.; sr., grad.; prereq., 15 hrs. in ed. and permission of instructor)	9:30-11:30	TTh	100OLa	Mr. Peik Dem.Sch. Mr. Cooper
Ed.Ad.157f,w,s	Practice in Supervision. (3 cred. a quarter; sr., grad.; prereq., consent of instructor)	Ar	Ar	Ar	Mr. Brueckner, Mr. Cooper
Ed.Ad.158w	Organization for Supervision. (2 cred.; sr., grad.)	I, II	S	224OL	Mr. Engelhardt

† A laboratory fee of \$1 per credit hour is charged for this course.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
Ed.Ad.159	<i>Supervision of Reading</i> (2 cred.; sr., grad.; prereq., 15 hrs. in ed.)	<i>Not offered</i>			
Ed.Ad.160w	Supervision of Elementary Subjects	IX-X	T	206Ed	Mr. Brueckner
	(2 cred.; sr., grad.; prereq., Ed.Ad. 150)				
Ed.Ad.161f,w,s	Special Problems in School Supervision	Ar	Ar	Ar	Mr. Brueckner
	(2 cred. a quarter; sr., grad.; prereq., 10 hrs. in ed., including Ed.Psy. 55)				
Ed.Ad.164s	High School Administration.....	II	TThS	210OL	Mr. Douglass
	(3 cred.; sr., grad.; prereq., 10 hrs. in ed. incl. Ed.Psy.55)				
Ed.Ad.167f-168w	Junior High School.....	IX, X	W	Ar	Mr. Douglass
	(4 cred.; sr., grad.; prereq., 10 hrs. in ed. incl. Ed.Psy.55)				
Ed.Ad.169f	Extra-Curricular Activities	IX, X	T	210OL	Mr. Benjamin
	(2 cred.; prereq., 10 hrs. in ed. incl. Ed.Psy.55)				
Ed.Ad.170f,w,s	Special Problems in Secondary Education	Ar	Ar	Ar	Mr. Douglass, Mr. Benjamin
	(2 cred.; prereq., 10 hrs. in ed. incl. Ed.Psy.55)				
Ed.Ad.172w	Curriculum and Course of Study Construction	I, II	S	324Lib	Mr. Peik
	(2 cred.; sr., grad.; prereq., 15 hrs. in ed.)				
Ed.Ad.175s	Financial Aspects of Public School Business Administration	IX I, II	F S	210OL 111Ed	Mr. Engelhardt
	(3 cred.; sr., grad.; prereq., 124, 125)				
Ed.Ad.178f	School Surveys	X	MWF	224OL	Mr. Engelhardt
	(3 cred.; sr., grad.)				
Ed.Ad.179	<i>School Surveys</i>	<i>Not offered</i>			
	(3 cred.; sr., grad.)				
Ed.Ad.180f,w,s†	Practice in High School Administration	Ar	Ar	Ar	Mr. Boardman
	(6 cred.; sr., grad.; prereq., 10 hrs. in ed. including Ed.Ad.65)				
Ed.Ad.184f	Supervision of Practice Teaching	III, IV	S	111Ed	Mr. Boardman
	(2 cred.; sr., grad.)				
Ed.Ad.185f	Professional Education of Teachers	I, II	S	100OLa	Mr. Peik
	(2 cred.; sr., grad.; prereq., 15 hrs. in ed.)				
Ed.Ad.186f,w	Special Problems in Teacher Training	Ar	Ar	Ar	Mr. Peik
	(1 or 2 cred.; sr., grad.; prereq., Ed.Ad.185 or permission of instructor)				
Ed.Ad.205f-206w-207s	Seminar in Educational Administration	IX, X	Th	224OL	Mr. Engelhardt

† A laboratory fee of \$1 per credit hour is charged for this course.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
Ed.Ad.218f- 219w-220s	Seminar in Secondary School Problems	IX, X	Th	216OL	Mr. Douglass, Mr. Benjamin, Mr. Boardman, Mr. Brueckner, Mr. Peik
Ed.Ad.225f- 226w-227s	Seminar in Elementary School Problems	IX, X	Th	Ar	

AGRICULTURAL EDUCATION

Major Advisers: A. V. Storm, A. M. Field

No.	Title	Hour	Day	Bldg.	Instructor
Agr.Ed.11f,w,s	Educational Psychology	II	TThS	202Ad	Mr. Field
	(3 cred.; jr., sr.; no prereq.)				
Agr.Ed.21f,s	Vocational Education	Ar	Ar	202Ad	Mr. Nylin
	(3 cred.; jr., sr.; no prereq.)				
Agr.Ed.41†	<i>Apprentice Teaching</i>	<i>Not offered</i>			
	(2 cred.; jr., sr.; prereq., 11)				
Agr.Ed.42f,w,s†	Supervised Teaching Experience	Ar	Ar	Ar	Mr. Field, Mr. Nylin
	(3 cred.; jr., sr.; prereq., 181)				
Agr.Ed.64w,s	Survey of Agriculture.....	Ar	Ar	Ar	Mr. Field and others
	(3 cred.; no prereq.)				
Agr.Ed.75	<i>Visual Presentation</i>	<i>Not offered</i>			
	(3 cred.; jr., sr.; prereq., 11)				
Agr.Ed.81s	Extension Work	VI	MWF	202Ad	Mr. Storm, Mr. Peck
	(3 cred.; jr., sr.; prereq., 6 cred. in farm mgt., 6 cred. in farm crops. 15 cred. in an. ind., 6 cred. in agr. ed.)				
Agr.Ed.82f,w,s	Agricultural Extension Field Course	Ar	Ar	Ar	Mr. Storm, Mr. Peck, Mr. Field
	(3 to 10 cred.; jr., sr.; prereq., 81)				
Agr.Ed.135	The Curriculum in Vocational Agriculture	Ar	Ar	Ar	Mr. Field
	(3 cred.; sr.; prereq., 11)				
Agr.Ed.141w,s	Supervised Practice in Vocational Agriculture	Ar	Ar	Ar	Mr. Field
	(3 cred.; sr.; prereq., 11)				
Agr.Ed.144w	Course Organization and Instruction for the Individual in Vocational Agriculture	Ar	Ar	Ar	
	(2 cred.; sr.; prereq., 11)				
Agr.Ed.154	Rural Education and Community Leadership	IV	TThS	202Ad	Mr. Field
	(3 cred.; sr.; prereq., 11)				
Agr.Ed.161	Vocational Education in Agriculture	Ar	Ar	Ar	
	(3 cred.; prereq., 11, 181, 182, 183)				
Agr.Ed.162	The Basis of Vocational Teaching Technique	Ar	Ar	Ar	
	(3 cred.; prereq., 11, 181, 182, 183)				

† A laboratory fee of \$1 per credit hour is charged for this course.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
Agr.Ed.164	Fundamentals in Agriculture... (3 cred.; prereq., 11)	Ar	Ar	Ar	
Agr.Ed.171w,s	Problems in Procedure..... (3 cred.; sr.; prereq. 42, 131, or equiv. teaching experience)	Ar	Ar	Ar	Mr. Field
Agr.Ed.176s	Problems in Visual Presentation (3 cred.; jr., sr.; prereq., 75)	Ar	Ar	Ar	Mr. Field
Agr.Ed.181f	Teaching Agriculture	III	MTWThF	202Ad	Mr. Field, Mr. Nylin
Agr.Ed.182w	Teaching Agriculture	III	MTWThF	202Ad	
Agr.Ed.183s	Teaching Agriculture	III	MTWThF	202Ad	
Agr.Ed.191f- 192w-193s	Seminar in Agricultural Education (6 cred.; sr.; prereq., 11 cred. in agr. ed.)	Ar	Ar	Ar	Mr. Storm, Mr. Field

ART EDUCATION

Major Adviser: Robert Hilpert

DESIGN

No.	Title	Hour	Day	Bldg.	Instructor
ArtEd.1f-2w-3s	Fundamental Principles of De- sign				
	(9 cred.; no prereq.)				
	Sec. 1	II, III	TThS	207bOPh	Miss Lutz
	2	III, IV	TThS	207aOPh	Mrs. Lewis
	3	Ar	Ar		
ArtEd.2of- 21w-22s	Principles of Harmony in Form and Color				
	(9 cred.; soph., jr., sr.; prereq., 1-2-3)				
	Lect. Sec. 1 for Int.Dec.	I	MWF	207aOPh	Mr. Hilpert
	2	II	MWF	207aOPh	Mr. Hilpert
	Lab.	Ar	Ar	Ar	Miss Berglund
ArtEd.5of-51w	Commercial and Industrial De- sign	IV	MWF	207aOPh	Mr. Hilpert
	(6 cred.; soph., jr., sr.; prereq., 1-2-3, 4, 5, 7, 8, or ar.)				
Art.Ed.55,56,57	Fundamental Art Principles.....	Not offered			
	(3 cred.; primarily for other than art majors; no prereq.)				
ArtEd.153,154	Design for the Consumer.....	Not offered			
	(3 cred.; jr., sr., grad.; prereq., 1-2-3, 20, 21, 22, or 50, 51, and 7, 8, 9)				

DRAWING

ArtEd.4,5,6f,w,s	Still Life Drawing.....				
	(3 cred.; all; no prereq.)				
	Sec. 1	I, II	M	203OPh	Mr. Harmes
	2	I, II	W	203OPh	Mr. Harmes
	3	III, IV	W	203OPh	Mr. Harmes

No.	Title	Hour	Day	Bldg.	Instructor
ArtEd.7,8,9f,w,s	Sketch, Course I..... (3 cred.; all; no prereq.)				
	Sec. 1	III, IV		M 203OPh	Mr. Harmes
	2	I, II		F 203OPh	Mr. Harmes
	3	III, IV		F 203OPh	Mr. Harmes
	4	II, III		F 203aOPh	Miss Lutz
ArtEd.10-11-12	Graphic Composition..... (3 cred.; soph., jr., sr.)				Not offered
ArtEd.23,24, 25f,w,s	Water Color..... (3 cred.; soph., jr., sr.; prereq., 4,5,6)				
	Sec. 1	I, II		T 203OPh	Mr. Harmes
	2	II, III		T 203OPh	Mr. Harmes
ArtEd.26,27, 28f,w,s	Pencil and Pen Techniques..... (3 cred.; soph., jr., sr.; prereq., 4,5,6)				
	Sec. 1	I, II		Th 203aOPh	Mr. Harmes
	2	II, III		Th 203aOPh	Mr. Harmes
ArtEd.29,30,31	Sketch, Course II..... (3 cred.; soph., jr., sr.; prereq., 7,8,9)				Not offered
ArtEd.29T,30T, 31T	Rhythmic Sketch (For other than ArtEd. majors..... (3 cred.; soph., jr., sr.)				Not offered
ArtEd.60,61, 62f,w,s	Water Color, Course II..... (3 cred.; soph., jr., sr.; prereq., 25)	II, III		Th 203OPh	Mr. Hilpert
ArtEd.63,64, 65f,w,s	Pencil and Pen Techniques, Course II..... (3 cred.; soph., jr., sr.)	I and ar		T 203aOPh	Miss Lutz
ArtEd.66,67, 68f,w,s	Sketch, Course III..... (3 cred.; soph., jr., sr.; prereq., 9)				
	Sec. 1	I, II		S 203OPh	Mr. Harmes
	2	III, IV		S 203OPh	Miss Lutz

HANDICRAFTS§

ArtEd.32w	Cardboard and Paper Construc- tion..... (1 cred.; all; no prereq.) (Sections limited to 20)				
	Sec. 1	(V) VI (VII)		W 10OPh	Miss Berglund
	2	(VII) VIII (IX)		W 10OPh	Miss Berglund
ArtEd.33w	Bookbinding..... (2 cred.; all; no prereq.) (Sections limited to 20)				
	Sec. 1	(V) VI (VII)		TTh 10OPh	Miss Ross
	2	(VII) VIII (IX)		TTh 10OPh	Miss Ross

§ Hours in parentheses are supervised laboratory hours. One should be chosen.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor	
ArtEd.35*	Clay Modeling (2 cred.; prereq., 4 cred. in Sketch)	<i>Not offered</i>				
ArtEd.37s	Basketry (2 cred.; all; no prereq.)	Sec. 1	(V) VI (VII)	TTh	11OPh	Miss Ross
		2	(VII) VIII (IX)	TTh	11OPh	Miss Ross
ArtEd.38f	Elementary Weaving and Allied Crafts (1 cred.; all; no prereq.) (Sections limited to 15)	Sec. 1	(V) VI (VII)	W	11OPh	Miss Ross
		2	(VII) VIII (IX)	W	11OPh	Miss Ross
ArtEd.39	Advanced Basketry (2 cred.; prereq., 37)	<i>Not offered</i>				
ArtEd.40f,s*	Advanced Weaving (2 cred.; jr., sr., ar.)	(II) III (IV)	TTh	11OPh	Miss Berglund	
ArtEd.41f,s*	Elementary Pottery (2 cred.; all; no prereq.)	Sec. 1	(V) VI (VII)	MF	10OPh	Miss Ross
		2	(VII) VIII (IX)	MF	10OPh	Miss Ross
ArtEd.42w*	Advanced Pottery (2 cred.; all; prereq., 41)	(V) VI (VII)	MF	10OPh	Miss Ross	
ArtEd.43*	Pottery, Course III.....	<i>Not offered</i>				
ArtEd.44f	Application of Design to Fabrics (2 cred.; prereq., 15 cred. in design)	II, III	MF	11OPh	Miss Ross	
ArtEd.45w	Application of Design in Needlecraft (2 cred.; soph., jr., sr.; prereq., 1,2,3)	III, IV	MF	10OPh	Miss Ross	
ArtEd.46f*	Metal Work and Simple Jewelry (2 cred.; soph., jr., sr.; prereq., four terms of design) (Limited to 10)	I, II	TTh	10OPh	Miss Ross	

ART HISTORY AND APPRECIATION

ArtEd.70	Art of the Italian Renaissance... See College of Education bulletin, Part I, for statement of courses in Art History.	<i>Not offered</i>			
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THEORY AND PRACTICE OF ART TEACHING

ArtEd.80,81, 82f,w,s†	Types of Art Instruction..... (3 cred.; jr., sr.; prereq., 9 cred. in design, 9 cred. in drawing, 6 cred. in handicrafts)	VIII and ar	M	207aOPh	Mrs. Lewis
ArtEd.83s	Problems in Art Education..... (3 cred.; sr.; prereq., 12 cred. in design, 12 cred. in drawing, 6 cred. in handicrafts)	4:00 to 5:00	MWF	207aOPh	Mr. Hilpert

* A laboratory fee of \$1.50 is charged for this course.

† A laboratory fee of \$1 per credit hour is charged for this course.

No.	Title	Hour	Day	Bldg.	Instructor
ArtEd.86,87, 88f,w,s†	Practice Teaching in Art..... (6 cred.; sr.; prereq., 9 cred. in design, 9 cred. in drawing, 6 cred. in handicrafts)	VI, VII	TTh	Public Schools	Mr. Hilpert, Mrs. Lewis
ArtEd.189	<i>Application of Esthetic Theories in Public School Art Education</i> (3 cred.; sr., grad.; prereq., 9 cred. in drawing, 9 cred. in design)	<i>Not offered</i>			

EDUCATIONAL PSYCHOLOGY

Major Advisers: M. E. Haggerty, W. S. Miller

No.	Title	Hour	Day	Bldg.	Instructor
Ed.Psy.55f	Educational Psychology (3 cred.; jr., sr.; prereq., 6 cred. in psy.)				
	Sec. 1	I	MWF	210OL	Mr. Miller
	2	II	MWF	OLaAud	Mr. Van Wageningen
	3	VII	MWF	100OLa	Mr. Carroll
Ed.Psy.55w	Educational Psychology (See 55f)				
	Sec. 1	I	MWF	115Psy	Mr. Miller
	2	III	MWF	100OLa	Mr. Carroll
Ed.Psy.55s	Educational Psychology (See 55f)				
	Sec. 1	I	MWF	Ar	Mr. Miller
	2	IV	MWF	OLaAud	Miss Merrill
Ed.Psy.56Tf- 57Tw	Educational Psychology for Ele- mentary School Teachers..... (4 cred.; jr., sr.; prereq., 6 cred. in psy.)	I, II		S 205bEd	Mr. Van Wageningen
Ed.Psy.60f,w	Introduction to Statistical Methods (3 cred.; jr., sr.; prereq., 6 cred. in psy.)	II	MWF	100OLa(fall) 210OL(winter)	Mr. Carroll
Ed.Psy.60s	Introduction to Statistical Methods (2 cred.; see 60f)	I-II		S 206Ed	Mr. Eurich
Ed.Psy.111Tf- 112Tw	Educational Measurements in the Elementary School (for teach- ers)	III, IV		S 205bEd	Mr. Van Wageningen
	(4 cred.; jr., sr., grad.; prereq., 55 or equiv.)				
Ed.Psy.111s	Educational Measurements in the Elementary School	II	MWF	109Psy	Mr. Van Wageningen
	(3 cred.; jr., sr., grad.; prereq., 55 or equiv.)				
Ed.Psy.113f- 114w-115s	Psychology of Elementary School Subjects	IX, X		W 109Psy	Mr. Van Wageningen
	(2 cred. per qtr.; jr., sr., grad.; prereq., 10 cred. in psy. and ed.)				

† A laboratory fee of \$1 per credit hour is charged for this course.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
Ed.Psy.116w-117s	Advanced Statistical Methods in Education	IX, X	T	115Psy	Mr. Van Wagenen
	(4 cred.; sr., grad.; prereq., 60 or equiv.)				
Ed.Psy.133	<i>Systematic Educational Psychology</i>	<i>Not offered</i>			
	(4 cred.; jr., sr., grad.; prereq., 15 cred. in psy. and ed.)				
Ed.Psy.134f	Mental Tests	VII, VIII	MW	211Psy	Mr. Eurich
	(2 cred.; sr., grad.; prereq., 55 and 60 or equiv.)				
Ed.Psy.135w-136s	Problems in Mental Testing.....	VII, VIII	MW	211Psy	Mr. Eurich
	(4 cred.; sr., grad.; prereq., 55 and 60 or equiv. and 134)				
Ed.Psy.138f-139w†	Experimental Educational Psychology	IX, X	WF	116Psy	Mr. Rockwell
	(4 cred.; sr., grad.; prereq., 55 or equiv.)				
Ed.Psy.141	<i>Psychology of Speech Disorders..</i>	<i>Not offered</i>			
Ed.Psy.143f-144w†	Individual Mental Examination..	IX-X	TTh	109Psy	Mr. Rockwell
	(4 cred.; sr., grad.; prereq., 55 and 111 or 134. Permission of instructor. Limited to 20.)				
Ed.Psy.145s	Special Problems in the Field of Individual Mental Testing....	Ar	Ar	Psy	Mr. Rockwell
	(2 cred.; sr., grad.; prereq., 143-144)				
Ed.Psy.146w-147s†	Child Guidance	III-IV	S	OLaAud	Mr. Chamberlain
	(4 cred.; jr., sr., grad.; prereq., 15 cred. in psy. and ed.)				
Ed.Psy.149f-150w†-151s	Psycho-Educational Clinic	Ar	Ar	Ar	Mr. Eurich
	(2 to 6 cred.; sr., grad.; permission of instructor; prereq., 134, 135-136, 144-145 or 184, and 111)				
Ed.Psy.153f-154w-155s	Research Problems	Ar	Ar	Ar	Mr. Haggerty, Mr. Eurich, Mr. Miller, Mr. Rockwell, Mr. Van Wagenen
	(Ar.; sr., grad.; prereq., consult instructor)				
Ed.Psy.157s	Psychology of Child Development	I, II	S	112Ed	Mr. Carroll
	(2 cred.; jr., sr., grad.; prereq., 6 cred. in psy.)				
Ed.Psy.158f	Psychology of Adolescence.....	VII	MWF	210OL	Miss Merrill
	(3 cred.; jr., sr., grad.; prereq., 55 or equiv.)				
Ed.Psy.159	<i>Psychology of Personality.....</i>	<i>Not offered</i>			
	(3 cred.; sr., grad.; prereq., 55 and 116 or 134 or parallel)				

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

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
Ed.Psy.181f,w,8	Practice in Personnel Work..... (Prereq., satisfactory prep. in psy. and ed. and approval of adviser)	Ar	Ar	Ar	Mr. Haggerty, Miss Merrill
Ed.Psy.183s	Psychology of Gifted Children... (2 cred.; jr., sr., grad.; prereq., 55 or equiv.)	III	TTh	210OL	Mr. Carroll
Ed.Psy.184s	Mental Deficiency	III, IV	S	210Ed	Mr. Rockwell
Ed.Psy.189f	The Human Organism..... (3 cred.; sr., grad.; prereq., permission of the instructor)	IV	MWF	Ar	Mr. Rockwell
Ed.Psy.190f	Original Nature of Man..... (3 cred.; sr., grad.; prereq., 55 and 60 or equiv. and permission of instructor)	III	MWF	301Psy	Mr. Miller
Ed.Psy.191w	Individual Differences	III	MWF	301Psy	Mr. Miller
Ed.Psy.192s	Recent Literature in Educational Psychology	III	MWF	301Psy	Mr. Miller
Ed.Psy.193w-194s	Psychology of Learning..... (4 cred.; sr., grad.; prereq., 12 cred. in psy. and ed. psy.)	II	TTh	301Psy	Mr. Rockwell
Ed.Psy.197,198,199	<i>Problems in Subnormality</i> (6 cred.; jr., sr., grad.)	<i>Not offered</i>			
Ed.Psy.201f-202w-203s	Seminar in Educational Psychology	Ar	Ar	301Psy	Mr. Haggerty, Mr. Eurich, Mr. Miller, Mr. Rockwell, Mr. Van Wageningen

HISTORY AND PHILOSOPHY OF EDUCATION

Major Advisers: A. C. Krey, Ross L. Finney, Jean H. Alexander

No.	Title	Hour	Day	Bldg.	Instructor
H.Ed.1f	Brief Course in History of Education	IV	MTWFS	210OL	Miss Alexander
	(5 cred.; jr., sr.; prereq., 6 cred. in psy.)				
H.Ed.1w,s	Brief Course in History of Education	IV	MTWFS	210OL	Miss Alexander
	(See 1f)				
H.Ed.3f	Educational Sociology	III	MWF	OLaAud	Mr. Finney
	(3 cred.; jr., sr.; prereq., 6 cred. in psy.)				

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
H.Ed.3w,s	Educational Sociology (See 3f)	III	MWF	OLaAud	Mr. Finney
H.Ed.5s	Public Education in the U. S.... (Offered at U. Farm) (3 cred.; jr., sr.; prereq., 6 cred. in psy.)	VIII	MWF	ArHE	Miss Alexander
H.Ed.101f	Historical Foundations of Modern Education (3 cred.; jr., sr., grad.; prereq., 6 cred. in psy.)	VI	MWF	210OL	Miss Alexander
H.Ed.102w	History of Modern Secondary and Higher Education..... (3 cred.; jr., sr., grad.; prereq., 6 cred. in psy.)	VI	MWF	210OL	Miss Alexander
H.Ed.103s	History of Modern Elementary Education (3 cred.; jr., sr., grad.; prereq., 6 cred. in psy. Not open to students who have had H.Ed.1.)	VI	MWF	210OL	Miss Alexander
H.Ed.114	Philosophy of Education				Not offered
H.Ed.129-130	Educational Classics				Not offered
H.Ed.131-132	Comparative School Systems.....				Not offered
H.Ed.140-141 f,w,s	Problems in the History of Edu- cation (2 cred. a quarter; sr., grad.; prereq., permission of instruc- tor)	Ar	Ar	Ar	Mr. Krey, Mr. Wesley
H.Ed.187f- 188w-189s	Special Problems in Educational Sociology (6 cred.; grad.; prereq., Ed. 1 or 101-102-103 and 3)	IX, X	T	Ar	Mr. Finney
H.Ed.211-212-213	Seminar in History of Education				Not offered

HOME ECONOMICS EDUCATION

COLLEGE OF EDUCATION

Major Advisers: Wylle B. McNeal, Ella V. Rose, Clara M. Brown

No.	Title	Hour	Day	Bldg.	Instructor
H.E.Ed.40f,s	Child Training (3 cred.; jr., sr.; prereq., Psy. 1-2)	IV	MWF	213HE	Mrs. Foster
H.E.Ed.40w*	Child Training (Same as 40f,s)	IV	MWF	202OLa	Mrs. Foster
H.E.Ed.42f,s†	Special Methods of Teaching Home Economics (3 cred.; jr., sr.; prereq., H.E.13, 53, 83, Psy. 1-2, Agr. Ed. 11 or Ed. Psy. 55)	VIII	MWF	215HE	Miss Rose

* Offered on the Minneapolis campus.

† A laboratory fee of \$1 per credit is charged for this course.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
H.E.Ed.49f,w,s*	Observation and Teaching: General Home Economics (8 cred.; sr.; prereq., 42‡ or parallel)	Lect. IX Teaching Ar	TTh Ar	213HE Ar	Miss Rose, Miss Studley, Miss Carlotta Brown Miss Ennis Miss Kafka, Miss Nordeen, Miss Segolson
H.E.Ed.141f	Vocational Education in Home Economics (2 cred.; sr.; prereq., 42)	Ar	Ar	Ar	Miss Clara Brown, Miss Rose
H.E.Ed.142af,w	Educational Measurement in Home Economics (2 cred.; sr.; prereq., 42)	II	TTh	213HE	Miss Clara Brown
H.E.Ed.142bw	Educational Measurement in Home Economics (2 cred.; sr.; prereq., 142a)	Ar	Ar	Ar	Miss Clara Brown
H.E.Ed.143w,s	Home Economics Curricula..... (2 cred.; jr., sr.; prereq., 42 or parallel)	VIII	TTh	213HE	Miss Clara Brown, Miss Rose
H.E.Ed.147w	Organization and Methods for Related Art Teaching..... (3 cred.; jr., sr.; prereq., 42 or parallel; H.E. 53, 131 or parallel)	III	TThS	402HE	Miss H. Goldstein
H.E.Ed.149f,w,s	Research Problems (Cred. ar.; sr.; permission of instructor)	Ar	Ar	Ar	Miss McNeal, Miss Clara Brown
H.E.Ed.242f,w,s	Problems in Home Economics Education (1 cred.; grad.)	Ar	Ar	Ar	Miss McNeal, Miss Clara Brown
H.E.Ed.243f,w,s	Administration and Supervision of Home Economics..... (3 cred.; grad.; prereq., 42, 49, 143)	Ar	Ar	Ar	Miss McNeal, Miss Rose
H.E.Ed.245f,w,s	Seminar in Home Economics Education (No cred.; grad.)	Ar	Ar	Ar	Miss Clara Brown

INDUSTRIAL EDUCATION

Major Adviser: Homer J. Smith

No.	Title	Hour	Day	Bldg.	Instructor
Ind.1f*	General Shopwork (2 cred.; no prereq.)	I-IV	S	60La	Mr. Fryklund
Ind.2w*	General Shopwork (2 cred.; prereq., Ind.1)	I-IV	S	60La	Mr. Fryklund

* A laboratory fee of \$1 per credit hour is charged for this course.

‡ In addition to other prerequisites a student registering for this course must have received a grade of C or higher in each of the following courses: H.E. 3, 11, 13, 50, 51, 53, 80 or 81, and 83; and must have completed home experience work in foods and clothing.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
Ind.5*	Wood Finishing	Not offered			
	(2 cred.; no prereq.)				
Ind.11w,3*	Special-Class Woodwork	4:00 to 6:00	TTh	6OLa	Mr. Cunningham
	(2 cred.; no prereq.‡)				
Ind.14s*	Methods in Drawing	IX-X	T	8Ed	Mr. Fryklund
	(2 cred.; prereq., 10 cred. in drawing or consent of instructor)				
Ind.20f	Industrial History	IX-X	Th	Ar	Mr. Cunningham
	(2 cred.; no prereq.)				
Ind.2‡	Literature of Industrial Education	Not offered			
	(2 cred.; no prereq.)				
Ind.30f	Graphic Presentation	IX-X	F	112OL	Mr. Smith
	(2 cred.; no prereq.)				
Ind.40f	Analysis	IX-X	T		Mr. Fryklund
	(2 cred.; no prereq.)				
Ind.42w	Course Organization	IX, X	T	112OL	Mr. Fryklund
	(2 cred.; prereq., Ind.40)				
Ind.44s	Equipment and Management.....	IX, X	Th	112OL	Mr. Fryklund
	(2 cred.; prereq., 40, 42)				
Ind.50f, 51w,52s*	Practice Teaching	Ar	Ar	Ar	Mr. Smith
	(6 cred.; jr., sr.; prereq., Ind.80, either Ind.14, Ind.66, or Ind.70, plus consent of instructor)				
Ind.60f	Philosophy of Vocational Education	IX, X	M	112OL	Mr. Smith
	(2 cred.; no prereq.; Ind.61w to follow)				
Ind.61w	Practices in Vocational Education (Econ.)	IX, X	Th	112OL	Mr. Smith
	(2 cred.; prereq., Ind.60)				
Ind.65*	Methods in Non-Vocational Subjects	Not offered			
Ind.66s*	Methods in Related Subjects....	IX-X	F	112OL	Mr. Smith
	(2 cred.; prereq., Ind.40)				
Ind.70s*	Methods in Shop Subjects.....	III-IV	S	112OL	Mr. Smith
	(2 cred.; prereq., Ind.40 and 42)				
Ind.80	General Industrial Training.....	Not offered			
	(2 cred.; no prereq.)				
Ind.101w	Tests in Industrial Subjects....	IX, X	F	112OL	Mr. Smith
	(2 cred.; prereq., Ed.Psy.55)				
Ind.105w	Industrial Education	IV	MWF	112OL	Mr. Smith
	(3 cred.; jr., sr., grad.‡)				
Ind.110f	Guidance in the Schools.....	III-IV	S	112OL	Mr. Smith
	(2 cred.; jr., sr., grad.; prereq., Ed.Psy.55)				
Ind.150f,151w, 152s	Problems in Vocational Education	IX-X	W	112OL	Mr. Smith
	(6 cred.; prereq., full year assumed)				
Ind.170f	Day Industrial Schools.....	IX, X	M	Ar	Mr. Craig
	(2 cred.; jr., sr., grad.; prereq., Ind.60)				

* A laboratory fee of \$1 per credit is charged for this course.

‡ Not open to those pursuing the industrial education undergraduate curriculum; primarily for administrators and supervisors, either general or in special fields.

§ Not open to those who have credit in bench woodworking or cabinet making; for teachers of art, subnormal, and primary grade work; limited to 20; repeated in spring quarter)

No.	Title	Hour	Day	Bldg.	Instructor
Ind.171w	Evening Industrial Schools..... (2 cred.; jr., sr., grad.; prereq., Ind.60 and Ind.170)	IX, X	M	112OL	Mr. Bass
Ind.172s	Part-time Education (2 cred.; jr., sr., grad.; prereq., Ind.60, 170, 171)	IX, X	M	112OL	Mr. Smith

Dunwoody enrolments, day or evening, arranged by Mr. Smith.

Shopwork and drawing courses of wide variety are available in the College of Engineering, University and Farm campuses. Students may elect to pursue courses, day or evening, at the William Hood Dunwoody Industrial Institute without fees other than those paid to the University. All shop and drawing courses should be taken under special advice and may be either extensive or intensive in resultant preparation for teaching. Those transferring from other institutions should bear in mind the maximum of forty-five quarter credits, for shopwork and drawing combined, which is enforced in this department.

INSTITUTE OF CHILD WELFARE*

Major Advisers: John E. Anderson, Josephine C. Foster

No.	Title	Hour	Day	Bldg.	Instructor
C.W.40w†	Child Training (3 cred.; jr., sr.; prereq., Psy. 1-2)	IV	MW	202OLA	Mrs. Foster
C.W.60f	Modern Aspects of Child Study (2 cred.; jr., sr.; prereq., 6 cred. in psy. and 5 cred. in soc. sci.)	VI	TTh	202OLA	Miss McGinnis
C.W.80f	Child Psychology (3 cred.; jr., sr.; prereq., Psy. 1-2)	V	MWF	202OLA	Miss Shirley
C.W.90w	Physical Development of the Young Child (2 cred.; jr., sr.; prereq., Zool. 1-2, Psy. 1-2)	V	T and 1 hr. ar.	202OLA	Ar
C.W.120s	Health Care of the Young Child (2 cred.; sr., grad.; prereq., 40 and 90 and permission of in- structor)	V	T and 1 hr. ar.	202OLA	Ar
C.W.130s	The Development of the Young Child (3 cred.; sr., grad.; prereq., 12 cred. in psy. or equivalent, and permission of instructor)	I	MWF	202OLA	Mr. Anderson
C.W.133f-134w‡- 135s	Observational and Experimental Methods in the Study of the Development of the Young Child (6 or 9 cred.; sr., grad.; prereq., 10 cred. in psy. or ed. psy. incl. 4-5 or 7 and permission of instructor)	VI VI-VII	M WF	202OLA	

* See also Courses Ed.T.30-34 and Ed.T.85-90 listed under Theory and Practice of Teaching which are offered by the Institute of Child Welfare.

† Offered fall and spring as Home Economics Education 40. See p. 23.

‡ Two quarters must be completed before credit is received for any quarter.

PROGRAM

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No.	Title	Hour	Day	Bldg.	Instructor
C.W.170f	Parental Education in Child Care and Training	III	MWF	202OLA	Miss McGinnis
	(3 cred.; sr., grad.; prereq., 40, 60, 80, or H.E. 34, 35, and 44, or 15 cred. in ed. or psy., or soc., or prev. med.)				
C.W.173w-174s†	Technique and Practice of Parental Education	Ar	Ar	204OLA	Ar
	(6 cred.; sr., grad.; prereq., 170, and permission of instructor)				
C.W.190w-191s†	Mental Examination of Pre-school Children	III	TTh	202OLA	Ar
	(4 cred.; sr., grad.; prereq., Ed. Psy. 143-144-145 or 134-135-136 or equivalent, and permission of instructor)				
C.W.230f-231w-232s	Seminar in the Development of the Young Child	Ar	Ar	202OLA	Mr. Anderson
C.W.233f-234w-235s	Research in the Development of the Young Child.....	Ar	Ar	Ar	Mr. Anderson
C.W.250w	Nursery School Education.....	VIII	MWF	202OLA	Mrs. Foster

LIBRARY METHODS

Major Adviser: F. K. Walter

Statement of fees.—A tuition fee of \$3 per credit is charged for all courses in Library Methods under the Division of Library Instruction, except Course 1, p. 89. Maximum fee for courses in Library Methods, not including courses in other subjects, for residents \$40, for non-residents, \$45.

No.	Title	Hour	Day	Bldg.	Instructor
Lib.Meth.101f	Bibliography	III	MWF	5Lib	Mr. Russell
	(3 cred.; jr., sr.; no prereq.)				
Lib.Meth.102f	Cataloging	I	MWF	5Lib	Miss Hutchinson
	(3 cred.; jr., sr.; no prereq.)				
Lib.Meth.103w	Cataloging	IV	MWF	5Lib	Miss Hutchinson
	(3 cred.; jr., sr.; prereq., 102)				
Lib.Meth.104f	Classification	II	TThS	5Lib	Miss Hutchinson
	(3 cred.; jr., sr.; no prereq.)				
Lib.Meth.105w	Classification	II	TThS	5Lib	Miss Hutchinson
	(3 cred.; jr., sr.; prereq., 104)				
Lib.Meth.107s	School Library Administration...	VIII	MWF	5Lib	Ar
	(3 cred.; prereq., 9 cred. in lib. meth.)				
Lib.Meth.108s	Public Library Administration..	I	TThS	5Lib	Miss Baldwin, Miss Wood
	(3 cred.; prereq., 9 cred. in lib. meth.)				
Lib.Meth.110f	Library Binding	III	T	5Lib	Mr. Walter
	(1 cred.; jr., sr.; no prereq.)				
Lib.Meth.111f,w,s	Library Practice	Ar	Ar	Ar	Mr. Walter
	(3 cred.; sr.; prereq., 15 cred. in lib. meth.)				

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

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
Lib.Meth.112w	Reference (3 cred.; jr., sr.; no prereq.)	III	MWF	5Lib	Miss Hutchinson
Lib.Meth.113s	Reference Continued (3 cred.; prereq., 112)	III	MWF	5Lib	Miss Hutchinson
Lib.Meth.114s	Selection of Books for Adolescents (3 cred.; no prereq.)	II	MWF	5Lib	Miss McGregor
Lib.Meth.117w	Library Printing (1 cred.; jr., sr.)	III	T	5Lib	Mr. Walter
Lib.Meth.118s	Library Publicity (1 cred.; prereq., 9 cred. in lib. meth.)	III	T	5Lib	Mr. Walter
Lib.Meth.119f	Current Library Problems..... (3 cred.; prereq., 9 cred. in lib. meth. or simultaneously with 101, 102, 104)	II	MWF	5Lib	Mr. Walter
Lib.Meth.120w	Current Library Problems..... (3 cred.; prereq., 119)	II	MWF	5Lib	Mr. Walter
Lib.Meth.121w	Library Work with Children.... (3 cred.; prereq., 9 cred. in lib. meth.)	I	MWF	5Lib	Miss McGregor
Lib.Meth.122s	Library Work with Children.... (3 cred.; prereq., 121)	I	MWF	5Lib	Miss McGregor
Lib.Meth.123f	Selection of Books for Adults... (2 cred.)	III	ThS	5Lib	Miss Hutchinson
Lib.Meth.124w	Selection of Books for Adults... (2 cred.; prereq., 123)	III	ThS	5Lib	Miss Hutchinson
Lib.Meth.125s	Selection of Books for Adults... (2 cred.; prereq., 124)	III	ThS	5Lib	Miss Hutchinson

PHYSICAL EDUCATION FOR MEN

Major Adviser: L. F. Keller

Statement of fees.—A gymnasium fee of \$1.50 is charged for all courses in Physical Education for Men with the exception of the following, for which no fees are charged: Phys. Ed. 7, 8, 9, 22, 23, 28, 31, 32, 33. Maximum gymnasium fee per student for any one quarter, \$1.50. No gymnasium fee is charged for Phys. Ed. 24, 25 and 43-44-45 but the regular methods and practice teaching fee of \$1 per credit is charged as indicated in the footnote.

No.	Title	Hour	Day	Bldg.	Instructor
Phys.Ed.1f,2w,3s	Freshman Physical Education.... (3 cred.; fr., no prereq.)				
	Sec. 1	I	MWF	202S	
	2	I	TThS	202S	
			(winter & spring only)		
	3	II	MWF	202S	
	4	II	TThS	202S	
	5	III	MWF	202S	
	6	III	TThS	202S	
	7	IV	MWF	202S	
	8	VI	MWF	202S	
	9	VII	MWF	202S	
	10	VIII	MWF	202S	
Phys.Ed.Af, Bw,Cs	Elementary Physical Education.. (3 cred.; fr. majoring in physical education only; no prereq.)	II	TThS	A	Mr. Piper

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
Phys.Ed. 7f,8w,9s	Advanced Leaders (3 cred.; soph., jr., sr.; prereq., 1-2-3)	Lect. IV Lab. Ar	T	206A	Mr. Keller
Phys.Ed.10f-11w- 12s	Minor Sports (6 cred.; soph., jr., sr.; prereq., 1-2-3)	Lect. IV Lab. IV	S MWF	204A	Mr. Keller
Phys.Ed.13f,14w, 15s	Corrective Work (3 cred.; by petition only)	Sec. 1 I 2 II 3 III	TThS	264S	
					(winter & spring only)
					TThS
					TThS
Phys.Ed.16f,17w, 18s	Drill Substitution (No cred. By petition only.)	Sec. 1 I 2 II 3 III 4 IV 5 VI 6 VII	MWF	264S	
					MWF
					MWF
					MWF
					MWF
					MWF
Phys.Ed.19f-20w- 21s	Gymnastics (3 cred.; jr., sr.; prereq., 1-2-3)	III	TThS	A	Mr. Piper
Phys.Ed.22f-23w	Kinesiology (4 cred.; jr., sr.; prereq., 1-2-3, Anat. 4)	VI	TTh	204A	Mr. Keller
Phys.Ed.24w, 25s†	Methods in Physical Education.. (4 cred.; jr., sr.; prereq., 22-23)	VII	TTh	204A	Mr. Keller
Phys.Ed.28f	Physical Examination and Nor- mal Diagnosis (2 cred.; sr.; prereq., Physiol. 57-58)	III	MWF	204A	Dr. Cooke
Phys.Ed.29w	Adaptation of Activities in Ortho- pedic Procedures (2 cred.; sr.; prereq., 22-23, 24, 28)	VII	MWF	204A	Dr. Cooke
Phys.Ed.30s	Athletic Training (2 cred.; sr.; prereq., none)	I	MWF	204A	Dr. Cooke
Phys.Ed.31f	History of Physical Education... (2 cred.; sr.; prereq., Ed. 1)	II	TThS	204A	Mr. Keller
Phys.Ed.32w	Principles of Physical Education.. (3 cred.; sr.; prereq., 31, 10-11- 12, 23, 24)	II	TThS	204A	Mr. Keller
Phys.Ed.33s	Organization and Administration of Physical Education..... (3 cred.; sr.; prereq., 32)	II	TThS	204A	Mr. Piper

† A laboratory fee of \$1 per credit hour is charged for this course.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
Phys.Ed.37s	Football Coaching				
	(3 cred.; sr.; no prereq.)				
	Lect.	III	MWF	202S	Mr. Crisler
	Lab.	Ar	Ar		
Phys.Ed.38w	Basket-Ball	VI	MWF	204A	Mr. MacMillan
	(2 cred.; sr.; no prereq.)				
Phys.Ed.39s	Track Athletics	VI	MWF	202S	Mr. Finger
	(2 cred.; sr.; no prereq.)				
Phys.Ed.42f	Baseball	VI	MWF	202S	
	(2 cred.; sr.; no prereq.)				
Phys.Ed.43f-44w-45†	Practice Teaching	Ar	Ar	A	Mr. Keller
	(6 cred.; sr.; prereq., 10-11-12, 22-23, 24, Ed. 55)				

PHYSICAL EDUCATION FOR WOMEN

Major Adviser: J. Anna Norris

Statement of fees.—Freshman Physical Education, \$2.50 a quarter. All other exercise courses, including swimming, for which registration is required, except Course 24, \$2 a quarter for classes meeting twice a week, \$2.50 for classes meeting three times a week. Maximum gymnasium fee per student, \$3.50 a quarter. No fee is charged for Courses 4, 24, 27, 40, 45, 75, 79, 80, 81, 82, 87, 97. No gymnasium fee is charged for Methods and Practice Teaching courses but the regular practice teaching fee of \$1 per credit is charged as indicated in the footnote.

No.	Title	Hour	Day	Bldg.	Instructor
Phys.Ed.1f	Freshman Physical Education ..				
	(1 cred.; required of all students; no prereq.)				
	Lect. Sec. 1	I	W	201WGm	Ar
	2	II	T	201WGm	Ar
	3	II	Th	201WGm	Ar
	4	III	Th	201WGm	Ar
	5	IV	M	201WGm	Ar
	6	IV	T	201WGm	Ar
	7	VI	W	201WGm	Ar
	8	VI	Th	201WGm	Ar
	Lab. Sec. 1	II	MWF	3,151,153WGm	Ar
	2	III	MWF	3,151,153WGm	Ar
	3	III	TThS	3,151,153WGm	Ar
	4	IV	MWF	3,151,153WGm	Ar
	5	VI	MWF	3,151,153WGm	Ar
	6	VIII	MWF	3,151,153WGm	Ar
Phys.Ed.2w,3s†	Freshman Physical Education....				
	(See 1f)				
	Lab. Sec. 1	II	MWF	3,151,153WGm	Ar
	2	III	MWF	3,151,153WGm	Ar
	3	III	TThS	3,151,153WGm	Ar
	4	IV	MWF	3,151,153WGm	Ar
	5	VI	MWF	3,151,153WGm	Ar
	6	VIII	MWF	3,151,153WGm	Ar

† A laboratory fee of \$1 per credit hour is charged for this course.

‡ Students may enter any quarter.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor	
Phys.Ed.4s||	Preliminary Hygiene (For nurses and transfer students; no cred.; no prereq.)	II	T	206OLA	Ar	
Phys.Ed.7f,8w‡	Sophomore Gymnastics (1½ cred.; soph., prereq., 1-2-3)	IV	TS	153WGm	Ar	
Phys.Ed.9s	Sophomore Archery (½ cred.; soph.; prereq., 1-2-3)	Sec. 1	II	MW	151WGm	Ar
		2	IV	TS		Ar
		3	VII	WF		Ar
Phys.Ed.10f-11w‡	Sophomore Orthopedic and Individual Gymnastics (1½ cred.; soph.; prereq., 1-2-3)	Sec. 1	I	WF	3WGm	
		2	IV	TS	3WGm	
		3	VI	TTh	3WGm	
Phys.Ed.12s	Sophomore Orthopedic and Individual Gymnastics (See 10f-11w)	IV	TS	3WGm	Ar	
Phys.Ed.13f-14w-15s*||	Sophomore Natural Dancing (2 cred.; soph.; prereq., 1-2-3)	VI	TTh	151WGm	Miss Timberman	
		II	TTh	151WGm	Miss Timberman	
Phys.Ed.13f,8-14w||	Sophomore Natural Dancing (1½ cred.; soph.; prereq., 1-2-3)	II	TTh	151WGm	Miss Timberman	
		I	WF	151WGm	Miss Dickson	
Phys.Ed.16f,17w‡	Sophomore Games and Folk Dancing (1½ cred.; soph.; prereq., 1-2-3)	I	WF	151WGm	Miss Dickson	
		Sec. 1	I	TTh	151WGm	Ar
		2	IV	TS	151WGm	Ar
		3	VI	TTh	151WGm	Ar
		4	VII	WF	151WGm	Ar
Phys.Ed.18s	Tennis (½ cred.; soph.; prereq., 1-2-3)	5	VIII	TTh	151WGm	Ar
		Sec. 1	I	TTh	151WGm	Ar
		2	IV	TS	151WGm	Ar
Phys.Ed.19f	Sophomore Hockey (½ cred.; soph.; prereq., 1-2-3)	3	VI	TTh	151WGm	Ar
		4	VII	WF	151WGm	Ar
		5	VIII	TTh	151WGm	Ar
Phys.Ed.19f	Sophomore Hockey (½ cred.; soph.; prereq., 1-2-3)	Sec. 1	VII	WF	151WGm	Ar
		2	V	MW	151WGm	Ar
		3	VIII	TTh	151WGm	Ar
Phys.Ed.20w	Sophomore Basket-Ball (½ cred.; soph.; prereq., 1-2-3)	Sec. 1	V	MW	151WGm	Ar
		2	VII	WF	151WGm	Ar
		3	VIII	TTh	151WGm	Ar
Phys.Ed.21s	Sophomore Baseball (½ cred.; soph.; prereq., 1-2-3)	Sec. 1	V	MW	151WGm	Ar
		2	VII	WF	151WGm	Ar
		3	VIII	TTh	151WGm	Ar

* The spring quarter is not open to students who have not had the previous quarter.

‡ Students may enter any quarter.

|| The winter quarter is not open to students who have not had the fall quarter.

|| Transfer students who have not completed the requirement in preliminary hygiene may register for this course or for Preventive Medicine 3.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
Phys.Ed.22f,s- 23w*§	Sophomore Elem. Swimming . . . (1½ cred.; soph.; prereq., 1-2-3)	Sec. 1	II	TTh	51WGm Miss Starr and others
		2	III	MW	51WGm Ar
		3	IV	TS	51WGm Ar
		4	IV	MW	51WGm Ar
		5	VII	TTh	51WGm Ar
		6	VIII(3:30)	TTh	51WGm Ar
		7	VIII(4:00)	TTh	51WGm Ar
Phys.Ed.22f,w,s	Sophomore Elem. Swimming . . . (See 22f,s-23w)		VII	WF	51WGm Ar
Phys.Ed.24f,s‡	Sophomore Horseback Riding . . . (¾ cred.; soph.; prereq., 1-2-3)	Sec. 1	VIII	TTh	Ar Miss Starr
		2	IX	TTh	Ar Miss Starr
Phys.Ed.25f,s- 26w*§	Sophomore Intermed. Swimming (1½ cred.; soph.; prereq., 1-2-3, elementary swimming test)	Sec. 1	III	TTh	51WGm Ar
		2	VIII½(4:00)	MW	51WGm Ar
		3	VI	MW	51WGm Ar
Phys.Ed.27f‡	Sophomore Golf—Advanced (¾ cred.; soph.; prereq., 1-2-3)		VI	TTh	Ar Ar
Phys.Ed.27s‡	Sophomore Golf—Elementary (¾ cred.; soph.; prereq., 1-2-3)	Sec. 1	I	TTh	151WGm Ar
		2	II	TTh	151WGm Ar
		3	II	MW	151WGm Ar
Phys.Ed.28f,s- 29w*§	Sophomore Advanced Swimming (1½ cred.; soph.; prereq., 1-2-3, inter. swim. test)		VIII	MW	51WGm Miss Starr
Phys.Ed.30s	Sophomore Life Saving and Water Sports (¾ cred.; soph.; prereq., 1-2-3, adv. swim. test)		IX	MW	51WGm Miss Starr
Phys.Ed.31w‡	Sophomore Skating (¾ cred.; soph.; prereq., 1-2-3)	Sec. 1	VII	WF	Ar
		2	II	TTh	
Phys.Ed.34f	Elementary Swimming for Major Students (No cred.; no prereq.)		II	WF	51WGm Ar
Phys.Ed.37f- 38w-39s	Freshman Major Sports (1½ cred.; no prereq.)		I(fall) VI½(winter) VII(spring)	TTh MW WF	151WGm Ar 151WGm Ar 151WGm Ar

* The winter quarter is not open to students who have not had the fall 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.

§ No student may register for more than two quarters of swimming without permission. Course 22 is never closed for senior registration.

¶ Students must supply their own golf equipment. The golf course at the University Recreation Field will be used for Phys.Ed.27. Student tickets 10 for \$4.50.

|| Class meetings will be fifty minutes in length, since weather and ice conditions will cause omissions at times.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
Phys.Ed.40s	Freshman Major Hygiene (2 cred.; fr.; no prereq.)	III	MW	201WGm 151WGm	Ar
Phys.Ed.43w-44s	Elementary Games and Folk Dances (1½ cred. winter, ½ cred. spring; soph., jr.; prereq., 6 qtrs.)	V(w) VIII(s)	TF MW	151WGm 151WGm	Ar Ar
Phys.Ed.45s	Theory and Function of Play . . (3 cred.; jr., sr.; prereq., 43-44)	II	MWF	201WGm	Ar
Phys.Ed.48f	Tennis and Posture Training for Freshman Majors (1 cred.; majors in phys. ed.; no prereq.)	VI½(First 6 wks.) VIII(Second 6 wks.)	MWF	Ar	Ar
Phys.Ed.49w	Gymnastics for Freshman Majors (See 48)	VIII	MWF	151WGm	Ar
Phys.Ed.50s	Track, Soccer, and Archery for Freshman Majors (See 48)	VIII	TTh	151WGm	Miss Dickson
Phys.Ed.51f-52w	Gymnastics for Sophomore Ma- jors (1 cred.; soph. majoring or minoring in phys. ed.; prereq., 48-49-50 for majors, 1-2-3 for minors)	II	TTh	153WGm	Ar
Phys.Ed.54f-55w	Gymnastics for Junior Majors . . . (1 cred.; jrs. majoring and srs. minoring in phys. ed.; prereq., 51-52)	I	WF	153WGm	Ar
Phys.Ed.56-57*	Swimming with Technique and Methods (1 cred.; soph., jr.; prereq., 28f)	Not offered			
Phys.Ed. 58w-59s*	Advanced Folk Dancing with Technique and Methods (2 cred.; jr.; prereq., 6 qtrs.)	Lect. I(winter) Lab. II½ I(spring)	M TTh MWF	Ar 151WGm Ar	Miss Baker
Phys.Ed.60f*	Minor Sports with Technique and Methods (1 cred.; jr.; prereq., 6 qtrs.)	VI	MTTh	153WGm	Ar
Phys.Ed.61s*	Minor Sports with Technique and Methods (See 60f)	VI	MTTh	153WGm	Miss Kissock, Ar
Phys.Ed. 63-64-65*	Major Sports with Technique and Methods (3 cred.; soph., jr.; prereq., 37, 38, 50)	Not offered			
Phys.Ed. 66f-67w†-68s	Interpretive Dancing (3 cred.; soph., jr.; prereq., 6 qtrs.)	VII(fall, winter) VII(spring)	MF TF	151WGm	
Phys.Ed. 69f-70w‡-71s*‡	Advanced Interpretive Dancing with Technique and Methods . . (3 cred.; sr.; prereq., 66-67-68)	II IV	W TS	151WGm	Miss Baker

* A laboratory fee of \$1 per credit hour is charged for this course.

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

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

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
Phys.Ed.72f-73w	Gymnastics for Senior Majors .. (1 cred.; sr.; prereq., 54-55)	II	S	151WGm	Miss Baker
Phys.Ed.75	History of Physical Education .. (1 cred.; soph., jr.)	Not offered			
Phys.Ed.79s	Human Anatomy	II, III, IV VI, VII, VIII	MWF Th	201WGm	Miss Mahoney
Phys.Ed.80f	Kinesiology	III	TThS	201WGm	Miss Mahoney
Phys.Ed.82w	Physical Examination	I	TThS	201WGm	Dr. Tolg
Phys.Ed.83s	Technique of Teaching and Principles of Gymnastics				
	(4 cred.; jr.; prereq., 54-55, 80-81)				
	Lab.	II	TThS	153WGm	Miss Baker
		III	T	153WGm	
	Lect.	VII	M	201WGm	
		VI	F	201WGm	Miss Baker
Phys.Ed.85w-86s	Principles of Physical Education (2 cred. winter, 1 cred. spring; prereq., 44, 84, 91)	II(winter) IV(spring)	MF W	201WGm	Miss Baker
Phys.Ed.87f	School Hygiene and Technique of Teaching Personal Hygiene .. (3 cred.; sr.; prereq., Physiol. 57-58)	III	MWF	201WGm	Miss Hume
Phys.Ed.88f-89w-90s	Orthopedic and Remedial Gym. .. (3 cred.; sr.; prereq., 82)				
	Lab.	II(fall)	TTh	3WGm	Ar
	Lect.	I(fall)	F	201WGm	
	Lab.	V(winter)	T	3WGm	
	Lect.	II(winter)	T	201WGm	
		(Practice teaching ar.)			
	Lab.	Ar(spring)			
	Lect.	I(spring)	T	201WGm	Ar
Phys.Ed.91f	Principles Underlying Dancing .. (2 cred.; sr.; prereq., 66-67-68)	VII	MW	151WGm	Miss Baker
Phys.Ed.92f-93w-94s*	Practice Teaching	Ar	Ar	Ar	Miss Baker
	(6 cred.; sr.; prereq., 43-44-45, 56-57, 63-64-65, 69, 91, 83)				
Phys.Ed.97w	Administration of Physical Education	III	MWF	201WGm	Dr. Norris
	(3 cred.; sr.; prereq., 75)				

Activities for Which No Registration Is Required

Elective Sports†	IX	MTWTh	51WGm
(Fall)—field hockey, volley ball; track, baseball, swimming	(Winter)—basket-ball, ice hockey;		(Spring)—
General Swimming	IX	MTWF	151WGm

* A laboratory fee of \$1 per credit hour is charged for this course.

† With permission of the director.

PREVENTIVE MEDICINE AND PUBLIC HEALTH

MEDICAL SCHOOL

Major Adviser: H. S. Diehl

For specialized curricula in School Health Work, Nursing Education, and Public Health Nursing, see College of Education bulletin, Part I.

No.	Title	Hour	Day	Bldg.	Instructor
P.M.&P.H.2f,w	First Aid	VI, VII(fall) I, II(winter)	W S	§	Miss Fisher
	(1 cred.; prereq., 10 cred. zool.) (Limited to 20 women)				
P.M.&P.H. 3f,w,s‡	Personal Hygiene and Elementary Sanitation	IV	TS	Ar	Dr. Lees, Dr. Boynton, Dr. Ellis, Dr. Bullard, Dr. Hinckley
	(2 cred.; fr. with cert. of apt., soph.; no prereq.) (3 sections for men, 40 each) (2 sections for women, 40 each) (Also one section for men)				
P.M.&P.H. 5of,w,s	Public and Personal Health	V	MWF	*	Dr. O'Brien
	(3 cred.; jr., sr.; prereq., Zool. 1-2 and Psy. 1-2 or permission of instructor)				
P.M.&P.H.52f,s	Health Care of the Family				
	(3 cred.; jr., sr.; prereq., Bact. 41, Hum. Physiol. 4) (Lab. sections limited to 20)				
	Lect.	VIII	Th	213HE	Dr. Boynton
	Sec. 1	VI, VII	TTh	§	Miss Fisher
	2	VI, VII	MF	§	Miss Fisher
	3	III, IV(s only)	TS		
P.M.&P.H.52w	Health Care of the Family				
	(See 52f,s. For S. L. & A. and Ed. students only. Lab. sec. limited to 20.)				
	Lect.	VI	M	*	Dr. Boynton and
	Lab.	VI, VII	WF	*	Miss Fisher
P.M.&P.H.53f,s	Elements of Preventive Medicine (3 cred.; jr., sr.; prereq., Psy. 1-2; Bact. 41 or equiv.)	II	MWF	*	Dr. Diehl, Dr. Lees
P.M.&P.H.57s	Health of Infant and Pre-school Child	III	TTh	*	Dr. Boynton
	(2 cred.; jr., sr.; prereq., Zool. 1-2, Psy. 1-2; or 50, or 53)				
PM.&P.H.58w	Maternal and Child Hygiene	III	MW	*	Dr. Boynton
	(2 cred.; jr., sr.; prereq., 50 or 53) (For public health nurses only)				
P.M.&P.H.59w	Social Hygiene	VII	M	Ar	Miss Owings
	(1 cred.; jr., sr.; prereq., 50, 52, or 53, or permission of instructor)				

* Classroom schedule will be posted on bulletin board in Millard Hall, also published in the *Official Daily Bulletin* at the beginning of each quarter.

‡ Students may complete the former requirements in freshman hygiene by registering for this course.

§ Woman's Hall, University Farm.

No.	Title	Hour	Day	Bldg.	Instructor
P.M.&P.H.60w	Tuberculosis and Its Control ... (2 cred.; jr., sr.; prereq., 50 or 52 or 53)	IV	TS	*	Dr. Myers
P.M.&P.H.61w	Mental Hygiene (3 cred.; jr., sr.; prereq., 50 or 52 or 53, Psy. 1-2)	III	TThS	*	Dr. deBerry
P.M.&P.H.62f,s	Principles of Public Health Nursing and Special Fields (5 cred.; jr., sr.; public health nurses)	II I	TTh MWF	*	Miss Butzerin
P.M.&P.H. 64f,w,s	Field Practice in Infant Welfare Nursing (4 cred.; jr., sr.; prereq., 58 and 62)	Ar	Ar	Ar	Miss Butzerin, Miss Peck
P.M.&P.H. 65f,w,s	Field Practice in School Nursing (2 cred.; jr., sr.; prereq., 62)	Ar	Ar	Ar	Miss Butzerin
P.M.&P.H. 66f,w,s	Field Practice in County Nursing (2 cred.; jr., sr.; prereq., 62)	Ar	Ar	Ar	Miss Butzerin
P.M.&P.H. 67f,w,s	Field Practice in a Tuberculosis Sanatorium (2 cred.; jr., sr.; prereq., 60 and 62)	Ar	Ar	Ar	Miss Butzerin
P.M.&P.H. 68f,w,s	Field Practice in Visiting Nursing (5 cred.; jr., sr.; prereq., 62)	Ar	Ar	Ar	Miss Butzerin, Miss Houlton
P.M.&P.H.69s	School Nursing Procedures (3 cred.; jr., sr.; prereq., 53 or permission of instructor)	Ar	Ar	Ar	Miss Butzerin
P.M.&P.H.70†	<i>Methods and Materials in Teaching Home Nursing and Child Care</i> (3 cred.; public health nurses; prereq., 62, 63, or equiv.)				<i>Not offered</i>
P.M.&P.H.73w	Occupational Hygiene and Disease (2 cred.; jr., sr.; prereq., 53)	IV	MW	*	Dr. Myers
P.M.&P.H.74†	<i>Health Instruction Methods and Materials</i>				<i>Not offered</i>
P.M.&P.H.75†	<i>Practice Teaching in Health Subjects</i>				<i>Not offered</i>
P.M.&P.H.80w	Health Supervision of the School Child (3 cred.; jr., sr.; prereq., 50 or 52 or 53)	II	MWF	*	Dr. Diehl
P.M.&P.H.102w	Sanitation (Cred. ar.; jr., sr., grad.; prereq., Bact. 101; Anal. Chem. 1-2 or 7; Org. Chem. 1-2 or 51-52-53; Phys. 24, 34, 44)	Ar	Ar	*	Mr. Whittaker

* Classroom schedule will be posted on bulletin board in Millard Hall, also published in the *Official Daily Bulletin* at the beginning of each quarter.

† A laboratory fee of \$1 per credit hour is charged for this course.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
P.M.&P.H.103s	Public Health Bacteriology (3 cred. or ar.; jr., sr., grad.; prereq., Bact. 101, 116)	VII, VIII or ar	MWF or ar	*	Dr. McDaniel
P.M.&P.H. 106f,w,s	Public Health Administration . . . (Cred. ar.; jr., sr., grad.; prereq., 53 or 101)	Ar	Ar	Ar	Dr. Diehl
P.M.&P.H.107s	Sanitary Surveys (2 cred.; jr., sr., grad.; prereq., 53 or 100)	Ar	Ar	Ar	Dr. Diehl
P.M.&P.H.200	Research	Ar	Ar	Ar	Dr. Diehl and staff
P.M.&P.H.210	Seminar in Preventive Medicine and Public Health	IX	F	Staff Room Health Service	Dr. Diehl and staff

PUBLIC SCHOOL MUSIC

Major Advisers: Carlyle M. Scott, Abe Pepinsky, A. N. Jones

NOTE.—For specialized curriculum in Public School Music, see p. . .

No.	Title	Hour	Day	Bldg.	Instructor
Mu.Ed.1f,s*	Appreciation (3 cred.; all Educ., fr. Mu. Ed.; no prereq.)	II	MWF	4Mu	Mr. Goranson
Mu.Ed.2w	History of Music (3 cred.; fr.; prereq., Mu.Ed.1)	II	MWF	4Mu	Mr. Goranson
Mu.Ed.3s	Ear-Training and Soffeggio (2 cred.; fr.; no prereq.)	II	MTThF	103Mu	Miss Kendall
Mu.Ed.4f-5w†	Harmony (6 cred.; soph.; prereq., Mu. Ed.3)	II	MWF	103Mu	Mr. Scott
Mu.Ed.6s	Accompanying and Sight Reading (2 cred.; soph.; prereq., Mu. A-B-C or Mu.Ed.8-9-10 or equivalent)	II	MTThF	103Mu	Mr. Scott
Mu.Ed.7w‡	Chorus (1 cred.; all Ed.; no prereq.)	VIII	MW	4Mu	Mr. Jones
Mu.Ed.35f- 36w-37s§‡	Applied Instrumental Technique . . . (6 cred.; soph.; no prereq.)	I	MTWF	4Mu	Mr. Pepinsky
Mu.Ed.38s	Form and Analysis (2 cred.; soph.; prereq., Mu.Ed. 4-5)	VI	MW	4Mu	Mr. Pepinsky
Mu.Ed.54f- 55w-56s	Orchestra (3 cred.; jr.; prereq., Mu.Ed. 35-36-37 or equiv.)	VI, VII	F	4Mu	Mr. Pepinsky
Mu.Ed.57f‡	Elementary School Methods (3 cred.; jr., sr.; prereq., Ed. Psy.55)	IV	MWF	4Mu	Mr. Jones

* Public School Music students are required to take this course in the fall quarter.

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

‡ A laboratory fee of \$1 per credit is charged for this course.

§ This course is required of Public School Music students in the freshman, sophomore, and junior years.

¶ Formerly Mu.Ed. 1-2-3, 4-5-6. Fall, string; winter, brasses and percussion; spring, woodwinds. Students majoring in any of these instruments are exempt from class instruction in that instrument.

No.	Title	Hour	Day	Bldg.	Instructor
Mu.Ed.58w*	High School Methods..... (3 cred.; jr., sr.; prereq., Ed.Psy. 55)	IV	MWF	4Mu	Mr. Jones
Mu.Ed.59s	Operetta Conducting (3 cred.; jr., sr.; no prereq.)	IV	MWF	18Mu	Mr. Jones
Mu.Ed.67f	Instrumental Chamber Music... (2 cred.; jr., sr.; prereq., 6 cred. in an instrument)	III	MWF	18Mu	Mr. Pepinsky
Mu.Ed.68w	Vocal Chamber Music (2 cred.; jr., sr.; prereq., 6 cred. in voice)	III	MWF	18Mu	Mr. Pepinsky, Mr. Jones
Mu.Ed.69s	Instrumentation (3 cred.; jr., sr.; prereq., Mu.Ed. 35-36-37 or equiv.)	III	MWF	4Mu	Mr. Pepinsky
Mu.Ed.70s	Vocal Technique (2 cred.; jr.; prereq., 6 cred. in in voice)	VII	MW	3Mu	Mr. Killeen
Mu.Ed.71f	Comparative Methods (2 cred.; sr.; prereq., Mu.Ed. 57)	III	TTh	4Mu	Mr. Jones
Mu.Ed.72f	Survey of School Materials (In- strumental) (1 cred.; sr.; prereq., Mu.Ed. 69 and 57 or 58)	VI	MW	4Mu	Mr. Pepinsky
Mu.Ed.73f	Survey of School Materials (Vo- cal) (See Mu.Ed. 72)	VII	MW	4Mu	Mr. Jones
Mu.Ed.74f	Orchestra Conducting (2 cred.; sr.; no prereq.)	VII, VIII	TTh	4Mu	Mr. Pepinsky
Mu.Ed.75f	Choral Conducting (2 cred.; sr.; prereq., Mu.Ed. 57-58)	III	MWFS	4Mu	Mr. Jones
Mu.Ed.76f*	Supervision (3 cred.; sr.; prereq., Mu.Ed. 57-58)	II	MWF	4Mu	Mr. Jones
Mu.Ed.77f,w,s*	Practice Teaching (5 or 9 cred.; sr.; prereq., Mu. Ed. 71, 74, 76)	Ar	Ar	Ar	Mr. Pepinsky, Mr. Jones

THEORY AND PRACTICE OF TEACHING

Major Advisers: C. W. Boardman, Leo J. Brueckner, Dora V. Smith

Statement of fees.—For all courses in practice teaching and special methods and practice teaching, a laboratory fee of \$1 per credit is charged.

No.	Title	Hour	Day	Bldg.	Instructor
Ed.T.11f-12w- 13s*	Practice Teaching in Schools of Nursing with Special Methods (9 cred.; sr., grad.; prereq., per- mission of instructor)	Ar	Ar	Ar	Mrs. Jensen
EdT.14*	Teaching Junior High School Mathematics <i>Not offered</i>				

* A laboratory fee of \$1 per credit hour is charged for this course.

PROGRAM

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No.	Title	Hour	Day	Bldg.	Instructor
Ed.T.15f	Technique of High School In- struction (3 cred.; jr., sr.; prereq., Ed. Psy. 55 and Ed.Ad. 65)	III	MWF	210OL	Mr. Umstatted
Ed.T.15w	Technique of High School In- struction (See Ed.T.15f)	III	MWF	210OL	Mr. Umstatted
	Sec. 1	IX-X	M	OLaAud	Miss Smith
	§2	I	S		
Ed.T.15s	Technique of High School In- struction (See Ed.T.15f)	III	MWF	210OL	Mr. Umstatted
	Sec. 1	II	MWF	OLaAud	Mr. Benjamin
	2	Ar	Ar	Ar	Mr. Boardman
Ed.T.16f,w,s*	Practice Teaching (5 cred.; sr.; prereq., Ed.T. 15 and Special Methods Course)	Ar	Ar	Ar	Mr. Boardman
Ed.T.17s*	Practice Teaching of Subnormal Children (5 cred.; jr., sr.)	Ar	Ar	Ar	Mr. Boardman
Ed.T.18*	Teachers' Course in Zoology..... (3 cred.; sr., grad.; prereq., Zool. 1-2, Ed.T. 15)	Not offered			
Ed.T.19*	Teachers' Course in Botany..... (5 cred.; sr.; prereq., 18 cred. in bot. and Ed.T. 15)	Not offered			
Ed.T.20*	Teachers' Course in Chemistry... (3 cred.; sr.; prereq., gen. chem. and qual. chem. and Ed.T. 15)	Not offered			
Ed.T.21*	Teachers' Course in English Com- position.....	Not offered			
Ed.T.22*	Teachers' Course in English Lit- erature	Not offered			
Ed.T.23f-24w- 25s*†	Teachers' Course and Practice Teaching in Geography..... (9 cred.; sr.; prereq., 15 cred. in geog. and Ed.T. 15)	VIII	MW	111Ed	
Ed.T.30f	Principles of Kindergarten and Nursery School Education.... (3 cred.; jr., sr.; prereq., C.W. 80)	VIII	MWF	202OLa	Mrs. Foster
Ed.T.31w	Permanent Play Materials..... (2 cred.; jr., sr.; prereq., Psy. 1-2)	VIII	TTh	202OLa	Ar
Ed.T.32s	Plastic Materials (3 cred.; jr., sr.; prereq., C.W. 80)	VIII	MWF	202OLa	Miss Headley
Ed.T.33s	Rhythms, Games, and Music.... (2 cred.; jr., sr.; prereq., Ed.T. 30)	IX	MW	202OLa	Ar
Ed.T.34w	Story Telling for Young Children (2 cred.; jr., sr.; prereq., Ed.T. 30)	VI	TTh	202OLa	Miss Headley

* A laboratory fee of \$1 per credit hour is charged for this course.

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

§ For Twin City teachers.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
Ed.T.355*	Teachers' Course in Norwegian.. (3 cred.; sr.; prereq., Scand. 4-5 or 10-11-12 and Ed.T. 15)	Ar	Ar	206F	
Ed.T.37*	Social Science for Senior High Schools	Not offered			
Ed.T.38*	Methods and Problems in Second- ary School Science	Not offered			
Ed.T.39*	Social Science for Junior High Schools	Not offered			
Ed.T.41w*	Teachers' Course in Swedish.... (3 cred.; sr.; prereq., Scand. 10-11-12 or 4-5 and Ed. 15)	VII	MWF	206F	Mr. Stomberg
Ed.T.42	Fundamental Educational Theories Relating to Instruction in the Elementary School	Not offered			
Ed.T.44f	Children's Literature	IX, X	M	OLaAud	Miss Smith
Ed.T.45*	Teaching of Geography and His- tory in the Elementary School	Not offered			
Ed.T.46w*	Practice Teaching with Special Methods	Ar	Ar	Ar	Mr. Peik
Ed.T.47	Field Problems in High School Training Departments	Not offered			
Ed.T.49aT*	The Teaching of Composition in the Junior High School.....	Not offered			
Ed.T.50aTs*	The Teaching of Literature in the Junior High School.....	I, II	S	114Ed	Miss Smith
Ed.T.52f-53w- 54s*†	Methods and Practice Teaching in Junior and Senior High School English	VIII	TTh	210OL	Miss Smith
Ed.T.52af*	The Teaching of Composition in Junior and Senior High Schools	VIII	TTh	210OL	Miss Smith
Ed.T.52as*	The Teaching of Composition in Junior and Senior High Schools (See Ed.T. 52af)	VIII	TTh	210OL	Miss Smith
Ed.T.53aw*	The Teaching of Literature in Junior and Senior High Schools	VIII	TTh	210OL	Miss Smith
Ed.T.56f-57w- 58s*†	Teachers' Course and Practice Teaching in Secondary School Mathematics	VIII	TTh	205aEd	Mr. Stokes

* A laboratory fee of \$1 per credit hour is charged for this course.

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

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
Ed.T.56af- 57aw*†	The Teaching of Secondary School Mathematics	VIII	TTh	205aEd	Mr. Stokes
	(4 cred.; sr.; prereq., Ed.T. 15 and consent of instructor)				
Ed.T.62f-63w- 64s*†	Teachers' Methods Course and Practice Teaching in Secondary School Science	IX	MW	6aOLA	Mr. Lund
	(9 cred.; sr., jr.; prereq., Ed.T. 15 and consent of instructor)				
Ed.T.62af- 63aw*†	The Teaching of Secondary School Science	IX	MW	6aOLA	Mr. Lund
	(4 cred.; sr.; prereq., Ed.T. 15 and consent of instructor)				
Ed.T.66f-67w- 68s*†	Methods and Practice Teaching in Social Science for Senior High School	VIII	MW	210OL	Mr. Wesley
	(9 cred.; jr., sr.; prereq., 30 cred. in history or social science. Consult instructor)				
Ed.T.66af- 67aw*†	The Teaching of Social Science in Senior High School	VIII	MW	210OL	Mr. Wesley
	(4 cred.; jr., sr.; prereq., Ed.T. 15 and consent of instructor)				
Ed.T.70f-71w- 72s*†	Teachers' Course and Practice Teaching in German	IX	TTh	114Ed	Miss Will
	(9 cred.; sr.; prereq., German Comp. 50-51-52, German Conversation 53-54-55 and Ed.T. 15)				
Ed.T.73f-74w- 75s*†	Teachers' Course and Practice Teaching in Latin	IX	MW	112Ed	Miss Marlowe
	(9 cred.; jr., sr.; prereq., any two of Latin Courses 51-53 or equiv., 73, and Ed.T. 15)				
Ed.T.76f-77w- 78s*†	Teachers' Course and Practice Teaching in the Romance Languages	IX	TTh	111Ed	Mrs. Sundeen
	(9 cred.; jr., sr.; prereq., French 49, 50-51-52, 53-54-55 (or 20), 63 and Ed.T. 15)				
Ed.T.80f-81w- 82s*†	Teachers' Course and Practice Teaching in Commercial Subjects	II	MWF	Ar	Miss Donaldson
	(9 cred.; jr., sr.; prereq., Ed.T. 15 and consent of instructor)				

* A laboratory fee of \$1 per credit hour is charged for this course.
 † The entire course must be completed before credit is received for any quarter.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
Ed.T.83w*	Teachers' Course in Journalism.. (3 cred.; jr., sr.; prereq., Jour. 41 or 51, Ed.T. 15)	VII	MWF	206P	
Ed.T.85f-86w- 87s*†	Methods and Observation..... (3 cred.; jr., sr.; prereq., Psy. 1-2, 4-5)	IV	T	202OLA	Miss Headley
Ed.T.88f-89w- 90s*†	Practice Teaching in Kindergar- ten or Nursery School..... (9 cred.; sr.; prereq., Ed.T. 30-34 and Ed.T. 85-87)	Ar	Ar Ar		Mrs. Foster

COURSES OPEN TO GRADUATE STUDENTS

Ed.T.110s	Educational Diagnosis in Second- ary Education	IX, X	F	205bEd	Mr. Carroll
	(2 cred.; sr., grad.; prereq., Ed. Psy. 55)				
Ed.T.118	<i>Problems in Junior High School English</i>	<i>Not offered</i>			
Ed.T.122s	Literature for Adolescents..... (2 cred.; jr., sr., grad.; prereq., Ed.T. 15 or junior-senior high school teaching experience)	IX, X	W	UHS Lib	Miss Smith
Ed.T.143f-144w†	Teaching of Reading in the Ele- mentary School	I, II	S	112Ed	Mr. Carroll
	(4 cred.; jr., sr., grad.; prereq., 9 hrs. in ed. incl. Ed. Psy. 55)				
Ed.T.150*	<i>Teaching and Administration in Teachers' Colleges</i>	<i>Not offered</i>			
	(4 cred.; jr., sr., grad.; prereq., 15 cred. in ed.)				
Ed.T.181f*	Technique of Elementary Instruc- tion	II, III II, III	Th T	100OLA Dem. School	Mr. Peik Mr. Cooper
Ed.T.181-182*	<i>Technique of Elementary Instruc- tion</i>	<i>Not offered</i>			
	(2 cred.; jr., sr., grad.; prereq., 9 hrs. in ed. incl. Ed. Psy. 55)				
Ed.T.188s*	Advanced Course in Methods of Teaching Modern Languages.. (2 cred.; sr., grad.; prereq., Ed.T. 76-77-78 or experience in teaching the modern lan- guages)	Ar	Ar Ar		Mrs. Sundeen
Ed.T.193f	Foundations of Secondary School Methods	IX, X 1 hr. ar.	T	202Ed	Mr. Johnson
	(3 cred.; sr., grad.; prereq., Ed. T. 15)				
Ed.T.194f*	Advanced Course in Methods of Teaching English	III-IV	S	216OL	Miss Smith
	(2 cred.; sr., grad.; prereq., Ed.T. 52-53-54 or equivalent)				

* A laboratory fee of \$1 per credit hour is charged for this course.

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

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
Ed.T.196w-197s†	Special Problems in Techniques of Secondary School Instruction (2 cred. a quarter; sr., grad.; prereq., Ed.T. 15)	III-IV	S	216OL	Miss Smith, Mr. Stokes, Mr. Wesley
Ed.T.201f-202w-203s*	Advanced Course in Methods of Teaching History and Social Studies (2 cred. a quarter; grad. and teachers; prereq., consent of instructor)	Ar	Ar	Ar	Mr. Krey, Mr. Wesley
Ed.T.222f-223w-224s	Seminar in the Technique of High School Instruction..... (No cred.; grad.; prereq., Ed.T. 15 and 113)	IX-X	Th	216OL	Mr. Benjamin, Mr. Johnson, Miss Smith, Mr. Stokes, Mr. Wesley

ANTHROPOLOGY

Major Advisers: A. J. Jenks, W. D. Wallis

No.	Title	Hour	Day	Bldg.	Instructor
41f	Intro. to Anthropology (5 cred.; soph., jr., sr.; prereq., 10 cred. sci. or soc. sci.)	VII	MTWThF	OPhAud	Mr. Wallis
41w	Intro. to Anthropology (See 41f)	VII	MTWThF	OPhAud	Mr. Jenks
41s	Intro. to Anthropology (See 41f)	I	MWThFS	OPhAud	Mr. Wallis
53s	Cultural Anthropology: Technology (3 cred.; jr., sr.; prereq., 41)	II	TThS	9F	Mr. Wallis
54w	Cultural Anthropology: Social Organization (3 cred.; jr., sr.; prereq., 41)	VIII	MWF	9F	Mr. Wallis
56	Primitive Science (3 cred.; jr., sr.; prereq., 41)	<i>Not offered</i>			
62w	Ethnology (3 cred.; jr., sr.; prereq., 41)	IV	MWF	6F	Mr. Wallis
80s	The American Indian (3 cred.; jr., sr.; prereq., 41)	III	TThS	25F	Mr. Wallis
106w	Prehistoric Man (3 cred.; jr., sr.; prereq., 41)	III	MWF	12F	Mr. Jenks
107s	American Archeology (3 cred.; jr., sr.; prereq., 41)	III	MWF	12F	Mr. Jenks
108	Philippine Peoples (3 cred.; jr., sr.; prereq., 41)	<i>Not offered</i>			
110f	Physical Anthropology (3 cred.; jr., sr.; prereq., 41)	III	TThS	12F	Mr. Wallis
112s	The American Negro (3 cred.; jr., sr.; prereq., 41)	II	MWF	9F	Mr. Jenks

* A laboratory fee of \$1 per credit hour is charged for this course.

† Opportunity is given in this course to work upon special research problems in the field of the student's individual choice under personal guidance of instructors in the given field. Individual conferences will replace regular class meetings throughout the course.

No.	Title	Hour	Day	Bldg.	Instructor
113s	Peoples of Europe	IV	MWF	6F	Mr. Jenks
	(3 cred.; jr., sr.; prereq., 41)				
114w	The American People	VII	MWF	25F	Mr. Jenks
	(3 cred.; jr., sr.; prereq., 41)				
121w	Advanced Phys. Anthropology ..	Ar	Ar	12F	Mr. Wallis
	(3 cred.; jr., sr.; prereq., 110)				
122f-123w-124s	Problems in Anthropology	Ar	Ar	12F	Mr. Jenks, Mr. Wallis
	(Cred. ar.; jr., sr., grad.; prereq., three courses. For honors course students, permission of instructor)				
150*	Field Trip in Archeology	Ar	Ar	Ar	Mr. Jenks
	(1 to 8 cred.; sen. coll. stud. only; prereq., one sen. coll. course)				
161f	Primitive Religion	I	MWF	12F	Mr. Wallis
	(3 cred.; jr., sr.; prereq., 41)				
204f-205w-206s	Seminar in Anthropology	Ar	Ar	12F	Mr. Jenks, Mr. Wallis
	(3 cred. per qtr.; grad.)				

ARCHITECTURE

COLLEGE OF ENGINEERING AND ARCHITECTURE

Major Adviser: F. M. Mann

Junior College Courses

No.	Title	Hour	Day	Bldg.	Instructor
21f,w-22w,s†-23s	Freehand Drawing				
	(6 cred.; all; no prereq.)				
24f,w-25f,w,s- 26f,w,s	Freehand Drawing				
	(6 cred.; soph., jr., sr.; prereq., 23)				
31f-32w†-33s	Elements of Architecture				
	(15 cred.; soph., jr.; prereq., soph. standing and regist. in Draw. 61, 62, or 63)				
31w-32s†-33su	Elements of Architecture				
	(See 31f-32w-33s)				
74f,w-75f,w,s- 76f,w,s	Freehand Drawing				
	(9 cred.; soph., jr., sr.; prereq., 23)				
81f	Stage Design				
	(2 cred.; soph., jr., sr.; no prereq.)				
84-85-86f,w,s	Modeling				
	(6 cred.; soph., jr., sr.; prereq., 23 or equiv.)				
90-91-92f,w,s	Illustration				
	(3 cred.; soph., jr., sr.; prereq., 23 or equiv.)				
93-94-95f,w,s	Hand Print Process				
	(3 cred.; soph., jr., sr.; prereq., 23 or equiv.)				

NOTE.—Consult the bulletin of the College of Engineering and Architecture for program of hours, days, buildings, and instructors.

* This course may be taken for credit only once.

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

PROGRAM

Senior College Courses

No.	Title	Hour	Day	Bldg.	Instructor
14f-15w-16s	History of Architecture (6 cred.; jr., sr.; prereq., 22, 32)				
17f-18w	History of Architecture (4 cred.; jr., sr.; prereq., 15)				
19s	History of Architecture (2 cred.; jr., sr.; prereq., 16)				
27-28-29f,w,s	Freehand Drawing (6 cred.; jr., sr.; prereq., 76 or 26)				
34-35-36f,w,s	Architectural Design (12 cred.; jr., sr.; prereq., 33, 23, 62)				
37-38-39f,w,s	Architectural Design (21 cred.; sr.; prereq., 36)				
51f-52w-53s	Building Construction (6 cred.; jr., sr.; prereq., 32)				
70f,w,s	Pictorial Composition (1 cred.; jr., sr.; prereq., 26 or equiv.)				
87-88-89f,w,s	Advanced Modeling (6 cred.; jr., sr.; prereq., 86)				
121-122-123f,w,s	Freehand Drawing (6 cred.; jr., sr.; prereq., 29)				
134-135-136f,w,s	Interior Design (Interior Architecture) (21 cred.; sr.; prereq., 36)				
163s	History of Sculpture and Painting (2 cred.; jr., sr.; prereq., 16)				
182f-183w-184s	Furniture and Decoration (9 cred.; sr.; prereq., 16, 23)				

Note.—Consult the bulletin of the College of Engineering and Architecture for program of hours, days, buildings, and instructors, and for additional courses.

ASTRONOMY

No.	Title	Hour	Day	Bldg.	Instructor
11f,s	Descriptive Astronomy (5 cred.; fr., soph., jr., sr.; no prereq.)	IV	MTWFS	150Ph(f) 133(s)	Mr. Luyten
51w	Astronomy (3 cred.; jr., sr.; prereq., Math. 6 and 50 or equiv.)	IV	MWF	133Ph	
52w	Astrophysics (4 cred.; prereq., 51 or 11 and Math. 6)	II	MTWF	Ph	
53s	Stellar Astronomy (4 cred.; prereq., 51 or 11 and Math. 6)	II	MTWF	Ph	
140f	Least Squares (4 cred.; prereq., 51 or 11 and Math. 6)	II	MTWF	Ph	

COLLEGE OF EDUCATION

BACTERIOLOGY

MEDICAL SCHOOL

Major Advisers: W. P. Larson, A. T. Henrici, R. G. Green, H. O. Halvorson

No.	Title	Hour	Day	Bldg.	Instructor
41f	General Bacteriology				
	(5 cred.; soph., jr., sr.; prereq., chem. 10 cred. and zool. 8 cred.)				
	Sec. 1	VII, VIII, IX	MWF	MH	Ar
	2	VI, VII, VIII, IX	TTh	MH	Ar
41w	General Bacteriology				
	(Sec 41f)				
	Sec. 1	VII, VIII, IX	MWF	MH	Ar
	2	I, II, III	MWF	MH	Ar
41s	General Bacteriology				
	(Sec 41f)				
		VII, VIII, IX	MWF	MH	Ar
101f	Special Bacteriology for Medical Students	I, II	TThS	MH	Dr. Larson
	(4 cred.; jr., sr.; prereq., 41)	Substitute hrs.	Ar		
103w	Soil Microbiology	I, II, III	TS	MH	Dr. Skinner
	(5 cred.; jr., sr.; prereq., 41, and 15 cred. chem.)	I, II	Th		
114s	Molds, Yeasts, and Actinomycetes (4 cred.; jr., sr.; prereq., 41)	II, III	MWF	MH	Dr. Henrici
116w	Immunity	VII, VIII	TTh	MH	Dr. Larson
	(3 cred.; jr., sr.; prereq., 101 or 103)				
117s	Pathogenic Protozoa	VII, VIII	TTh	MH	Dr. Larson
	(3 cred.; jr., sr.; prereq., 101 or 103)				
119w	Bacteriological Chemistry	VI	TTh	MH	Dr. Green
	(2 cred.; jr., sr.; prereq., 101 or 103; Hum. Physiol. 100-101, or Agr. Biochem. 111-112)				
120s	Bacterial and Virus Diseases Common to Man and Animals (3 cred.; jr., sr., grad.; prereq., 101)	VI, VII	T	MH	Dr. Green
		VI	Th		
121w	Industrial Bacteriology	I, II	TTh	MH	Dr. Halvorson
	(3 cred.; jr., sr., grad.; prereq., 41)				
122s	Industrial Bacteriology continued (3 cred.; jr., sr., grad.; prereq., 41)	I, II	TTh	MH	Dr. Halvorson
150f-151w or 150w-151s	Advanced Bacteriology	VII, VIII	TTh	MH	Ar
	(Cred. ar.; jr., sr., grad.; prereq., see instructor)				

BOTANY

For a teacher's certificate.—Major recommendation, 31 credits in botany including Courses 1-2, 7, 21, 22, and either 12 and 13 or 23 and 63; Course 51 advised.

Minor recommendation in botany 20 credits including Courses 1-2, 7, and either 21 or 22; Course 51 advised.

For specialized curriculum in natural science see Part I of Education bulletin.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
1f*	General Botany				
	(4 cred.; all; no prereq.)				
	Lect. Sec. 1	III	TThS	BotAud	Mr. Huff
	2	{ VI	T		
		{ VI, VII	Th		
	Quiz Sec. 1	I	M		
	2	II	T		
	3	III	M		
	4	III	W		
	5	IV	T		
	6	V	T		
	7	VI	M		
	8	VII	M		
1w,s*	General Botany				
	(See 1f)				
	Lect.	III	TThS	BotAud	Mr. Huff
	Quiz Sec. 1	I	T		
	2	II	T		
	3	III	W		
2w,s	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	WF	1,4,5,8Bot	Mr. Butters
	(3 cred.; all; prereq., 1)				
7f	Taxonomy of Flowering Plants ..	I, II	MWF	1,4,5,8Bot	Mr. Rosendahl
	(3 cred.; all; prereq., 1)				
7s	Taxonomy of Flowering Plants ..				
	(See 7f)				
	Sec. 1	I, II	MWF	1,4,5,8Bot	Mr. Rosendahl
	2	VI, VII, VIII	TTh		
12f,w,s	Morphology of Algae	I, II	TThS	1,4,5,8Bot	Miss Tilden
	(3 cred.; all; prereq., 1)				
13	Morphology of Fungi	Not offered			
	(3 cred.; all; prereq., 1)				
21f	Elementary Ecology	III, IV	MWF	1,4,5,8Bot	Mr. Oosting
	(3 cred.; all; prereq., 1)				
21w	Elementary Ecology				
	(See 21f)				
	Lect.	VI	TTh	BotAud	Mr. Oosting
	Lab.	I, II	ThS	1,4,5,8Bot	
21s	Elementary Ecology	VI, VII, VIII	TTh	1,4,5,8Bot	Mr. Oosting
	(See 21f)				
22f,w,s	Elem. Plant Physiology				
	(3 cred.; all; prereq., 1)				
	Lect.	VI	TTh	1,4,5,8Bot	Mr. Burr
	Lab.	VII, VIII	TTh		
23w	Bryophytes and Pteridophytes ..	VI, VII	MWF	1,4,5,8Bot	Mr. Huff
	(3 cred.; all; prereq., 2 or 12)				
51f	Histological Methods	I, II	MTWThF	01Bot	Miss Wilson
	(5 cred.; jr., sr.; prereq., 15 cred.)				
63s	Gymnosperms and Angiosperms	III, IV	MWF	215Bot	Mr. Butters
	(3 cred.; jr., sr.; prereq., 15 cred. incl. 7 and 2 or 23)				

* 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
101f	Biometric Principles (3 cred.; jr., sr., grad.; prereq., 18 cred. biol. sci. or permission of instructor)	Lect. III Lab. Ar	TThS Ar	214Bot 202Bot	Mr. Treloar
101S	Biometric Principles (See 101f)	Lect. I Lab. Ar	TThS Ar	BotAud Ar	Mr. Treloar
108w	Pteridophytes (5 cred.; sr.; grad.; prereq. 18 cred. incl. 7 and 23)	Ar	Ar	Ar	Mr. Butters
110	<i>Gymnosperms</i> (5 cred.; sr., grad.; prereq., 18 cred. incl. 7 and 63)	<i>Not offered</i>			
113f-114w-115S*	Adv. Taxonomy of Flowering Plants (9 cred.; jr., sr., grad.; prereq., 15 cred. incl. 7)	VI, VII, VIII	MF	215Bot	Mr. Rosendahl
118w	Cytology (5 cred.; jr., sr., grad.; prereq., 18 cred.)	I, II	MTWThF	215Bot	Mr. Rosendahl
124S-125su-126f*	Morphology and Taxonomy of Algae: Algal Types (3 to 5 cred.; jr., sr., grad.; pre- req., 15 cred. incl. 12, or con- sent of instructor)	Lect. III Lab. III, IV	Th TS	110Bot	Miss Tilden
127S	Anatomy of Vascular Plants (5 cred.; jr., sr., grad.; prereq., 18 cred. incl. 5)	Lect. I Lab. Ar	MWF Ar	215Bot	Mr. Butters
131f	Field Ecology (5 cred.; jr., sr., grad.; prereq., 15 cred. incl. 21)	VI, VII, VIII	MWF	214Bot	Mr. Oosting
132	<i>Ecological Anatomy</i> (5 cred.; jr., sr., grad.; prereq., 15 cred. incl. 21)	<i>Not offered</i>			
133	<i>Plant Geography of North Amer- ica</i> (5 cred.; jr., sr., grad.; prereq., 15 cred. incl. 21)	<i>Not offered</i>			
134	<i>Research Methods in Ecology</i> .. (5 cred.; jr., sr., grad.; prereq., 15 cred. incl. 21)	<i>Not offered</i>			
140w	General Plant Physiology (3 cred.; jr., sr., grad.; prereq., 22, elem. inorg. chem.)	II	MWF	8Bot	Mr. Burr
141f	Physico-chemical Principles in Plant Physiology (5 cred.; jr., sr.; prereq., qual., quant., org., and phys. chem.)	Lect. 7:55 Lab. II, III, IV	MWF MF	101Bot	Mr. Burr

* Any quarter may be taken separately.

PROGRAM

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No.	Title	Hour	Day	Bldg.	Instructor
142w	Photosynthesis (5 cred.; sr., grad.; prereq., as for 141)	Lect. 7:55 Lab. II, III, IV	MWF MF	101Bot	Mr. Burr
143s	Plant Metabolism (5 cred.; sr., grad.; prereq., as for 141)	Lect. 7:55 Lab. II, III, IV	MWF MF	101Bot	Mr. Burr
145w	Advanced Biometry (3 cred.; sr., grad.; prereq., 101)	Lect. III Lab. Ar	TThS Ar	214Bot 202Bot	Mr. Treloar
146s	Advanced Biometry (3 cred.; sr., grad.; prereq., 145)	Lect. III Lab. Ar	TThS Ar	214Bot 202Bot	Mr. Treloar
149s, 150su, 151f*	Advanced Phycology (3 to 10 cred. per qtr.; jr., sr., grad.; prereq., 12, 124, 125, or 126)	VI, VII, VIII	TTh	110Bot	Miss Tilden
153f	Biometric Methods (3 cred.; sr., grad.; prereq., 101 or consent of instr.)	Lect. I Lab. Ar	TThS Ar	214Bot 202Bot	Mr. Treloar
153w	Biometric Methods (See 153f)	Lect. I Lab. Ar	MWF Ar	214Bot 202Bot	Mr. Treloar

For graduate courses given during 1931-32, consult the department.

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 Adviser: S. E. Lund

For a teacher's certificate.—Major recommendation: Courses Inorganic Chemistry 6-7-8 or 9-10; 12-13; Analytical Chemistry 1-2; Organic Chemistry 51-52.

Minor recommendation: Courses Inorganic Chemistry 6-7-8, or 9-10; 12-13; Analytical Chemistry 1-2, or 7, and 6 additional credits in chemistry.

For specialized curriculum in natural science see Part I of Education bulletin.

* Any quarter may be taken separately.

COLLEGE OF EDUCATION

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. Glockler
	Lab. Sec. 1	VII, VIII, IX	T	290C	Mr. Glockler and assts.	
	Quiz Sec. 1	VI	T	ArC	Mr. Glockler and assts.	
	Lab. Sec. 2	VII, VIII, IX	Th	290C	Mr. Glockler and assts.	
	Quiz Sec. 2	VI	Th	ArC	Mr. Glockler and assts.	
4f-5w†	Gen. Inorg. Chemistry (pre-med. and pre-dent.) (8 cred.; pre-dent., pre-med. only; prereq., entrance cred. in chem.)	Lect.	VI	MWF	100C	Mr. Stephens
	Lab. Sec. 1	VII, VIII, IX	T	210C	Mr. Stephens and assts.	
	Quiz Sec. 1	VI	T	ArC		
	Lab. Sec. 2	VII, VIII, IX	Th	210C	Mr. Stephens and assts.	
	Quiz Sec. 2	VI	Th	ArC		
6f-7w†-8s	Gen. Inorg. Chemistry (15 cred.; those entering without chem., fr., soph., jr., sr.; no prereq.)	Lect.	II	MWF	225C	Miss Cohen
	Lab.	I, II, III	ThS	210C	Miss Cohen and assts.	
9f-10w†	Gen. Inorg. Chemistry (10 cred.; fr., soph., jr., sr.; prereq., entr. cred. in chem.)	Lect.	II	MWF	100C	Mr. Sneed
	Lab.	I, II, III	ThS	290C	Mr. Sneed and assts.	
9w-10s†*	Gen. Inorg. Chemistry (See 9f-10w)	Lect. Sec. 1	III	MWF	225C	Miss Cohen,
	Lab. 2	III	MWF	100C	Mr. Maynard	
		VI, VII	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, VIII, IX	F	210C	Miss Cohen and assts.	

* Students who have failed in 1f or 6f may register in section 2 for this course without further prerequisite.

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

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
115	Qual. Chemical Anal. (pre-med. and pre-dent.) (See 11f)	Lect. VI Lab. Sec. 1 VI, VII, VIII, IX Lab. Sec. 2 VI, VII, VIII, IX	MWF T	100C 210C 210C	Mr. Stephens Mr. Stephens and assts. Mr. Stephens and assts.
12f-13w†	Qual. Chemical Analysis (10 cred.; all; prereq., 8 or 10)	Fall Lect. I Lab. I, II, III Winter Lect. VI Lab. VII, VIII, IX	TThS MW WF MWF	325C 290C 410C 290C	Mr. Maynard
12st†	Qual. Chemical Anal. (See 12f-13w†)	Lect. II Lab. I, II, III	MWF ThS	100C 290C	Mr. Sneed Mr. Sneed and assts.
13ft	Qual. Chemical Anal. (See 12f-13w†)	Lect. VI Lab. VII, VIII, IX VI, VII, VIII	WF M M	490C 290C	Mr. Heisig
1018	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)	I	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. Glockler

ANALYTICAL CHEMISTRY

1w-2s*	Quant. Analysis (10 cred.; soph., jr., sr.; prereq., Inorg. Chem. 12-13)	Lect. VI Quiz VI Rec. VI Lab. VII, VIII, IX	M W F MWF	325C 490C 315C 310C	Mr. Geiger
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* Course 2s may precede 1w, if desired.

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

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
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, VIII, IX	MW	310C	
		VI, VII	F	310C	
	Rec. (limit 35) Sec. 2	VI	F	315C	
	Lab.	VII, VIII, IX	MF	310C	
		VI, VII	W	310C	
	Lect. Sec. 3	VII	Th	325C	Mr. Sarver
	Rec.	VI	Th	325C	
	Lab.	VII, VIII, IX	T	310C	
		VIII, IX	Th	310C	
		I, II, III	S	310C	
		or			
		II, III, IV	S	310C	
75	Quantitative Analysis				Mr. Sarver
123f-124w-125s	Advanced Analytical Chemistry (3 cred. per qtr.; prereq., 1, 2, or 7)				
	Lect.	VI	T	315C	Mr. Sarver
	Lab.	VII, VIII, 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.	Ar	Ar	ArC	Mr. Kolthoff
	Lab.	Ar	Ar	ArC	Mr. Kolthoff
132w,s	Electrometric Titrations (3 cred.; prereq., Anal. Chem. 1 and 2 and Phys. Chem. 101, 102, 103)				
	Lect.	Ar	Ar	ArC	Mr. Kolthoff
	Lab.	Ar	Ar	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	VI-IX	T	390C
		3	VI-IX	W	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	W	390C*	
		2	VI-IX	Th	390C*
		3	I-IV	S	390C

* Limited to 40 students.

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

No.	Title	Hour	Day	Bldg.	Instructor
15†	Elem. Organic Chemistry (See 1f-2w)	For hours, see	1f-2w.		Mr. Lauer
2†	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. (f,w)	III	S	111C	Mr. Lauer
	(s)	IV T and	III S	111C	
	Lab. (f) Sec. 1	II, III, IV	T	390C	
		I, II, III	Th		
	2	VI, VII, VIII	TTh		
	3	II, III, IV	T		
		VI, VII, VIII	F		
	Lab. (w) Sec. 1	II, III, IV	T	390C	
		I, II, III	Th		
	2	VII, VIII, IX	T		
		VI, VII, VIII	Th		
	3	VI, VII, VIII	M		
		I, II, III	Th		
	Lab. (s) Sec. 1	II, III, IV	T	390C	
		VI, VII, VIII	F		
	2	VI, VII, VIII	TTh		
101f-102w-103s	Advanced Organic Chemistry .. (3 cred. per qtr.; prereq., 53)	III	TThS	325C	Mr. Hunter

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

PHYSICAL CHEMISTRY

101f-102w-103s	Physical Chemistry (9, 12, or 15 cred.; jr., sr., grad.; prereq., 2 yrs. coll. chem., 1 yr. coll. phys.)				Mr. MacDougall
	Lect.	IV	MWF	325C	
	Lab.	VI, VII, VIII	F	190C	
	Rec.	IV	S	115C	
110f,w	Physical Chemistry (medic) (4 cred.; pre-med. and biol. stu- dents; prereq., Org. Chem. 2)				
	Lect.	VI	TTh	225C	Mr. Taylor
			F	325C	
	Lab. Sec. 1	I, II, III	MW	190C	
	2	VII, VIII, IX	TTh	190C	
116f-117w-118s	Adv. Physical Chem. (9 or 12 cred.; jr., sr., grad.; prereq., 103 and calculus)	Ar	Ar	Ar	Ar
129	<i>Prin. of Colloidal Chemistry</i> .. (2 cred.; sr., grad.; prereq., 102)	<i>Not offered</i>			
130s	Appl. of Colloidal Chemistry . . . (2 cred.; sr., grad.; prereq., 102)	Ar	Ar	ArC	Mr. Reyerson
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

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

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
161f-162w	Radioactivity (2 cred. per qtr.; jr., sr., grad.; prereq., Phys. Chem. 103)	Ar	Ar	Ar	Mr. Lind
164f,w,s	Radioactivity Laboratory (Must be preceded or accom- panied 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. Lab.	Ar VI, VII, VIII	Ar TF	Ar 217C	Mr. Stoppel Mr. Stoppel
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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.

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
111s	The Novel in Europe, 1875-1925 (3 cred.; jr., sr., grad.; prereq., jr. coll. requirement in Eng. and foreign lang.)	II	MWF	113F	Mr. Firkins

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.)			411C	Mr. Brainard
	Sec. 1	I, II	MWF		
	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	237EE	Mr. Levens
45f,w,s	Alphabets (2 cred.; soph., jr., sr.; no pre- req.)	II	TTh	205E	Mr. Kirchner

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

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
61f,w	Projections (2 cred.; soph.; prereq., Math. 3 or 5)	Lect. III(f) VI(w)	Th T	335EE 205E	Mr. Kirchner, Mr. Myers
62w	Shades and Shadows (2 cred.; prereq., 61)	Lect. III Lab.‡	Th	335EE	Mr. Kirchner, Mr. Myers
63s	Perspective (2 cred.; prereq., 61)	Lect. III Lab.‡	Th	335EE	Mr. Kirchner, Mr. Myers
64f	The Graphic Arts: Introduction . (2 cred.; jr., sr.; prereq., 15 cred. of econ.)	IV	MW	5E	Mr. Kirchner
65w	The Graphic Arts: Printing and Layouts (2 cred.; jr., sr.; prereq., 15 cred. of econ.)	IV	MW	5E	Mr. Kirchner
66s	The Graphic Arts: Processes .. (2 cred.; jr., sr.; prereq., 15 cred. of econ.)	IV	MW	5E	Mr. Kirchner

ECONOMICS

SCHOOL OF BUSINESS ADMINISTRATION

For specialized curriculum in social science see Part I, Education bulletin.

NOTE.—The following courses in other departments may carry credit also in this: Agricultural Economics 126, Economics of Consumption; 130, Prices of Farm Products; 131, Market Prices; 135, Methods of Forecasting Prices; 171, Land Tenure; History 80-81-82, Introduction to Economic History; 83-84-85, American Economic History; 113-114-115, Economic History of Europe since 1750; 180-181-182, Topics in Economic History; Political Science 107, Recent Social Legislation; 109, Government and Business; 111, Law of Public Utilities; 195-196 Colonial Government and Administration.

No.	Title	Hour	Day	Bldg.	Instructor
1Af	Business Organization: Produc- tion (5 cred.; fr. only; no prereq.)	Lect. IV Sec. 1 I 2 I 3 II 4 II 5 II 6 III 7 III 8 IV 9 IV 10 V 11 V 12 VI 13 VI 14 VII 15 VII 16 VIII	T MWFS MWFS MWFS MWFS MWFS MWFS MWFS MTWF MTWF MWThF MWThF MWThF MWThF MWThF	OLAud 3F 209OL 110P 108F 5F 209½F 3F 6B 2OPh 102B 202B 206OLa 2OPh 6B 303B 6B	Mr. Stevenson, Mr. Borak, and others

‡ Consult bulletin of the College of Engineering and Architecture.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor	
1A _w	Business Organization: Production (See 1A _f)	Lect.	IV	T	301F	Mr. Stevenson, Mr. Borak, and others
		Sec. 1	II	MWFS	210P	
		2	III	MWFS	3F	
		3	V	MTWF	303B	
		4	VII	MWThF	6B	
1B _w	Business Organization: Marketing (5 cred.; fr. only*; no prereq.)	Lect.	IV	TS	OLAud	Mr. Vaile and others
		Sec. 1	I	MWF	109F	
		2	I	TThS	104OPh	
		3	II	MWF	6B	
		4	II	MWF	301B	
		5	II	TThS	303B	
		6	III	MWF	211OL	
		7	III	TThS	104OPh	
		8	IV	MWF	302B	
		9	IV	MWF	321F	
		10	V	MWF	6B	
		11	VI	MWF	206OLa	
		12	VI	MWF	210P	
		13	VII	MWF	209B	
		14	VIII	MWF	6B	
1B _s	Business Organization: Marketing (See 1B _f)	Lect.	IV	TS	301F	Mr. Vaile and others
		Sec. 1	I	TThS	6B	
		2	IV	MWF	6B	
		3	V	MWF	102B	
		4	VI	MWF	102B	
3 _w	The Mechanism of Exchange ... (5 cred.; 3rd qtr. fr., soph., jr., sr.; no prereq.)	Lect.	III	TTh	OLAud	Mr. Stehman and others
		Sec. 1	I	TThS	211OL	
		2	II	MWF	3F	
		3	III	MWF	204F	
		4	IV	MWF	209B	
		5	V	MWF	202B	
		6	VI	MWF	125F	
		7	VII	MWF	301B	
3 _s	The Mechanism of Exchange ... (See 3 _w)	Lect.	III	TTh	OLAud	Mr. Stehman and others
		Sec. 1	I	MWF	303B	
		2	I	TThS	301B	
		3	II	MWF	6B	
		4	II	TThS	110F	
		5	III	MWF	209B	
		6	IV	MWF	112OL	
		7	IV	MWF	2F	
		8	V	MWF	202B	
		9	V	MWF	6B	
		10	VI	MWF	2OPh	
		11	VI	MWF	112OL	
		12	VII	MWF	202B	
		13	VII	MWF	6B	
14	VIII	MWF	202B			

* Sophomores who have credit for 1A and wish to continue Economics may elect courses 1B, 3, and 4.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor				
4f	Principles of Economics (5 cred.; soph.; prereq., 1A, 1B and 3)	Lect.	II	Th	OPhAud	Mr. Hansen and others			
		Sec. 1	I	TThFS	5F				
		2	II	MWFS	6F				
		3	III	TThFS	6F				
		4	IV	MWFS	9F				
		5	V	MTWF	6B				
		6	VII	MWThF	206OLa				
4s	Principles of Economics (Sec 4f)	Lect.	II	Th	206OLa	Mr. Hansen and others			
		Sec. 1	II	MWFS	101F				
		2	IV	MWFS	202B				
		3	V	MTWF	303B				
		4	VI	MWThF	209OL				
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 or in Econ. 1A)	Lect.	III	W	OPhAud	Mr. Hansen and others			
		Sec. 1	I	TThFS	6F				
		2	II	MWFS	9F				
		3	III	TThFS	5F				
		4	IV	MWFS	104F				
		5	V	MTWF	301B				
		6	VI	MWThF	9F				
		7	VII	MWThF	9F				
		6w-7s†§	Principles of Economics—General Course (See 6f-7w)	Lect.	II		T	OPhAud	Mr. Hansen and others
				Sec. 1	I		TThFS	5F	
				2	II		MWFS	5F	
3	IV			MWFS	9F				
4	V			MTWF	302B				
5	VI			MWThF	124F				
14f†	Elements of Statistics (5 cred.; soph.; jr., sr.; prereq., 4 or 6-7)	Sec. 1	I	MWThFS	125F	Mr. Mudgett and others			
		2	III	MTWFS	9F				
		3	IV	MTWFS	301B				
		4	VI	MTWThF	202B				
14w†	Elements of Statistics (See 14f)	Sec. 1	III	MTWFS	9F	Mr. Mudgett and others			
		2	IV	MTWFS	124F				
		3	VI	MTWThF	102B				
		4	VII	MTWThF	303B				

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

‡ No student may receive credit for both Economics 14 and Sociology 45.

§ Students entering with advanced standing in Economics 6 must consult department adviser as to a continuation course.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
14s†	Elements of Statistics (See 14f)				Mr. Mudgett and others
	Sec. 1	I	MWThFS	210P	
	2	II	MWThFS	3F	
	3	III	MTWFS	206OLa	
	4	III	MTWFS	2F	
	5	IV	MTWFS	102B	
	6	VI	MTWThF	303B	
20f*	Elements of Accounting (3 cred.; 3rd qtr. fr., soph., no prereq.)				Mr. Heilman and others
	Sec. 1	I	MWF	303B	
	2	I	TThS	302B	
	3	II	MWF	302B	
	4	II	TThS	202B	
	5	III	TThS	302B	
	6	III	TThS	301B	
	7	IV	MWF	302B	
	8	V	MWF	302B	
	9	VI	MWF	303B	
20w*	Elements of Accounting (See 20f)				Mr. Heilman and others
	Sec. 1	I	TThS	303B	
	2	III	TThS	301B	
	3	III	MWF	302B	
	4	VI	MWF	6B	
20s*	Elements of Accounting (See 20f)				Mr. Heilman and others
	Sec. 1	I	MWF	301B	
	2	II	MWF	301B	
	3	III	TThS	301B	
	4	VI	MWF	302B	
25f-26w††	Principles of Accounting (6 cred.; soph., jr., sr.; prereq., 20)				Mr. Heilman and others
	Sec. 1	I	MWF	301B	
	2	I	TThS	301B	
	3	VI	MWF	302B	
25w-26s††	Principles of Accounting (See 25f-26w)				Mr. Heilman and others
	Sec. 1	I	MWF	302B	
	2	I	TThS	302B	
	3	II	MWF	302B	
	4	II	TThS	301B	
	5	III	MWF	303B	
	6	IV	MWF	301B	
	7	VI	MWF	301B	
25s††	Principles of Accounting (1st qtr. of 25-26. See 25f-26w)				Mr. Heilman and others
	Sec. 1	II	MWF	303B	
	2	III	TThS	303B	

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

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

‡ No student may receive credit for Economics 14 and Sociology 45.

¶ Open to pre-business students only.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
26f††	Principles of Accounting (2nd qtr. of 25-26. See 25f-26w)	II	TThS	302B	Mr. Heilman and others
32f-33w-34s*†§	Secretarial Training: Typewriting (3 cred.; 3rd qtr. fresh., soph., jr.; prereq., consent of in- structor)	III V	TThS MW	1B 1B	Miss Donaldson and others
32s§*	Secretarial Training: Typewriting (1st qtr. of 32-33-34. See 32f- 33w-34s)	IV	MTWFS	1B	Miss Donaldson and others
33f*§	Secretarial Training: Typewriting (2nd qtr. of 32-33-34. See 32f- 33w-34s)	VI	MTWThF	1B	Miss Donaldson and others
34w*§	Secretarial Training: Typewriting (3rd qtr. of 32-33-34. See 32f- 33w-34s)	VI	MTWThF	1B	Miss Donaldson and others
37f-38w-39s*†§	Secretarial Training: Shorthand (9 cred.; soph., jr.; prereq., 32; consent of instructor)				
	Rec.	II	TThS	311F	Miss Donaldson and others
	Lab. Sec. 1	I	MWF	1B	
	2	II	MWF	1B	
40f-41w-42s*†§	Secretarial Procedure (9 cred.; soph., jr., sr.; prereq., 33, 39; consent of instructor)				
	Rec.	I	MWF	301F	Miss Donaldson
	Lab. Sec. 1 Sec. Tr.	V	TThF	1B	
	2 Com'l Ed.	VII	TThF	1B	
54f¶	Accounting Survey I (3 cred.; jr., sr.; prereq., 4 or 6-7)	III	TThS	209B	Mr. Heilman and others
55w¶	Accounting Survey II (3 cred.; jr., sr.; prereq., 54)	III	TThS	6B	Mr. Heilman and others
85w¶	Economics of Marketing (3 cred.; jr., sr.; prereq., 4 or 6-7)	I	TThS	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	204F	Mr. Garver
105s	History of Economic Ideas (The Classical Economists) (3 cred.; jr., sr., grad.; prereq., 101-102 or 103-104 or consent of instructor)	VII	MWF	102B	Mr. Garver
106	History of Economic Ideas (The Critics of the Classical Econ- omists) <i>Not offered</i> (3 cred.; jr., sr., grad.; prereq., 101-102 or 103-104 or consent of instructor)				
113w-114s	Theory of Statistics (6 cred.; jr., sr., grad.; prereq., 14)	I	MWF	102B	Mr. Mudgett

* Open for credit to pre-secretarial and pre-commercial education students only.

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

‡ Open to pre-business students only.

§ A laboratory fee of \$2.50 will be required of students who register for one or more of the courses in secretarial training.

¶ Not open to School of Business Administration students.

No.	Title	Hour	Day	Bldg.	Instructor	
124f	Comparative Banking, British Systems (3 cred.; jr., sr., grad.; prereq., 141)	III	MWF	302B	Mr. Myers	
125w	Comparative Banking, European Systems (3 cred.; jr., sr., grad.; prereq., 141)	III	MWF	6B	Mr. Myers	
127s	Comparative Banking, South American Systems (3 cred.; jr., sr., grad.; prereq., 141)	II	MWF	209B	Mr. Myers	
141f‡	Monetary and Banking Policy .. (3 cred.; jr., sr., grad.; prereq., 3, and 4 or 6-7)	I	MWF	102B	Mr. Marget, Mr. Myers	
141w‡	Monetary and Banking Policy .. (See 141f)	I	MWF	6B	Mr. Marget, Mr. Myers	
141s‡	Monetary and Banking Policy .. (See 141f)	VI	MWF	6B	Mr. Marget, Mr. Myers	
149f	Business Cycles (3 cred.; sr., grad.; prereq., 141)	I	TThS	202B	Mr. Marget	
149w	Business Cycles (See 149f)					
		Sec. 1	I	MWF	209B	Mr. Marget,
		2	VII	MWF	102B	Mr. Myers
149s	Business Cycles (See 149f)	III	MWF	102B	Mr. Myers	
154s‡	Public Utilities (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. Econ. 4 or 6-7)	II	TThS	202B	Mr. Garver	
160w‡	The Modern Corporation (3 cred.; jr., sr., grad.; prereq., 3, and 4 or 6-7)	IV	MWF	6B	Mr. Stehman	
161f	Labor Problems and Trade Unionism (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. Econ. 4 or 6-7)	IV	MWF	202B	Mr. Hansen	
161w	Labor Problems and Trade Unionism (See 161f)	III	TThS	209B	Mr. Stead	
161s	Labor Problems and Trade Unionism (See 161f)	III	TThS	102B	Mr. Hansen	
162w	Labor Movements (3 cred.; jr., sr., grad.; prereq., 161)	IV	MWF	202B	Mr. Hansen	
163w	Economic Aspects of Population and Immigration (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. Econ. 4 or 6-7)	III	TThS	202B	Mr. Hansen	
164s	Labor Legislation and Social Insurance (3 cred.; jr., sr., grad.; prereq., 161)	III	TThS	209B	Mr. Stead	

‡ Not open to School of Business Administration students.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
166f	Contemporary Economic Problems (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. including Econ. 4 or 6-7)	VII	MWF	102B	Mr. Hansen
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
176f	Commercial Policies (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. including Econ. 4 or 6-7)	I	MWF	202B	Mr. Blakey
176s	Commercial Policies (See 176f)	I	MWF	202B	Mr. Blakey
187f,188w,189s	Honors Course in Economics ... (Cred. ar.; jr., sr.; prereq., con- sent of major adviser)	Ar	Ar	Ar	Ar
191f-192w†	Public Finance (6 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. including Econ. 3, and 4 or 6-7)	III	MWF	209B	Mr. Blakey
193s	State and Local Taxation (3 cred.; jr., sr., grad.; prereq., 191-192)	III	MWF	6B	Mr. Blakey

ENGLISH

Major Advisers: C. W. Nichols, Dora V. Smith

For teacher's certificate in English—

	Credits
a. English as a major subject:	
English 22-23. Introduction to Literature	10
English 55-56. Shakespeare	6
English 73-74. American Literature	6
Composition 11-12 or 18-19	6
Speech	6
Additional credits, all of which must be secured in courses numbered 100 or above	6
Total credits	40
b. English as a minor subject:	
English 22-23. Introduction to Literature	10
English 55-56. Shakespeare	6
English 73-74. American Literature	6
Composition 11-12 or 18-19	6
Total credits	28

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	MTWFS	150Ph(f), 133Ph(w), 166Ph(s)	Mr. Thomas
	2	VI	MTWThF	301F	Miss Jackson

* Not open to School of Business Administration students.

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

‡ Students may enter any quarter. Students must take two consecutive quarters to receive credit.

Two quarters are required as prerequisite for a major sequence; the second and third quarters are required for a teacher's certificate. Three quarters recommended. Limited to students with an average of 3/3 honor point per credit in their previous work, and to students exempt from English A-B-C.

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

No.	Title	Hour	Day	Bldg.	Instructor
31f-32w†	The English Novel (6 cred.; all; prereq.§)	VII	MWF	301F	Mr. Hillhouse
33s	The Later English Novel (3 cred.; soph., jr., sr.; prereq.§)	VII	MWF	OPhAud	Mr. Beach
40w-41s	The Bible as Literature (6 cred.; soph., jr., sr.; prereq.§)	II	MWF	226F	Mr. Powell
51	Spenser (3 cred.; jr., sr.; prereq., 21-22 or 55-56)	<i>Not offered</i>			
53	Seventeenth-Century Lyrists (4 cred.; jr., sr.; prereq., 21-22 or 55-56)	<i>Not offered</i>			
55f-56w†	Shakespeare				
	Sec. 1	I	TThS	205F	Miss Atkins
	2	VI	MWF	305F	Mr. Hillhouse (f), Mr. Dunn (w)
	3	VII	MWF	305F	Mr. Dunn (f), Miss Jack- son (w)
55w-56s†	Shakespeare				
	(See 55f-56w)				
	Sec. 1	VI	MWF	303F	Mr. Bush (w), Mr. Hill- house (s)
	2	IV	MWF	205F	Miss Carr
55s†	Shakespeare	II	MWF	205F	Mr. Bush
	(First qtr. of 55-56. See 55f- 56w)				
58f-59w†	Nineteenth-Century Prose (6 cred.; jr., sr.; prereq., C or 23, or 31-32)	II	TThS	204F	Mr. Beach
61	American Pronunciation (3 cred.; jr., sr.; prereq.‡)	<i>Not offered</i>			
62f	Milton	VII	MTWF	204F	Mr. Stoll
	(4 cred.; jr., sr.; prereq., 21-22 or 55-56)				
63	American Usage	<i>Not offered</i>			
	(3 cred.; jr., sr.; prereq.‡)				
69f	Browning and Tennyson (4 cred.; jr., sr.; prereq.‡)	VI	MTWF	204F	Mr. Stoll
73f-74w†	American Literature (6 cred.; jr., sr.; prereq.‡)	IV	MWF	301F	Mr. McDowell, Mr. Nichols
75f	Chaucer	III	MTWF	205F	Miss Armstrong
	(4 cred.; jr., sr.; prereq.‡)				
75s	Chaucer				
	(See 75f)				
	Sec. 1	III	MTWF	206F	Mr. Dunn
	2	V	MTWF	204F	Miss Carr
77-78	Classic Myths and the Classic Tradition in English Poetry ..	<i>Not offered</i>			
	(6 cred.; jr., sr.; prereq.‡)				
81-82†	Survey of Middle English (6 cred.; jr., sr.; prereq.‡)	<i>Not offered</i>			

† 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.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
86f	Forms of English Verse (3 cred.; jr., sr.; prereq.†)	III	MWF	207F	Miss Jackson
100f	Old English (4 cred.; jr., sr., grad.; prereq., 8 cred. above 50)	II	MTWF	205F	Mr. Ruud
102w	Old English Poetry (3 cred.; jr., sr., grad.; prereq., 100 and 4 add. cred. above 50)	II	MWF	302F	Mr. Ruud
103s	Beowulf (3 cred.; jr., sr., grad.; prereq., 100 and 4 add. cred. above 50)	II	MWF	302F	Mr. Ruud
105w-106s†	Eighteenth-Century Poetry (6 cred.; jr., sr., grad.; prereq., 8 credits above 50)	VII	MWF	204F	Mr. Moore
107-108†	<i>Eighteenth-Century Prose</i> (6 cred.; jr., sr., grad.; prereq., 8 credits above 50)	<i>Not offered</i>			
109f-110w†	Romantic Poets (6 cred.; jr., sr., grad.; prereq., 8 credits above 50)	III	TThS	204F	Mr. Beach
111f-112w†	Seventeenth-Century Prose (6 cred.; jr., sr., grad.; prereq., 8 credits above 50)	III	MWF	306F	Mr. Bush
123f-124w-125s†	Technique of the Novel (9 cred.; sr., grad.; prereq., 8 credits above 50 and permis- sion of instructor)	4:00 to 6:00	T	205F	Mr. Beach
126w-127s†	Drama, 1660-1880 (6 cred.; jr., sr., grad.; prereq., 8 credits above 50)	III	TThS	205F	Mr. Hillhouse, Mr. Nichols
129s	Modern Drama (4 cred.; jr., sr., grad.; prereq., 55-56)	II	MTWF	204F	Mr. Stoll
133f	Ballads (3 cred.; jr., sr., grad.; prereq., 8 credits above 50)	III	MWF	204F	Mr. Ruud
136s	Advanced Shakespeare (4 cred.; jr., sr., grad.; prereq., 55-56)	I	MTWF	204F	Mr. Stoll
140s	Advanced Chaucer (4 cred.; jr., sr., grad.; prereq., 8 credits above 50, including 75)	III	MTWF	209½F	Mr. Ruud
141-142-143	<i>Historical Grammar</i> (6 cred.; jr., sr., grad.; prereq., 8 cred. above 50, including 75 or 81-82)	<i>Not offered</i>			
146f-147w†	Metrical Romances (6 cred.; jr., sr., grad.; prereq., 8 cred. above 50, including 75 or 81-82)	VI	MWF	306F	Miss Carr
148-149†	<i>Arthurian Romances</i> (6 cred.; jr., sr., grad.; prereq., 8 cred. above 50, including 75 or 81-82)	<i>Not offered</i>			

† 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.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
150	<i>Victorian Poetry</i> (4 cred.; jr., sr., grad.; prereq., 8 credits above 50)	<i>Not offered</i>			
151s	<i>Recent Poetry</i> (4 cred.; jr., sr., grad.; prereq., 8 credits above 50)	III	TWThF	204F	Mr. Beach
152f	<i>Pre-Elizabethan Drama</i> (3 cred.; jr., sr., grad.; prereq., 55-56)	IV	MWF	205F	Mr. Bush
154w-155s†	<i>American Novel</i> (6 cred.; jr., sr., grad.; prereq., 73-74)	VI	MWF	205F	Mr. McDowell
156	<i>The American Drama</i> (3 cred.; jr., sr., grad.; prereq., 8 cred. above 50, including 73-74)	<i>Not offered</i>			
157-158†	<i>Elizabethan Non-Dramatic Litera- ture</i> (6 cred.; jr., sr., grad.; prereq., 8 credits above 50, including 51 or 55-56 or 170)	<i>Not offered</i>			
159f	<i>Colonial Literature in America</i> .. (3 cred.; jr., sr., grad.; prereq., 8 cred. above 50, including 73-74)	VI	MWF	205F	Mr. Nichols
160	<i>History of the English Language</i> (2 cred.; jr., sr., grad.; prereq., 100)	<i>Not offered</i>			
162f	<i>Restoration Literature</i> (4 cred.; jr., sr., grad.; prereq., 8 credits above 50)	IV	MTWF	204F	Mr. Moore
165w	<i>The Historical Study of Modern English</i> (3 cred.; jr., sr., grad.; prereq., 8 credits above 50)	III	MWF	205F	Mr. Ruud
168s	<i>English Literary Criticism</i> (3 cred.; jr., sr., grad.; prereq., 8 credits above 50)	IV	MWF	204F	Mr. Bush
170w	<i>Elizabethan Drama</i> (4 cred.; jr., sr., grad.; prereq., 8 cred. above 50, incl. 55-56)	IV	MTWF	204F	Mr. Stoll
171f-172w-173s*	<i>Honors Course</i> (9 cred.; jr., sr.; prereq., per- mission of the department)				
	1 Masterpieces of English Literature				Miss Carr
	2 Elizabethan Literature				Mr. Dunn
	3 The Romantic Movement				Mr. Nichols
	4 American Literature				Mr. McDowell
<i>Seminars</i>					
217f-218w-219s	<i>Restoration Drama</i> 4 to 6		M	312Lib	Mr. Stoll
220f-221w-222s	<i>Medieval Drama</i> 4 to 6		W	312Lib	Mr. Ruud
228f-229w-230s	<i>Eighteenth-Century Novel</i> 4 to 6		Th	312Lib	Mr. Moore
253f-254w-255s	<i>Studies in Hawthorne, Poe, and Emerson</i> 4 to 6		F	314Lib	Mr. McDowell
256f-257w-258s	<i>Spenser and Milton</i> 4 to 6			312Lib	Mr. Bush
259f-260w-261s	<i>The Romantic Period of the Eng- lish Novel</i> 4 to 6		F	312Lib	Mr. Hillhouse

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

* Required of candidates for graduation honors in 1933.

COMPOSITION

IMPORTANT NOTE.—No student may register for any course in Freshman English without having taken a placement test.

For details of classification as based on this test see page 5, Science, Literature, and the Arts bulletin.

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 who have already completed one or more quarters of Freshman English in another college should consult the director of the course before registering.

Any student who receives an A in composition in Course A-B-C is exempted from any further requirement in English.

Any student who receives an A or B in any quarter of Course 4-5-6 may at his option elect the following quarter of A-B-C.

No.	Title	Hour	Day	Bldg.	Instructor	
Af-Bw-Cs	Freshman English (15 cred.; all; prereq., placement test)	I	MWThFS	Ar	Ar	
		II	MWThFS			
		III	MTWFS			
		IV	MTWFS			
		V	MTWTF			
		III	Th			
		VI	MTWThF			
Aw-Bs	Freshman English (2 qtrs. of A-B-C. See Af-Bw-Cs)	VI	MTWThF	Ar	Ar	
Cf	Freshman English (3rd qtr. of A-B-C. See Af-Bw-Cs)	II	MWThFS	Ar	Ar	
		VI	MTWThF			
4f-5w-6s	Freshman Composition (9 cred.; all; prereq., placement test)	Sec. 1	I	MWF	Ar	Ar
		2	II	MWF		
		3	II	TThS		
		4	III	MWF		
		5	III	TThS		
		6	IV	MWF		
		7	V	MWF		
		8	VI	MWF		
		9	VII	MWF		
		4w-5s	Freshman Composition (2 qtrs. of 4-5-6. See 4f-5w-6s)	Sec. 1	II	TThS	Ar	Ar
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.)	Sec. 1	III	TThS	Ar	Ar
		2	V	MWF		
6f	Freshman Composition (3rd qtr. of 4-5-6. See 4f-5w-6s)	II	MWF	311F	Ar	

No.	Title	Hour	Day	Bldg.	Instructor
11f-12w†‡	Description; Narration (6 cred.; soph., jr., sr.; prereq., A-B-C or 4-5-6 or exemption from requirement)	Sec. 1	I	MWF 305F	Mrs. del Plaine
		2	II	MWF 303F	Miss Arm- strong, Mrs. del Plaine
		3	III	MWF 302F	Miss Gable, Miss Christie
		4	IV	MWF 305F	Miss Atkins, Miss Christie
11w-12s†‡	Description; Narration (See 11f-12w)	Sec. 1	I	MWF 303F	Mr. Mallam
		2	IV	MWF 303F	Mr. Hursley
11s	Description; Narration (First qtr. of 11-12. See 11f- 12w)	Sec. 1	II	MWF 108F	Mr. Mallam
		2	III	MWF 302F	Miss Christie
		3	IV	MWF 305F	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	I	MWF 304F	Mr. Briggs
		2	III	MWF 305F	Mr. Mallam
		3	V	MWF 303F	Mr. Edmunds
18s	Types of Writing (First qtr. of 18-19. See 18f- 19w)	Sec. 1	I	MWF 304F	Mr. Briggs
		2	II	MWF 316F	Miss Armstrong
20f	Informal Exposition (3 cred.; soph., jr., sr.; prereq., 11-12 or 18-19)	II	MWF 302F	Miss Gable	
20s	Informal Exposition (See 20f)	Sec. 1	I	MWF 305F	Mrs. del Plaine
		2	II	MWF 303F	Miss Atkins
		3	III	MWF 305F	Mrs. Phelan
		4	IV	MWF 304F	Miss Gable
31w	Technical Writing Source Materials: Shakespeare's England (or similar field) ... (3 cred.; jr., sr.; prereq., A-B-C, or 4-5-6 and 6 additional cred- its, or 10 credits in Eng. 21- 22-23)	Consult College of Engineering bulletin			
65s¶		III	MWF 306F	Mr. Hillhouse	

† 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. This rule does not apply to Course 69-70-71.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
67f-68w†¶	Imitative Writing (6 cred.; jr., sr., not open to sophomores; prereq., average of B in two quarters of either 11-12 or 18-19 and 20 or 65)	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 or 18-19 and 20 or 65)	VIII, IX	W	304F	Mrs. Phelan
81f-82w-83s¶	Essay Writing (9 cred.; jr., sr.; prereq., 11-12, or 18-19, and 20 or 65)	III	MWF	304F	Mr. Nichols
91f-92w-93s¶	Seminar in Writing (9 cred.; sr.; prereq., 9 cred., sr. coll. courses, and permission of instructor)	VI, VII	Th	304F	Mrs. Phelan

THE FINE ARTS

No.	Title	Hour	Day	Bldg.	Instructor
if	History of Ancient Art (3 cred.; all; no prereq.)	III	TThS	OPhAud	Mr. Upjohn
2w	History of Architecture and Sculpture (3 cred.; all; no prereq.)	III	TThS	OPhAud	Mr. Upjohn
3s	History of Painting (3 cred.; all; no prereq.)	III	TThS	OPhAud	Mr. Upjohn
5f	Principles of the Fine Arts (3 cred.; all; no prereq.)	IV	S*		
		VI	MWF	OPhAud	Mr. Upjohn
40	European Study (3 cred.; all; prereq., permission of chairman)	Consult department			
5f	Medieval Art (3 cred.; jr., sr.; prereq., 1 and 2 and 10 cred. in approved courses in hist. or lit., or permission of instructor)	Not offered			
52	The Art of the Italian Renaissance (3 cred.; jr., sr.; prereq., 2 and 3 and 10 cred. in approved courses in hist. or lit., or by permission of instructor)	Not offered			
53f	The Art of the Seventeenth Century (3 cred.; jr., sr.; prereq., as for 52)	III	MWF	124F	Mr. Upjohn
54w	The Art of the Eighteenth Century (3 cred.; jr., sr.; prereq., as for 52)	III	MWF	124F	Mr. Upjohn

* The fourth hour Saturday should be reserved for field trips.

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

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

This rule does not apply to Course 69-70-71.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
55s	The Art of the Nineteenth Century (3 cred.; jr., sr.; prereq., as for 52)	III	MWF	124F	Mr. Upjohn
56	American Art (3 cred.; jr., sr.; prereq., as for 51)	Not offered			
60f-61w-62s	Tutorial Work (Permission of instructor)	Ar	Ar	Ar	Mr. Upjohn

GEOGRAPHY

Major Adviser: D. H. Davis

For the teacher's certificate in geography.—Major recommendation: a minimum of 33 credits from the following courses in Geography: 11, 41, 43, 53, 71, 101, 102, 110, 111, 120, 133, 235, 241, 251-252-253.

An additional 5 credits from the following courses in Geology: 1-2, 1-3, or 8.

Minor recommendation: 18 credits from the following courses in Geography: 11, 41, 71, 101, 102, 110, 120.

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w†	Introduction to Human Geography (10 cred.; fr.; no prereq.)	Lect. II Sec. 1 VI 2 VII	MWF TTh TTh	OLAud 103OL 103OL	Mr. Davis
11f	Human Geography (5 cred.; 3rd qtr. fr., soph., jr., sr.; no prereq.)	Sec. 1 II 2 III	MWThFS MTWFS	103OL 103OL	Mr. Dicken Mr. Brown
11w	Human Geography (See 11f)	Sec. 1 II 2 III	MWThFS MTWFS	103OL 103OL	Mr. Dicken Mr. Brown
11s	Human Geography (See 11f)	Sec. 1 I 2 II 3 IV	MWThFS MWThFS MTWFS	103OL 103OL 103OL	Mr. Dicken Mr. Brown Ar
41f	Geography of Commercial Production (5 cred.; soph., jr., sr.; prereq., 5 cred. in geog., or 10 cred. in econ. or soc. or 15 cred. in hist.)	IV	MTWFS	206OLa	Ar
41w	Geography of Commercial Production (See 41f)	IV	MTWFS	150Ph	Ar
41s	Geography of Commercial Production (See 41f)	III	MTWFS	150Ph	Ar

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

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
43	<i>Political Geography</i> (5 cred.; soph., jr., sr.; prereq., 1-2, or 11, or 41, or 10 cred. in hist. or pol. sci.)	<i>Not offered</i>			
53f	<i>Historical Geography</i> (3 cred.; jr., sr.; prereq., 11, or 15 cred. in hist.)	I	MWF	103OL	Mr. Brown
71f	<i>Geography of North America</i> ... (3 cred.; jr., sr.; prereq., 11 or 41, or 20 cred. in soc. sci. incl. at least one course in geog.)	I	TThS	103OL	Mr. Dicken
101S	<i>Geography of Europe</i> (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. 10 cred. in geog.)	VII	MWF	103OL	Mr. Dicken
102W	<i>Trade Routes and Trade Centers</i> (3 cred.; jr., sr., grad.; prereq., 41)	I	TThS	103OL	Ar
110S	<i>Geography of South America</i> ... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. to incl. 11 or 41)	VI	MWF	103OL	Mr. Brown
111	<i>Cartography</i> (3 cred.; jr., sr., grad.; prereq., 10 cred. in sen. coll. work in geog., geol., hist., or other subject in which the use of maps is necessary)	<i>Not offered</i>			
120W	<i>Geography of Asia</i> (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. to incl. 11 or 41)	III	MWF	105OL	Mr. Davis
133W	<i>Climatology</i> (3 cred.; jr., sr., grad.; prereq., 11)	I	MWF	103OL	Mr. Brown

NOTE.—The Courses 235, 241, 251, 252, 253, and 301, listed in the Graduate School bulletin, are open to properly qualified juniors and seniors. For further information consult the chairman of the department.

GEOLOGY AND MINERALOGY

Major Adviser: G. A. Thiel

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w†§	General Geology (Dynamic and Historical) (10 cred.; fr., soph., jr., sr.; no prereq.)				
	Lect.	I	WThFS	210P	Mr. Thiel
	Lab. Sec. 1	I, II	M	220P	
		II	WF		
	Lab. Sec. 2	VI, VII	MW	220P	

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

§ For a three-quarter sequence, Course 2 may be followed by Course 3 or 4 or 11, and Course 3 by Course 2.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
1f-3w*†	General Geology (Dynamic and Economic) (10 cred.; fr., soph., jr., sr.; no prereq.)	Lect. III Lab. III, IV or VI, VII	TThFS MW TTh	110P 216P	Mr. Emmons
1w-2s*†	General Geology (Dynamic and Historical) (See 1f-2w)	Lect. IV Lab. VI, VII	MTWF WF	110P 220P	Mr. Dutton
1w-3s*†	General Geology (Dynamic and Economic) (See 1f-3w)	Lect. II Lab. I, II	MWFS TTh	110P 216P	Mr. Emmons Mr. Matheson
1s*†	General Geology (Dynamic and Historical or Economic) (First qtr. of 1-2 or 1-3. See 1f-2w)	Lect. III Lab. III, IV	MWThF TS	110P 220P	Mr. Park
2f*†	General Geology (Dynamic and Historical) (2nd qtr. of 1-2. See 1f-2w)	Lect. III Lab. III, IV	MWThF TS	206P 216P	Mr. Matheson
4s	Geology of Minnesota (5 cred.; all; prereq., 2)	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 and Zool. 1-2)	Lect. II Lab. I, II	MWF ThS	208P 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. Cannot be followed by Course 1 for credit. May be followed by Course 2 with instructor's permission.

§ Not open to students who have had 1.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
15f||	Minerals and Rocks	Ar	Ar	100P	Mr. Gruner
	(1 cred.; jr., sr.; prereq., 1 or 29)				
23w-24sf†	Elements of Mineralogy				
	(8 cred.; soph., jr., sr.; prereq., course in chem.)				
	(Winter) Lect.	II	WF	206P	Mr. Gruner
	Rec.	VII	T	210P	
	Lab. Sec. 1	VII, VIII	WF	100P	
	2	III, IV	TS	100P	
	(For other sections, see Mines bulletin)				
	(Spring) Lect.	II	MWF	206P	Mr. Gruner
	Rec.	IX	T		
	Lab. Sec. 1	VII, VIII	M	100P	
	2	VI, VII	T		
		III, IV	M		
		VII, VIII	F		
27s||	Outlines of Mineralogy	Ar	Ar	100P	Mr. Gruner
	(1 cred.; jr., sr.; no prereq.)				
61f	Blowpipe Analysis		Consult Mines program		Mr. Gruner
	(3 cred.; jr., sr.; prereq., 24)				
73f	Economic Geology	VI	MWF	110P	Mr. Schwartz
	(3 cred.; jr., sr.; prereq., 24)				
85s	Field Work in Northern Minnesota	Ar	Ar	Ar	Mr. Gruner, Mr. Thiel
	(4 cred.; jr., sr.; prereq., 2, 3, or 11)				
91f-92w-93s	Index Fossils of North America				
	(9 cred.; jr., sr.; prereq., 2, 3, or 11)				
	Lect.	I	F	208P	Mr. Stauffer
	Lab.	VI, VII	MW	105P	
101f	Sedimentation	IV	MWF	210P	Mr. Thiel
	(3 cred.; jr., sr., grad.; prereq., 24)				
102w-103s	Micropaleontology	II, III	TThS	103P	Mr. Stauffer
	(6 cred.; jr., sr., grad.; prereq., 11 or 91)				
105f	Rock Study				
	(3 cred.; jr., sr., grad.; prereq., 24)				
	Lect.	VI	TTh	110P	Mr. Grout
	Lab. Sec. 1	VII, VIII	T	200P	
	2	VI, VII	M	200P	
106w	Petrography	VII, VIII	TTh	200P	Mr. Grout
	(3 cred.; jr., sr., grad.; prereq., 105)				
107f-108w-109s	Paleontologic Practice	Ar	Ar	105P	Mr. Stauffer
	(9 cred.; jr., sr., grad.; prereq., 91-92-93)				
111f	Ore Deposits	I	TThS	110P	Mr. Emmons
	(3 cred.; sr., grad.; prereq., 2, 3, or 11, and 105)				

† The entire course must be completed before credit is received for any quarter.
 ‡ Does not count for a senior college course. Not open to sophomores. Consult adviser.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
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
119f	Physiography of the United States (3 cred.; jr., sr., grad.; prereq., 2 or 3)				
	Lect.	II	TThS	206P	Ar
	Lab.	Ar	Ar	Ar	
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	MWF MTWThFS, spring, to May 1)	110P 208P	Mr. Schwartz
127f	Geol. of Lake Superior 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	
137f	Testing Econ. Minerals (3 cred.; jr., sr., grad.; prereq., 2, 3, or 11, and 105)				
	Lect.	I	W	200P	
	Lab.	VI, VII, VIII, IX	T	200P	Ar
140w-141s	Applied Petrography (6 cred.; jr., sr., grad.; prereq., 131)				
	Lect.	II	F	200P	Mr. Grout
	Lab.	I, II	MW	Ar	
144w-145s	Interp. of Geologic Maps (6 cred.; jr., sr., grad.; prereq., 2, 3, or 11, and 124)	VII, VIII, IX	MTh	Ar	Mr. Dutton
149s	Methods of Field Geology (No cred.; jr., sr., grad.; to be taken with 150; prereq., 2, 23-24, 106, 124-125)	Ar	Ar	Ar	Mr. Schwartz
150s*	Field Geol. (Black Hills) (jr., sr., grad.)	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	Ar	Mr. Gruner
166f-167w	Mineralography (6 cred.; sr., grad.; prereq., 111, 131)	Ar	Ar	207P	Mr. Schwartz

* A maximum of 8 credits will be granted after field report is completed.

GERMAN

Major Adviser: S. Kroesch

For a teacher's certificate.—Major recommendations: Courses 50-51-52, 53-54-55, 56-57, 65, 66, 67, 108, and eight additional credits in courses numbered above 50.

Minor recommendations: Courses 50-51-52, 108, and eight additional credits in courses numbered above 50.

No.	Title	Hour	Day	Bldg.	Instructor
1f*	Beginning A				
	(5 cred.; fr., soph., jr., sr.; no prereq.)				
	Sec. 1	I	MWThFS	207F	Ar
	2	I	MWThFS	209F	Ar
	3	I	MWThFS	209½F	Ar
	4	II	MWThFS	209½F	Ar
	5	III	MTWFS	212F	Ar
	6	IV	MTWFS	207F	Ar
	7	VI	MTWThF	207F	Ar
	8	VII	MTWThF	209½F	Ar
1w*	Beginning A				
	(See 1f)				
	Sec. 1	I	MWThFS	125F	Ar
	2	II	MWThFS	209F	Ar
	3	VII	MTWThF	212F	Ar
1s*	Beginning A				
	(See 1f)				
	Sec. 1	II	MWThFS	213F	Ar
	2	III	MTWFS	102F	Ar
	3	VI	MTWThF	209½F	Ar
2f*	Beginning B				
	(5 cred.; fr., soph., jr., sr.; prereq., 1 or one yr. prep. German)				
	Sec. 1	II	MWThFS	207F	Ar
	2	VI	MTWThF	110F	Ar
2w*	Beginning B				
	(See 2f)				
	Sec. 1	I	MWThFS	207F	Ar
	2	I	MWThFS	209F	Ar
	3	I	MWThFS	209½F	Ar
	4	II	MWThFS	209½F	Ar
	5	III	MTWFS	212F	Ar
	6	IV	MTWFS	207F	Ar
	7	VI	MTWThF	207F	Ar
	8	VII	MTWThF	209½F	Ar
2s*	Beginning B				
	(See 2f)				
	Sec. 1	I	MWThFS	125F	Ar
	2	II	MWThFS	209F	Ar
	3	VII	MTWThF	212F	Ar
3f	Beginning C				
	(5 cred.; fr., soph., jr., sr.; pre- req., 2)				
	Sec. 1	II	MWThFS	213F	Ar
	2	III	MTWFS	209F	Ar
	3	VII	MTWThF	209F	Ar

* Credit is usually not given for more than one beginning language. See page 6, Science, Literature, and the Arts bulletin, Part II.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
3Af	Beginning C (For pre-medics. See 3f)				
	Sec. 1	I	MWThFS	102F	Ar
	2	IV	MTWFS	102F	Ar
3W	Beginning C (See 3f)				
	Sec. 1	II	MWThFS	207F	Ar
	2	VI	MTWThF	110F	Ar
3S	Beginning C (See 3f)				
	Sec. 1	I	MWThFS	209½F	Ar
	2	II	MWThFS	209½F	Ar
	3	III	MTWFS	212F	Ar
	4	IV	MTWFS	207F	Ar
	5	VI	MTWThF	207F	Ar
3As	Beginning C (For pre-medics. See 3f)				
	Sec. 1	I	MWThFS	207F	Ar
	2	I	MWThFS	209F	Ar
	3	IV	MTWFS	104F	Ar
4f	Intermediate German (5 cred.; fr., soph., jr., sr.; pre-req., 3)				
	Sec. 1	II	MWThFS	209F	Ar
	2	III	MTWFS	213F	Ar
	3	IV	MTWFS	212F	Ar
	4	VII	MTWThF	102F	Ar
4Af	Intermediate German (For pre-medics. See 4f)	II	MWThFS	212F	Ar
4W	Intermediate German (See 4f)				
	Sec. 1	II	MWThFS	213F	Ar
	2	III	MTWFS	209F	Ar
	3	VII	MTWThF	209F	Ar
4S	Intermediate German (See 4f)				
	Sec. 1	II	MWThFS	207F	Ar
	2	VI	MTWThF	110F	Ar
24f-25w-26s†	Chemical German (12 cred.; chemists, miners; no prereq.)				
	Sec. 1	IV	MTWF	209½F	Ar
	2	IV	MTWF	101F	Ar
	3	V	MTWF	207F	Ar
30f-31w-32s	Medical German (9 cred.; pre-med.; prereq., 3A)				
	Sec. 1	I	MWF	212F	Ar
	2	IV	MWF	113F	Ar
	3	IV	MWF	213F	Ar
30w	Medical German (3 cred.; see 30f)				
	Sec. 1	I	MWF	217F	Ar
	2	IV	MWF	212F	Ar
31f-32w	Medical German (6 cred.; pre-med.; prereq., 4A or 30)	I	MWF	205F	Ar

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

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
31s	Medical German				
	(1st qtr. of 31-32. See 31f-32w)				
	Sec. 1	I	MWF	217F	Ar
	2	IV	MWF	212F	Ar
32f	Medical German	I	MWF	109F	Ar
	(2nd qtr. of 31-32. See 31f-32w)				
50f-51w-52s†	Composition	IV	TS	213F	Mr. Lussky
	(6 cred.; jr., sr.; prereq., 4 or 4 yrs. prep. German)				
53f-54w-55s†	Conversation	II	ThS	205F	Mr. Lussky
	(6 cred.; jr., sr.; prereq., 4 or 4 yrs. prep. German)				
56f-57w†	Essay Writing	I	TThS	114F	Mr. Pfeiffer
	(6 cred.; jr., sr.; prereq., 52)				
61s	Epics and Ballads	III	MWF	209F	Mr. Lussky
	(3 cred.; jr., sr.; prereq., 4 or 4 yrs. prep. German)				
62w	Nineteenth-Century Prose	III	MTWFS	209½F	Mr. Lussky
	(5 cred.; jr., sr.; prereq., 4 or 4 yrs. prep. German)				
63f	Modern Drama	IV	MWF	209F	Mr. Davies
	(3 cred.; jr., sr.; prereq., 4 or 4 yrs. prep. German)				
64w	Classic Drama	IV	MWF	209F	Mr. Davies
	(3 cred.; jr., sr.; prereq., 4 or 63)				
65f	Survey through Reformation	III	TThS	207F	Mr. Kroesch
	(3 cred.; jr., sr.; prereq., 3 cred. above 60)				
66w	Eighteenth-Century Survey	III	TThS	207F	Mr. Burkhard
	(3 cred.; jr., sr.; prereq., 3 cred. above 60)				
67s	Nineteenth-Century Survey	III	TThS	207F	Mr. Pfeiffer
	(3 cred.; jr., sr.; prereq., 3 cred. above 60)				
77s	Faust I	IV	MWF	209F	Mr. Burkhard
	(3 cred.; jr., sr.; prereq., 64 and 3 additional cred. above 60)				
108s	Phonetics	III	MWF	207F	Mr. Kroesch
	(3 cred.; sr., grad.; prereq., 9 senior college cred. in mod lang.)				
115-116-117†	Middle High German Literature	Not offered			
	(9 cred.; sr., grad.; prereq., 65 and 11 credits above 60)				
143f-144w-145s†	The Classical Period: Goethe ..	VIII, IX, X	W	301Lib	Mr. Lussky
	(9 cred.; sr., grad.; prereq., 66 and 11 cred. above 60)				
153f-154w-155s†	Studies in German Literature of the Nineteenth Century: Real- ism	VIII, IX, X	T	301Lib	Mr. Burkhard
	(9 cred.; sr., grad.; prereq., 67 and 11 cred. above 60)				
160f-161w-162s†	Lyric Poetry	Ar	Ar	Ar	Mr. Davies
	(9 cred.; sr., grad.; prereq., 66 or 67 and 11 cred. above 60)				

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

No.	Title	Hour	Day	Bldg.	Instructor
163-164-165†	<i>German and English Literary Relations, 16th, 17th, 18th Centuries</i>	Not offered			
	(9 cred.; sr., grad.; prereq., 66 and 11 cred. above 60)				
170-171-172	<i>Young Germany</i>	Not offered			
	(9 cred.; sr., grad.; prereq., 67 and 11 cred. above 60)				
173f-174w-175s	The Modern Novel, 1890-1930 ..	VIII, IX, X	F	301Lib	Mr. Pfeiffer
215f-216w-217s	Middle High German	VIII	MWF	207F	Mr. Kroesch
	(9 cred.; grad., sr. with completed major sequence)				

GREEK

Major Adviser: C. A. Savage

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w†-3s	Beginning Greek	IV	MTWFS	114F	Mr. Savage, Mr. Hays
	(15 cred.; fr., soph., jr., sr.; no prereq.)				
14f	History: Xenophon or Herodotus (3 cred.; all; prereq., 1-2-3)	III	TThS	108F	Mr. Hays
15w	History: Herodotus	III	TThS	108F	Mr. Savage
	(3 cred.; all; prereq., 1-2-3)				
16s	Epic Poetry: Homer	III	TThS	108F	Mr. Hays
	(3 cred.; all; prereq., 14 or 15)				
17f,w	Greek Sources (Everyday Greek) (2 cred.; soph., jr., sr.; prereq., 1 yr. of any foreign language)	VIII	TTh	114F	Mr. Savage, Mr. Hays
17s	Greek Sources (Everyday Greek) (See 17f,w)	I	TTh	114F	Mr. Hays
51f	Philosophy	Ar	Ar	112F	Mr. Savage
	(3 cred.; jr., sr.; prereq., any two of 14, 15, and 16)				
52w	Oratory†	Ar	Ar	112F	Mr. Savage
	(3 cred.; jr., sr.; prereq., any two of 14, 15, and 16)				
53s	Dramatic Poetry	Ar	Ar	112F	Mr. Savage
	(3 cred.; jr., sr.; prereq., 51 or 52)				
61-62‡-63	<i>Advanced Greek Composition</i> ..	Not offered			
	(2 or 3 cred.; jr., sr.; prereq., 2 years of Greek)				
105f	Lyric Poetry	Ar	Ar	112F	Mr. Savage
	(3 cred.; sr., grad.; prereq., 53)				
106w*	Advanced Drama	Ar	Ar	112F	Mr. Savage
	(3 cred.; sr., grad.; prereq., 53 or 105)				
107w*	Advanced Prose	Ar	Ar	112F	Mr. Savage
	(3 cred.; sr., grad.; prereq., 51-52, or 51-53, or 52-53)				
108s§	Advanced Epic Poetry	Ar	Ar	112F	Mr. Savage
	(3 cred.; sr., grad.; prereq., 105 or 106)				

* Courses 106 and 107 are offered alternately.

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

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

§ Courses 108 and 109 are offered alternately.

No.	Title	Hour	Day	Bldg.	Instructor
109s§	New Testament	Ar	Ar	112F	Mr. Hays
	(3 cred.; jr., sr., grad.; prereq., 51 and 52)				

Courses for Which No Knowledge of Greek Is Required

No.	Title	Hour	Day	Bldg.	Instructor
42s¶	Greek Sculpture	VII	TTh	114F	Mr. Savage
	(2 cred.; jr., sr.; no prereq.)				
43f¶‡	Greek Drama	VII	TTh	114F	Mr. Savage
	(2 cred.; jr., sr.; no prereq.)				
44w¶‡	Greek Literature and Life	VII	TTh	114F	Mr. Savage
	(2 cred.; jr., sr.; no prereq.)				
44s¶‡	Greek Literature and Life	I	WF	114F	Mr. Savage
	(See 44w)				
45f¶	Greek Mythology	I	WF	114F	Mr. Savage
	(2 cred.; jr., sr.; no prereq.)				
45w¶	Greek Mythology	I	WF	114F	Mr. Savage
	(See 45f)				

HISTORY

Major Adviser: E. S. Osgood

For a teacher's certificate.—Major recommendation: a minimum of 45 credits; at least 15 credits must be in senior college courses, and of these one course (5 credits) must be numbered from 151 to 200.

Minor recommendation: a minor recommendation will be given upon the completion of at least 18 credits with a satisfactory grade.

No major recommendation to teach history will be given unless the candidate has taken at least the general course in American History, History 7-8, or equivalent.

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w†	Modern World				
	(10 cred.; all; no prereq.)				
	Lect.	II	TThS	OLAud	Mr. Ford
	Rec. Secs.	I	MTh	2F	
		I	MW	5F	
		I	WF	2F	
		II	MW	2F	
		II	MW	301F	
		II	MW	112OL(f), 113F(w)	
		III	MTh	2F	
		III	MW	113F	
		III	TF	2F	
		III	WS	2F	
		IV	MW	2F	
		IV	MW	112OL	
		IV	TF	2F	
		IV	TS	112OL	
		V	MW	2F	
		V	TTh	2F	
		VI	MW	2F	
		VI	TTh	2F	
		VII	MW	2F	
		VII	TTh	2F	

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

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

§ Courses 108 and 109 are offered alternately.

¶ Does not count in a major or minor sequence. Not open to sophomores.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
1w-2s†	Modern World (See 1f-2w)				
	Lect.	I	TThS	OPhAud(w), 150Ph(s)	Mr. Burt
	Rec. Secs.	I	MW	221OL(w), 5F(s)	
		I	MW	3F	
		II	TTh	2F	
		II	TTh	25F	
		III	ThS	305F	
		VI	WF	3F	
		VI	TTh	3F	
4f-5w†	English History (10 cred.; all; no prereq.)				
	Lect.	VII	MWF	OLAud	Mr. Burt
	Rec. Secs.	I	MTh	25F	
		I	WF	25F	
		II	MW	25F	
		III	MW	25F	
		III	TTh	25F	
		IV	MW	25F	
		IV	TF	25F	
		IV	TS	111OL	
		V	MW	25F	
		V	TF	25F	
		VI	MW	25F	
		VI	TTh	25F	
		VII	TTh	25F	
		VII	TTh	111OL	
7f-8w-9s†	American History (10 cred.; soph., jr., sr.; no prereq.; 3 meetings with group confs.)				
	Sec. 1	I	MWF	211OL	Mrs. Tyler
	2	VII	MWF	211OL	Mr. Stephenson
	3	VII	MWF	111OL	Mr. Osgood
11f-12w-13s†	Medieval History (10 cred.; mu. and int. arch. only; no prereq.)				
	Lect.	IV	MF	221OL	Miss Thompson
	Sec. 1	IV*	W	221OL	
	2	IV*	T	221OL	
17s	Europe in the Middle Ages (5 cred.; all; prereq., 10 cred. if taken by fr.)				
	Lect.	II	TThS	166Ph	Mr. Krey
	Secs.	Ar	Ar		

Senior College Courses

Except where otherwise stated, prerequisites for all courses numbered 50 to 100 are 15 credits in social science. The examination at the end of the course will cover the work of the three terms, and no final grade will be assigned until the whole course is completed. In exceptional cases students may enter the winter quarter but in that event must read to cover the work of the first quarter.

50f-51w-52s†	Survey of Ancient European History	I	TThS	112OL	Mr. Deutsch
	(9 cred.; jr., sr.)				
53f-54w-55s†	Survey of Medieval European History	III	MWF	112OL	Mr. Krey
	(9 cred.; jr., sr.)				

* In the spring quarter, an additional hour to be arranged.

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

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
56-57-58	<i>Survey of Early Modern European History</i>				<i>Not offered</i>
59f-60w-61sf	<i>Survey of Later Modern European History</i>	IV	MWF	111OL	Mr. Steefel
	(9 cred.; jr., sr.)				
62f-63w-64sf	<i>Survey of European Expansion</i>	II	TThS	211OL	Mr. Buck, Mr. Willson
	(9 cred.; jr., sr.)				
70f-71w-72sf	<i>English Constitutional History</i> ..	I	MWF	112OL	Mr. White
	(9 cred.; pre-legal soph. with C average, jr., sr.)				
73f-74w-75sf	<i>England Since 1485</i>	II	MWF	211OL	Mr. Willson
	(9 cred.; jr., sr.)				
76f-77w-78sf	<i>Canadian History</i>	III	TThS	221OL	Mr. Burt
	(9 cred.; jr., sr.)				
80f-81w-82sf	<i>Introduction to Economic History</i> ..	II	TThS	111OL	Ar
	(9 cred.; jr., sr.)				
83-84-85†	<i>American Economic History</i>				<i>Not offered</i>
86-87†	<i>English Backgrounds and American Colonies</i>				<i>Not offered</i>
88w-89s	<i>American Colonies in the Seventeenth Century</i>	II	MWF	112OL	Mr. White
	(9 cred.; jr., sr.)				
90f-91w-92sf	<i>West in American History</i>	III	TThS	211OL	Mr. Buck, Mr. Osgood, Mr. Shippee
	(9 cred.; jr., sr.)				
93f-94w-95sf	<i>American Diplomatic History</i> ..	III	MWF	221OL	Mr. Shippee
	(9 cred.; jr., sr.)				

Courses numbered 150 and over are open to seniors and graduates; prerequisites are the appropriate survey courses (numbered 50 to 100) and the consent of the department.

For the year 1931-32 seniors will consult with advisers to ascertain what topics their preparation fits them for.

150-151-152†	<i>Topics in Ancient European History</i>				<i>Not offered</i>
153f-154w-155sf	<i>Topics in Medieval European History</i>	*		Ar Ar	Mr. Krey
	(9 cred.; sr., grad.)				
156f-157w-158sf	<i>Topics in Modern European History</i>	†		Ar Ar	Mr. Deutsch, Mr. Steefel
170f-171w-172sf	<i>Topics in English History</i>	§		Ar Ar	Mr. White, Mr. Willson, Miss Thompson
	(9 cred.; sr., grad.)				

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

* One or more of such topics as the following will be studied by small groups of students: Break-up of the Roman Empire; The Crusades; Empire and Papacy; Rise of Feudalism; Feudal Institutions; European Migrations; Rise of National States; Intellectual Development; The Renaissance; The Reformation; Rise of Towns.

† One or more of such topics as the following will be studied by small groups of students: Age of Louis XIV; The Eighteenth Century; French Revolution and Empire; Restoration and Revolution; Second French Empire; Making of Italy and Germany; International Relations, 1871-1914; Europe Since 1914; The Eastern Question; Modern Russia.

§ One or more of such topics as the following will be studied by small groups of students: Beginnings of Parliament; Legal History (Anglo-Saxon Law, the Age of Glanvill, of Bracton, or of Edward I, etc.); Local Self-Government in Medieval England; Parliament and Administration in the Fourteenth Century; Antiquarianism and Political Theorists; The Tudors and Stuarts; England in the Nineteenth Century; British India.

No.	Title	Hour	Day	Bldg.	Instructor
176-177-178†	<i>Topics in Canadian History</i>	<i>Not offered</i>			
180-181-182†	<i>Topics in Economic History</i>	<i>Not offered</i>			
190f-191w-192s†	<i>Topics in American History</i> ..	¶	Ar	Ar	Mr. Blegen, Mr. Buck, Mr. Osgood, Mr. Shippee, Mr. Stephen- son, Mrs. Tyler
	(9 cred.; sr., grad.)				

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 Willigar	
4f	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 Willigar	
4s	Textiles (Ed., S., L., & A.) (See 4f) (Limited to 24)	Sec. 1	VI, VII	MWF	307, 311HE	Miss Weller
		2	VI, VII	MWF	305HE	Miss Willigar
11f,s	Clothing Planning and Construc- tion A (3 cred.; all; no prereq.)	Sec. 1	I, II	MWF	304HE	Miss Willigar, Miss Gorham, Miss Ander- son
	(Limited to 24)	2	I, II, III	ThS	304HE	Miss Willigar, Miss Gorham
		3	VI, VII, VIII	TTh	304HE	Miss Keller
11w	Clothing Planning and Construc- tion A (See 11f)	Sec. 1	I, II	MWF	304HE	Miss Gorham
	(Limited to 24)	2	VI, VII, VIII	TTh	304HE	Miss Gorham
13f,s	Clothing Planning and Construc- tion B (3 cred.; all; prereq., 3, 11, 50)	Sec. 1	III, IV	MWF	304HE	Miss Willigar
	(Limited to 24)	2	I, II	MWF	305HE	Miss Gorham
15f,w,s	Clothing Problems (3 cred.; 3rd qtr. fr., soph., jr.; prereq., 3, 51 or parallel)	Lect.	VI, VII	Th	313HE	Miss Weller,
	(Limited to 30)	Field Trips	VI, VII, VIII, IX	T		Miss Gorham

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

¶ Such topics as The Colonies; The Revolution and Making of the Constitution; Political Parties; Civil War and Reconstruction; Immigration; The West; History of Minnesota; American Agriculture and Rural Life; American Diplomacy; Recent American Development; will be studied by small groups of students.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
50f	Color and Design I (3 cred.; no prereq.)				
	Sec. 1	I, II	MWF	402HE	Miss Segolson
	(Limited to 24)	2	ThS	402HE	Miss Guttman
		3	MWF	402HE	Miss Fowler
50w	Color and Design I (See 50f)				
	Sec. 1	III, IV	MWF	402HE	Miss Guttman
		2	TThS	402HE	Miss Guttman
50s	Color and Design I (See 50f)				
	Sec. 1	I, II	MWF	402HE	Miss Guttman
		2	MWF	402HE	Miss Guttman
51f	Color and Design II (3 cred.; prereq., 50) (Limited to 24 each)				
	Sec. 1	I, II	MWF	401HE	Miss V. Goldstein
		2	TThS	401HE	Miss V. Goldstein
51w	Color and Design II (See 51f) (Limited to 24 each)				
	Sec. 1	III, IV	MWF	401HE	Miss V. Goldstein
		2	TThS	401HE	Miss Fowler
51s	Color and Design II (See 51f) (Limited to 24 each)				
	Sec. 1	VI, VII, VIII	TTh	402HE	Miss Segolson
		2	MWF	402HE	Miss Fowler
53f	Related Art Problems (3 cred.; soph., jr., sr.; prereq., 51 or 56) (Limited to 24)				
	Sec. 1	VI, VII	MWF	402HE	Miss Fowler
		2	MWF	402HE	Miss Fowler
53w	Related Art Problems (See 53f) (Limited to 24 each)				
	Sec. 1	VI, VII	MWF	402HE	Miss Fowler
		2	MWF	402HE	Miss Fowler
53s	Related Art Problems (See 53f)				
	Sec. 1	I, II	TThS	402HE	Miss Segolson
		2	MWF	402HE	Miss Segolson
56f	Applications of Color and Design (3 cred.; no prereq.)				
	VI, VII, VIII	TTh	402HE	Miss H. Goldstein	
70f	Nutrition Survey (2 cred.; all; no prereq.) (Limited to 45 each)				
	Sec. 1	IV	WF	203HE	Mrs. Furnas,
		2	ThS		Miss Dinsmore
70w	Nutrition Survey (See 70f) (Limited to 45)				
	III	TTh	203HE	Miss Dinsmore	
70s	Nutrition Survey (See 70f) (Limited to 45)				
	VI	TTh	OPhAud	Miss Biester	
80f	Food Preparation (5 cred.; prereq., Agr. Biochem. 3 and 4* or permission of Miss Child) (Limited to 20)				
	I, II	MTWThF	209HE	Miss Steers	

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

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
80w	Food Preparation (See 80f)				
	(Limited to 20 each) Sec. 1	VI, VII	MTWThF	209HE	Miss Steers
		2	VIII, IX	MTWThF	Miss Steers
80s	Food Preparation (See 80f)				
	Sec. 1	III, IV	MTWFS	209HE	Miss Steers
	2	VI, VII	MTWThF		Miss Steers
83f,s	Food Management (3 cred.; soph., jr., sr.; prereq., 80 or 81)				
	(Limited to 20) Sec. 1	III, IV	MWF	203, 207HE	Mrs. Niles
				203,	
	2	VI, VII	MWF	207HE	Miss Steers
83w	Food Management (See 83f,w)	III, IV	MWF	203, 207HE	Mrs. Niles
	(Limited to 20)				
90s	Home Management Problems for Social Workers (3 cred.; jr., sr.; no prereq.)	III	MWF	20Ph	Miss Studley

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 Carlotta Brown, Miss Gorham
17s	Advanced Clothing (See 17w)	III, IV and	TS	305HE	Miss Carlotta Brown, Miss Gorham
	(Limited to 24)	III, IV or	W		
		I, II	Th		
115f,w	Clothing Economics (2 cred.; jr., sr.; prereq., 13, Econ. 6-7)	III	TTh	203HE	Miss Weller
131f	Home Management: House Plan- ning and Equipment (5 cred.; jr., sr.; prereq., 53) (Limited to 24)	III, IV	MTWFS	401HE	Miss H. Gold- stein
131w	Home Management: House Plan- ning and Equipment (See 131f)	VI, VII	MTWThF	401HE	Miss H. Gold- stein
	(Limited to 24)				
131s	Home Management: House Plan- ning and Equipment (See 131f)				
	Sec. 1	III, IV	MTWFS	401HE	Miss V. Gold- stein
	(Limited to 24 each) 2	VI, VII	MTWThF	401HE	Miss H. Gold- stein
150f,w,s	Art History and Appreciation .. (3 cred.; jr., sr.; prereq., per- mission of instructor)	VIII	MWF	313HE	Miss V. Gold- stein

HOW TO STUDY

No.	Title	Hour	Day	Bldg.	Instructor
1f	How To Study (2 cred.; all; prereq., permission of instructor)	Sec. 1 I 2 II 3 VII	MWF MWF MWF	104OPh 104OPh 104OPh	Mr. Beers Mr. Beers Mr. Bird
1w	How To Study (See 1f)	Sec. 1 I 2 II	MWF MWF	104OPh 104OPh	Mr. Beers Mr. Bird
1s	How To Study (See 1f)	Sec. 1 I 2 II	MWF MWF	104OPh 104OPh	Mr. Beers Mr. Beers

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.

No.	Title	Hour	Day	Bldg.	Instructor
5s	Human Anatomy (For students in Physical Edu- cation)	Ar	Ar	Ar	

HUMAN PHYSIOLOGY

MEDICAL SCHOOL

Major Advisers: J. F. McClendon, F. H. Scott

No.	Title	Hour	Day	Bldg.	Instructor
1f,s*	Elements of Physiologic Chemistry (3 cred.; all; no prereq.)	Lect. I Lab. II, III, IV Quiz II	MWThFS T Th	Ar	Dr. Greisheimer and others
2f,s*	Elements of Physiology (4 cred.; all; no prereq.)	Lect. I Lab. II, III, IV Quiz II	MWThFS T Th	Ar	Dr. Greisheimer and others
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. Greis- heimer, Dr. King, and others

* Courses 1 and 2 compose a sequence required of three-year nursing students. Either or both courses open to others.

COLLEGE OF EDUCATION

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)	IV I	M TThS	MH MH	Dr. Hemingway, Dr. Cavett, Mr. Arm- strong, and others
59s	Human Physiology (6 cred.; jr., sr.; prereq., Zool. 1-2 or 5-6-7; Inorg. Chem. 1-2-3 or 4-5)	Lect. I Rec. II Lab. II, III, IV	TWThS Th TW		Dr. King
60s	Physiology of Exercise (4 cred.; jr., sr.; prereq., 4 and 57)	Lect. I Lab. VI, VII, VIII	TThS W	Ar	Dr. Collins
100w-101s‡	Physiol. Chemistry (10 cred.; jr., sr.; prereq., zool., org. chem., and physics)	IV	MWF	301MH	Dr. McClendon 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. (8 cred.; jr., sr.; prereq., zool. and org. chem.)	Lect. II VI Rec. Sec. A III B II Lab. Sec. A VI, VII, VIII III, IV B III, IV VI, VII, VIII	MWThF T TTh TS M F W F		Dr. Scott, Dr. Lyon, Dr. Greis- heimer, Dr. King, and others
104w*	Physiol. of Nervous System, etc. (7 cred., lect. only, 4 cred.; jr., sr.; prereq., 103 or org. chem. and neurol.)	Lect. IV VI Rec. VIII Lab. Div. A 9-11:00 1:30-4:00 B 9-11:00 1:30-4:00	MTWF Th F S M F W	301MH	Dr. Lyon, Dr. Scott, and others

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

JOURNALISM

Fees.—Students registered for any journalism course, except Course 5, are required to pay a general fee of \$1 a quarter, regardless of the number of courses pursued. Courses 41, 51-52, 55, 56, and 58 require laboratory fees in addition to the general fee of \$1.

* Students may register for lectures without laboratory.

‡ Div. A, B, primarily for medics; C primarily for others.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
5w	The American Newspaper (3 cred.; soph., jr., sr.; prereq., average of C)	III	MWF	301F	Mr. Ford and others
5s	The American Newspaper (See 5w)	II	MWF	301F	Mr. Ford and others
13f	Introduction to Reporting (3 cred.; soph. with average of C, jr., sr.; prereq., Eng. A-B-C, Comp. 4-5-6 or exemption)				
	Sec. 1 Journalism majors	I	MWF	14P	Mr. Desmond
	2 Journalism minors	I	MWF	10P	Mr. Kildow
	Reporting conferences	Ar	Ar	Ar	Mr. Desmond, Mr. Ford, Mr. Barnhart, Mr. Kildow
14w-15s†	Newspaper Reporting (6 cred.; soph., jr., sr., with average of C in 13, or profes- sional experience, or consent of instructor, and Comp. 11-12 or 18-19§)	I	MWF	14P	Mr. Desmond
	Reporting conferences	Ar	Ar	Ar	Mr. Desmond, Mr. Ford, Mr. Barnhart, Mr. Kildow
17s‡	Newspaper Reference Methods .. (2 cred.; soph. with average of C, jr., sr.; prereq., 5, 13, or 14)	I	TTh	19P	Mr. Desmond
41w||	Editing for Non-Majors (3 cred.; jr., sr.; prereq., 13, and a professional or vocational major in colleges other than S. L. & A.)				
	Lect.	I	MW	10P	Mr. Kildow
	Lab. Sec. 1	VIII, IX	M	10P	
	2	I, II	T	19P	
	3	VII, VIII	Th	10P	
51f-52w**†	News Editing (4 cred.; jr., sr.; prereq., 15)				
	Lect.	III	T	14P	Mr. Olson, Mr. Barnhart,
	Lab. Sec. 1	VI, VII	M	19P	
	2	VI, VII	T	19P	
	3	VIII, IX	W	19P	
	4	VII, VIII	Th	19P	
55f**||	Advertising Typography (3 cred.; jr., sr.; prereq., 41 or 51)				
	Lect.	IV	M	14P	Mr. Olson, Mr. Barnhart,
	Lab. Sec. 1	VII, VIII	MW	20P	
	2	VI, VII	TTh	20P	
	3	VII, VIII	WF	20P	

* A laboratory fee of \$1 per credit hour is charged for this course.

† 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.

|| Credit will be allowed for only one quarter of Courses 55 and 56.

|| A laboratory fee of \$1 per quarter is charged for this course.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
56w*†	Newspaper Typography and Make-up (3 cred.; jr., sr.; prereq., 41 or 51)	Lect. IV Lab. Sec. 1 VIII, IX 2 I, II 3 VI, VII	T 14P MW 20P WF 20P TTh 20P		Mr. Olson, Mr. Barnhart
56s*‡	Newspaper Typography and Make-up (Sec 56w)	Lect. IV Lab. Sec. 1 VIII, IX 2 VI, VII 3 VI, VII	T 14P MW 20P TTh 20P WF 20P		Mr. Olson, Mr. Barnhart
58*	<i>Advanced Typography</i> (2 cred.; jr., sr.; prereq., 55, 56, or 57)	<i>Not offered</i>			
60f-61w-62s†	The Weekly Newspaper (9 cred.; jr., sr.; prereq., 15)	I	TThS	10P	Mr. Barnhart
55f	Women's Departments (3 cred.; jr., sr.; prereq., 15)	I	TThS	14P	Mr. Kildow
69s	Newspaper and Magazine Articles (3 cred.; jr., sr.; prereq., 15 or 41)	I	MWF	10P	Mr. Kildow
70f-71w†	Business and Specialized Journalism (6 cred.; jr., sr.; prereq., 15 or 69)	II	MWF	10P	Mr. Ford
73f-74w†	Newspaper and Magazine Articles (6 cred.; jr., sr.; prereq., 15)	VI	MWF	10P	Mr. Steward
75s	Law of the Press (2 cred.; jr., sr.; prereq., 52)	III	TTh	14P	Mr. Desmond
76f	Critical Writing (3 cred.; jr., sr.; prereq., 15, 69, or 73-74)	III	TThS	10P	Mr. Ford
78s	Press Relations (3 cred.; jr., sr.; prereq., 69 or 73)	IV	MWF	19P	Mr. Barnhart
82s	Supervision of School Publications (3 cred.; jr., sr.; prereq., 41 or 51)	IV	MWF	14P	Mr. Kildow
94f-95w†	Newspaper Administration (3 cred.; jr., sr.; prereq., 52)	II	MWF	14P	Mr. Olson
96s	The Journalism of Finance and Commerce (3 cred.; jr., sr.; prereq., 15, and 10 cred. in econ. or bus. adm.)	VI	MWF	10P	Mr. Steward
101w	The Reporting of Public Affairs (3 cred.; jr., sr., grad.; prereq., 52 and 10 cred. in pol. sci. Required of all men majors)	II	TThS	14P	Mr. Ford

* A laboratory fee of \$1 per credit hour is charged for this course.

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

‡ Credit will be allowed for only one quarter of Courses 55 and 56.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
103s	Literary Aspects of Journalism .. (3 cred.; jr., sr.; prereq., Eng. 21-22 or 22-23)	III	MWF	10P	Mr. Ford
110s	History of Journalism	II	MWF	14P	Mr. Casey
111f	Foreign News Sources	III	MWF	14P	Mr. Desmond
112w	Current Newspaper Problems ...	III	MWF	10P	Mr. Desmond
130f-131w-132s†	The Press and Public Opinion ..	IV	MWF	10P	Mr. Casey
140f-141w-142s†	Contemporary Affairs	1:30-3:00	TTh	14P	Mr. Casey, Mr. Olson, Mr. Desmond
210	Research in Newspaper Problems (Seminar course for grad. stu- dents; 2 cred.; prereq., consent of dept.)	Ar	Ar	Ar	Mr. Casey, Mr. Olson

LATIN

Major Adviser: J. B. Pike

For a teacher's certificate—Major recommendation: Course 73 and any two of Courses 51, 52, 53, 62, 63, 71, and three courses in the hundred sequence.

Minor recommendation: Course 73 and any two of Courses 51, 52, 53, 62, 63, 71.

Students entering with one year Latin will take 3, or 2 and 3. Students entering with two years of Latin will take 11 and 12 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; 11 and 12 in their second year; and any two of 21, 22, and 23 in their third year.

To secure a recommendation from the department to take the Teachers' Course and Practice Teaching a student must make a grade of C or better in Course 73.

Junior College Courses

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w†§	Beginning Latin	IV	MTWFS	110F	Mrs. Babcock
3s	Caesar	IV	MTWFS	110F	Mrs. Babcock
11f	Virgil I	III	MTWFS	109F	Mr. Cram

† 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 page 6, Science, Literature, and the Arts bulletin, Part II.

No.	Title	Hour	Day	Bldg.	Instructor
12w	Virgil II (5 cred.; fr., soph., jr., sr.; pre- req., 1-2, 3, or 2 yrs. Latin)	III	MTWFS	109F	Mr. Cram
21f	Selections (5 cred.; fr., soph., jr., sr.; pre- req., any two of 11, 12, 13, or 3 or 4 yrs. of Latin)	IV	MTWFS	109F	Mr. Pike
22w	Selections and Survey (5 cred.; fr., soph., jr., sr.; pre- req., any two of 11, 12, 13, or 3 or 4 yrs. of Latin)	IV	MTWFS	109F	Mr. Pike
23s	Plautus and Terence (5 cred.; fr., soph., jr., sr.; pre- req., 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 three or four years of Latin may elect 23s.

Senior College Courses

51	<i>Pliny's Letters</i> (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	<i>Not offered</i>			
52	<i>Horace's Satires and Epistles</i> .. (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	<i>Not offered</i>			
53	<i>Suetonius, Selected Lives</i> (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	<i>Not offered</i>			
62w	Horace's Odes and Epodes (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	I	TThS	109F	Mr. Cram
63s	Apuleius (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	I	TThS	109F	Mr. Cram
71f	Cicero's De Amicitia and De Senectute (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	I	TThS	109F	Mr. Cram
73s	Advanced Grammar and Compo- sition* (3 cred.; jr., sr.; prereq., any two of 51, 52, 53, or equiv.)	III	MWF	109F	Mr. Pike
121f	Advanced Virgil (3 cred.; jr., sr., grad.; prereq., any two of 51, 52, 53, or equiv.)	II	MWF	109F	Mr. Pike
122	<i>Cicero's Letters</i> (3 cred.; jr., sr., grad.; prereq., any two of 51, 52, 53, or equiv.)	<i>Not offered</i>			
123	<i>Medieval Latin</i> (3 cred.; jr., sr., grad.; prereq., any two of 51, 52, 53, or equiv.)	<i>Not offered</i>			

* Required of students who expect a teaching recommendation.

No.	Title	Hour	Day	Bldg.	Instructor
131	<i>Juvenal</i> (3 cred.; jr., sr., grad.; prereq., any two of 51, 52, 53, or equiv.)	<i>Not offered</i>			
132W	Seneca's Epistles (3 cred.; jr., sr., grad.; prereq., any two of 51, 52, 53, or equiv.)	II	MWF	109F	Mr. Pike
133S	Vulgar Latin (3 cred.; jr., sr., grad.; prereq., any two of 51, 52, 53, or equiv.)	II	MWF	109F	Mr. Pike
221f-222W-223S	Graduate Seminar: Cicero's Phil. Works (9 cred.)	VII, IX	T	314Lib	Mr. Pike
241f-242W-243S	Graduate Seminar: Introduction to Classical Philology (9 cred.)	VIII, IX	Th	314Lib	Mr. Cram

LIBRARY METHODS

For specialized curriculum for school librarian, see Education bulletin, Part I. For program of courses see page 27. For program of professional courses in library instruction and for the course in hospital library service, consult the bulletin of the Division of Library Instruction.

The courses listed below are for personal skill in the use of books. They are not professional in purpose and carry no professional credit.

No.	Title	Hour	Day	Bldg.	Instructor
1f,w,s*	Use of Books and Libraries (2 cred.; fresh., soph. only; no prereq.)				
	Sec. 1	II	MW	3Lib	Miss Firkins
	2	IV	MW	3Lib	Mr. Russell, Miss Moen
	3	VI	MW	5Lib	Mrs. Blomgren

MATHEMATICS

Major Adviser: A. L. Underhill

For a teacher's certificate.—Major recommendation: entrance credit in solid geometry or its equivalent; Courses 50, 51, and 8 additional credits in courses numbered over 49; a comprehensive examination on the material related to Courses 5, 6, 7, 30, 50.

Minor recommendation: entrance credit in solid geometry or its equivalent. Course 50 and 3 additional credits in courses numbered over 49; a comprehensive examination on the material related to Courses 5, 6, 7, 30, 50.

The comprehensive examination will be given at the beginning of each quarter. Except with the permission of his major adviser, a student must take it during the first quarter of residence after completing Course 50 or on transferring to this college with credit in differential calculus. A student receiving an unsatisfactory rating in this examination may repeat it at a later time but not until one quarter has elapsed.

* For students in the College of Science, Literature, and the Arts. Others must obtain a special card from the junior college office. Carries no professional credit.

Placement tests.—In each of Courses 3, 4, 5, and 8, a placement test will be given at the *first meeting* of the class. Students who fail in this test will be advised to take a more elementary course. It is especially important to attend the first meeting of the class promptly. Late registrants must take the test before entering class.

Junior College Courses

No.	Title	Hour	Day	Bldg.	Instructor
3f*	Higher Algebra, Short Course .. (4 cred.; all; prereq., 1 yr. elem. alg.)	III	MWThF	206OLa	Ar
3w*	Higher Algebra, Short Course .. (See 3f)	IV	MTWF	206OLa	Ar
4f*	Trigonometry, Short Course (4 cred.; all; prereq., 3 or 5 or prep. higher alg.)	II	MTWF	166Ph	Ar
4w*	Trigonometry, Short Course (See 4f)	III	MWThF	206OLa	Ar
4s*	Trigonometry, Short Course (See 4f)	IV	MTWF	206OLa	Ar
5f	Higher Algebra				
	(5 cred.; all; prereq., 1 yr. elem. alg.)				
	Sec. 1	II	MWThFS	206OLa	Ar
	2	VI	MTWThF	166Ph	Ar
5w	Higher Algebra	VI	MTWThF	133Ph	Ar
	(See 5f)				
5s	Higher Algebra	I	MWThFS	206OLa	Ar
	(See 5f)				
6f¶	Trigonometry	II	MWThFS	104F	Ar
	(5 cred.; fr., soph., jr., sr.; prereq., 3 or 5, or prep. higher algebra)				
6w¶	Trigonometry	VI	MTWThF	105F	Ar
	(See 6f)				
6s¶	Trigonometry	IV	MTWFS	105F	Ar
	(See 6f)				
7f¶	College Algebra	I	MWThFS	105F	Ar
	(5 cred.; all; prereq., 5 and 6 or prep. higher algebra and 6)				
7w¶	College Algebra	II	MWThFS	104F	Ar
	(See 7f)				
7s¶	College Algebra	VI	MTWThF	105F	Ar
	(See 7f)				
8f¶	Commerce Algebra	I	MWThFS	206OLa	Ar
	(5 cred.; pre-bus. stud.; prereq., 5 or prep. high. alg.)				
8w¶	Commerce Algebra	II	MWThFS	206OLa	Ar
	(See 8f)				
8s¶	Commerce Algebra	VI	MTWThF	104F	Ar
	(See 8f)				

* For pre-med. and pre-dent. students, and others who desire only the mathematics necessary in the first course in physics.

¶ Course 8 involves some duplication of material with Courses 6 and 4. Any student who has taken Course 4 or 6 may take Course 8 for 4 credits. Any student who has taken Course 8 may take Course 4 for 3 credits or Course 6 for 4 credits: No student may receive credit for both 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.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
20w	Mathematics of Investment (5 cred.; all; prereq., 8 or 47, or 6 and 7)	I	MWThFS	166Ph	Mr. Hart
20s	Mathematics of Investment (See 20w)	II	MWThFS	133Ph	Ar
21	<i>Elements of the Mathematics of Life Insurance</i> (3 cred.; all; prereq., 20)	<i>Not offered</i>			
30f	Analytic Geometry (6 cred.; all; prereq., 6 and 7)	I	MTWThFS	104F	Mr. Underhill
30w	Analytic Geometry (See 30f)	I	MTWThFS	105F	Mr. Brink
30s	Analytic Geometry (See 30f)	II	MTWThFS	102F	Mr. Hart

Senior College Courses

50f	Calculus I (5 cred.; jr., sr.; prereq., 30)	III	MTWFS	105F	Mr. Jackson
50w	Calculus I (See 50f)	I	MWThFS	104F	Mr. Underhill
51w	Calculus II (5 cred.; jr., sr.; prereq., 50)	III	MTWFS	105F	Mr. Jackson
51s	Calculus II (See 51w)	I	MWThFS	104F	Mr. Underhill
52f	Calculus III (5 cred.; jr., sr.; prereq., 51)	II	MWThFS	101F	Mr. Underhill
52s	Calculus III (See 52f)	III	MTWFS	105F	Mr. Jackson
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
63	<i>Theory of Equations II</i> (3 cred.; jr., sr.; prereq., 62)	<i>Not offered</i>			
70	<i>Hist. of Elem. Math.</i> (3 cred.; jr., sr.; prereq., 30)	<i>Not offered</i>			
71f	Solid Analytic Geometry (3 cred.; jr., sr.; prereq., 50)	III	TThS	101F	Mr. Bussey
102s	Advanced Analytical Geometry .. (3 cred.; jr., sr., grad.; prereq., 51)	III	TThS	101F	Mr. Bussey
106f	Differential Equations (3 cred.; jr., sr., grad.; prereq., 51)	III	MWF	101F	Miss Gibbens
107w-108s	Advanced Calculus (6 cred.; jr., sr., grad.; prereq., 52)	III	MWF	101F	Miss Carlson
116w	Differential Geometry (3 cred.; jr., sr., grad.; prereq., 52)	III	TThS	101F	Mr. Underhill
118f	Vector Analysis (3 cred.; jr., sr., grad.; prereq., 51)	VII	MWF	101F	Mr. Hart
121-122-123	<i>Math. Theory of Statistics</i> (9 cred.; jr., sr., grad.; prereq., 51 or 47, 48, 49)	<i>Not offered</i>			
131s	Advanced Algebraic Theory (3 cred.; jr., sr., grad.; prereq., 62)	VII	MWF	101F	Mr. Hart

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
141	<i>Projective Geometry</i> (3 cred.; jr., sr., grad.; prereq., 51)	<i>Not offered</i>			
142	<i>Theory of Invariants</i> (3 cred.; jr., sr., grad.; prereq., 51 and 62)	<i>Not offered</i>			
143	<i>Integral Equations</i> (3 cred.; jr., sr., grad.; prereq., 107)	<i>Not offered</i>			
144f-145W-146S	Topics in Analysis (9 cred.; jr., sr., grad.; prereq., 51)	VIII	MTF	105F	Mr. Jackson
222W-223S	Calculus of Variations (6 cred.; grad.; prereq., 206, 207, 208)	Ar	Ar	Ar	Mr. Underhill
251f	Functions of Infinitely Many Variables (3 cred.; grad.; prereq., 206, 207, 208)	Ar	Ar	Ar	Mr. Hart
271f-272W-273S	Theory of Linear Differential and Integral Equations (9 cred.; grad.; prereq., 206, 207, 208)	Ar	Ar	Ar	Mr. Brink

NOTE.—Some of the courses listed in the Graduate School bulletin are open to properly qualified juniors and seniors. For more information consult the chairman of the Department of Mathematics.

MECHANICAL ENGINEERING

COLLEGE OF ENGINEERING AND ARCHITECTURE

NOTE.—Students will register for these courses in the order II-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.)	VI-IX‡ VII	T M	ME ME	Mr. Koepke and others

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
	8	II	TThS	A	Ar
	9	III	TThS	A	Ar

‡ Students having conflicts with this program may register with one of the engineering sections, with permission from Mr. Koepke.

§ Does not carry credit except for pre-dental students.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor	
35	First Year Basic Course					
	(No cred.; fr.; no prereq.)					
	Sec. 1	II	MW & IX T	A	Ar	
	2	III	MW & IX T	A	Ar	
	3	IV	MW & IX T	A	Ar	
	4	V	MW & IX W	A	Ar	
	5	VI	MW & IX W	A	Ar	
	6	VII	MW & IX W	A	Ar	
	7	VIII	MW & IX W	A	Ar	
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					
	(No cred.; soph.; no prereq.)					
	Sec. 1	II	MW & IX T	A	Ar	
	2	III	MW & IX T	A	Ar	
	3	IV	MW & IX T	A	Ar	
	4	V	MW & IX W	A	Ar	
	5	VI	MW & IX W	A	Ar	
	6	VII	MW & IX W	A	Ar	
	7	VIII	MW & IX W	A	Ar	
5f-52w	First Year Advanced Course					
	(Cred.*; prereq., 4-5-6)					
	Sec. 1	II	TTh	A	Ar	
	2	III	TTh	A	Ar	
	Sec. 1	II	MWF	A	Ar	
	2	III	MWF	A	Ar	
	3	VI	MWF	A	Ar	
	4	VIII	MWF	A	Ar	
	53s	First Year Advanced Course				
(Cred.*; prereq., 4-5-6)						
Sec. 1		II	MTWTh	A	Ar	
2		III	MTWTh	A	Ar	
Sec. 1		IX	T or W	A	Ar	
54f-55w		Second Year Advanced Course ..				
		(Cred.*; prereq., 4-5-6)				
		Sec. 1	II	TTh	A	Ar
		2	III	TTh	A	Ar
	Sec. 1	II	MWF	A	Ar	
	2	III	MWF	A	Ar	
	3	VI	MWF	A	Ar	
	4	VIII	MWF	A	Ar	

* For the amount of credit given for the work of the advanced R.O.T.C., see page 18, Science, Literature, and the Arts bulletin, Part II.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
568	Second Year Advanced Course .. (Cred.*; prereq., 4-5-6)	Total of five hours to be taken as follows:			
		One of the two-hour sections:			
	Sec. 1	II	MW	A	Ar
	2	III	MW	A	Ar
	3	II	TTh	A	Ar
	4	III	TTh	A	Ar
		One of the drill sections:			
	Sec. 1	II	MW & IX	T A	Ar
	2	III	MW & IX	T A	Ar
	3	IV	MW & IX	T A	Ar
	4	V	MW & IX	W A	Ar
	5	VI	MW & IX	W A	Ar
	6	VII	MW & IX	W A	Ar
	7	VIII	MW & IX	W A	Ar
	8	II	TTh & IX	W A	Ar
	9	III	TTh & IX	W A	Ar

MUSIC

Major Advisers: Carlyle Scott, A. Pepinsky, A. N. Jones

NOTE.—For specialized curriculum in Public School Music, see p. 7. For courses in Music Education, see p. 37.

Fees

Courses A-B-C, 10, 11, 12, 13

1 lesson per week, 2 credits in one subject	\$35.00
2 lessons per week, 4 credits in one subject	65.00
2 lessons per week, 2 credits in each of two subjects	70.00

Courses 14 to 26

1 lesson per week, 2 credits in one subject	40.00
2 lessons per week, 4 credits in one subject	75.00
2 lessons per week, 2 credits in each of two subjects	80.00

Entrance requirements according to the 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 two 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.

Organ: Same as for piano.

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.

Courses numbered from 10 to 26 inclusive carry either 2 or 4 credits per quarter and must be repeated until the practical music requirement has been met.

* For the amount of credit given for the work of the advanced R.O.T.C., see page 18, Science, Literature, and the Arts bulletin, Part II.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w-3s†	Harmony (9 cred.; fr. mu.; no prereq.)	VI	MWF	103Mu	Mr. Scott
1w-2s-3su†	Harmony (See 1f-2w-3s)	III	MWF	103Mu	Miss Reeves
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 pre- req.)	VI	TTh	Mu	Miss Kendall, Miss Reeves
7w-8s-9su†	Ear Training (See 7f-8w-9s)	VII	TTh	103Mu	Miss Kendall
Af-Bw-Cs†§	Piano (6 or 12 cred.; no prereq.)	Ar	Ar	Mu	Ar
10f,w,s§	Organ	Ar	Ar	Mu	Ar
11f,w,s§	Piano|| .....	Ar	Ar	Mu	Ar
12f,w,s§	Voice|| .....	Ar	Ar	Mu	Ar
13f,w,s§	Violin|| .....	Ar	Ar	Mu	Ar
14f,w,s§	Viola	Ar	Ar	Mu	Ar
15f,w,s§	Cello	Ar	Ar	Mu	Ar
16f,w,s§	Double Bass	Ar	Ar	Mu	Ar
17f,w,s§	Flute	Ar	Ar	Mu	Ar
18f,w,s§	Oboe	Ar	Ar	Mu	Ar
19f,w,s§	Clarinet	Ar	Ar	Mu	Ar
20f,w,s§	Bassoon	Ar	Ar	Mu	Ar
21f,w,s§	Trumpet	Ar	Ar	Mu	Ar
22f,w,s§	French Horn	Ar	Ar	Mu	Ar
23f,w,s§	Trombone	Ar	Ar	Mu	Ar
24f,w,s§	Tuba	Ar	Ar	Mu	Ar
25f,w,s§	Percussion	Ar	Ar	Mu	Ar
26f,w,s§	Harp	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.; all nu., acad. jr., sr.; prereq., consent of director)	IX	T	MuAud	Mr. Killeen
86f-87w-88s	Normal Piano (6 cred.; jr.; prereq., 2 yrs. piano)	VII	MWF	103Mu	Miss Reeves
89f-90w-91s	Advanced Normal Piano (6 cred.; sr.; prereq., 86-87-88)	VIII	MWF	103Mu	Miss Reeves
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.; soph., jr., sr.; prereq., 1-2-3)	III	T	4Mu	Mr. Pepinsky
106f-107w-108s†	History of Music (9 cred.; jr., sr.; prereq., 1-2-3)	II	MWF	4Mu	Mr. Ferguson

* Students majoring in music may take 4 years of orchestra.

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

‡ Carries no credit for students majoring in piano. May be taken only with the consent of the instructor.

¶ Students may receive credit for 2 years of chorus.

§ See statement of fees, p. 94.

|| See entrance requirements on page 94.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
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.)				
	Instrumental Sec. 1	II	TTh	4Mu	Mr. Pepinsky
	Vocal 2	II	TTh	104Mu	Miss Hull
115f-116W-117S	Adv. Ensemble: Instrumental .. (6 cred.; sr.; prereq., 112-113-114)	IV	MW	104Mu	Mr. Pepinsky
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)	IV, V	T	103Mu	Mr. Scott
127f-128W-129S	Advanced Composition (6 cred.; sr.; prereq., 100-101-102)	Ar	Ar	Ar	Mr. Ferguson
201f-202W-203S	Basis of Musical Expression	Consult the office of the department			

ORIENTATION

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w†	Man in Nature and Society (10 cred.; entering freshmen; no prereq.)				Mr. Sirich, Mrs. Kuypers, and others
	Lect.	III	Th	OLAud	
	Sec. 1	I	MWThFS	101F	
	2	II	MWThFS	102F	
	3	III	MTWFS	102F	
	4	IV	MTWFS	5F	
	5	VI	MTWThF	5F	
	6	VII	MTWThF	5F	
1W-2S†	Man in Nature and Society (See 1f-2w)	III	MTWFS	6F	

PHILOSOPHY

Major Adviser: Norman Wilde

No.	Title	Hour	Day	Bldg.	Instructor
1f	Problems of Philosophy (5 cred.; soph., jr., sr.; no pre-req.)				
	Sec. 1	I	MWThFS	321F	Mr. Conger
	2	II	MWThFS	321F	Ar
1W	Problems of Philosophy (See 1f)				
	Sec. 1	III	MTWFS	321F	Mr. Swenson
	2	VII	MTWThF	321F	Mr. Conger
1S	Problems of Philosophy (See 1f)	IV	MTWFS	321F	Mr. Conger

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

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor	
2f	Logic (5 cred.; soph., jr., sr.; no pre-req.)	Sec. 1 2	III IV	MTWFS MTWFS	322F 321F	Mr. Swenson Ar
2w	Logic (See 2f)		VI	MTWThF	321F	Ar
2s	Logic (See 2f)	Sec. 1 2	III VII	MTWFS MTWThF	321F 321F	Ar Ar
3f	Ethics (5 cred.; soph., jr., sr.; no pre-req.)		I	MWThFS	322F	Mr. Wilde
3w	Ethics (See 3f)		I	MWThFS	321F	Ar
3s	Ethics (See 3f)		I	MWThFS	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
50f	Ancient Philosophy (3 cred.; jr., sr.; prereq., 10 cred. or 15 cred. in phil. and soc. sci.)		IV	MWF	322F	Mr. Wilde
51w	Medieval and Renaissance Philo- sophy (3 cred.; jr., sr.; prereq., 10 cred. or 15 cred. in phil. and soc. sci.)		IV	MWF	322F	Mr. Wilde
52s	Modern Philosophy (3 cred.; jr., sr.; prereq., 10 cred. or 15 cred. in phil. and soc. sci.)		IV	MWF	322F	Mr. Wilde
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	<i>Esthetics</i> (3 cred.; jr., sr., grad.; prereq., 10 cred.)		<i>Not offered</i>			
104	<i>History of Esthetic Theory</i> (3 cred.; jr., sr., grad.; prereq., 10 cred.)		<i>Not offered</i>			
108f-109w-110s	History of Ethics (6 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 10 cred. in phil.)		IV	TS	322F	Mr. Wilde
115w	Contemporary Philosophy (3 cred.; jr., sr., grad.; prereq., 50 or 51)		III	MWF	322F	Mr. Conger

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
120f	Scandinavian Philosophy (3 cred.; jr., sr., grad.; prereq., 10 cred.)	VII	MWF	322F	Mr. Swenson
124	<i>Political and Social Ethics</i> (5 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 10 cred. in phil.)	<i>Not offered</i>			
129w	Development of Political Thought (Same as Pol. Sci. 165. 5 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 10 cred. in phil.)	I	MWThFS	322F	Mr. Wilde
135w-136s	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	MTWFS	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	<i>Modern Idealism</i> (6 cred.; sr., grad.; prereq., 15 cred. in phil.)	<i>Not offered</i>			
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

PHYSICS

Major Adviser: H. A. Erikson

For a teacher's certificate.—Major recommendation: 28 credits including Physics 3, 4, 23, 24, 33, 34, 43, 44, 9, 52 and six additional credits to be elected from the following: 104, 124, 134, 136, 144, 148, 150, 152.

Minor recommendation: 22 credits consisting of the following courses: 3, 4, 23, 24, 33, 34, 43, 44, 9 and 52.

For the specialized curriculum in natural science see College of Education bulletin, Part I.

NOTE.—Courses in laboratory require separate registration.

Fees.—A laboratory fee of \$2 a quarter is charged for each of the following courses: 4, 24, 34, 44, 52, 124, 134, 136, 144, 146, 148, 150.

Introductory Courses

No.	Title	Hour	Day	Bldg.	Instructor
3f	Elem. of Mechanics (3 cred.; all; prereq., Math. 4, or 6)	Lect. VIII Quiz II or IX	MWF Th	150Ph 150Ph	Mr. Erikson
			Th	150Ph	

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
3w,s	Elem. of Mechanics (See 3f)	Lect. VIII Quiz IX	MWF F	150Ph 150Ph	Mr. Erikson
4f,w,s	Elem. of Mechanics Lab. (1 cred.; all; prereq., 3 or reg. in 3)	Sec. 1 VI, VII 2 VIII, IX 3 I, II 4 VIII, IX	T T Th Th	153Ph 153Ph 153Ph 153Ph	Mr. Buchta and assts.
11s	Physics Survey (3 cred.; all; no prereq.)	Lect. I Quiz IX	MWF T	166Ph 166Ph	Mr. Erikson and others
13w,s	Acoustics (3 cred.; all; prereq. 3 or reg. in 3)	VIII	MWF	166Ph	Mr. Buchta
23f	Heat (3 cred.; all; prereq., 3)	Lect. III Quiz IX	TThS T	166Ph 166Ph	Mr. Miller Mr. Miller
23w	Heat (See 23f)	Lect. Sec. 1 II 2 VI Quiz Sec. 1 II 2 IX	MWF MWF Th Th	150Ph 150Ph 150Ph 150Ph	Mr. Miller
24f	Heat Laboratory (1 cred.; all; prereq., 4, 23, or reg. in 23)	Sec. 1 I, II 2 VI, VII 3 VIII, IX 4 I, II 5 VIII, IX	T T Th F F	244Ph 244Ph 244Ph 244Ph 244Ph	Mr. Miller and assts.
24w	Heat Laboratory (See 24f)	Sec. 1 VI, VII 2 VIII, IX 3 I, II 4 VI, VII	T Th F Th	244Ph 244Ph 244Ph 244Ph	Mr. Miller and assts.
33f	Optics (3 cred.; all; prereq., 3)	Lect. I Quiz IX	TThS F	133Ph 133Ph	Mr. Buchta
33s	Optics (See 33f)	Lect. I Quiz IX	TThS T	133Ph 133Ph	Mr. Buchta
34f,s	Optics Laboratory (1 cred.; all; prereq., 4 and 33 or reg. in 33)	Sec. 1 VI, VII 2 VI, VII	Th F	236Ph 236Ph	Mr. Valasek and assts.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
43w	Electricity (3 cred.; all; prereq., 3)	Lect. III Quiz IX	TThS T	150Ph 150Ph	Mr. Zeleny Mr. Zeleny
43s	Electricity (See 43w)	Lect. Sec. 1 II 2 VI Quiz Sec. 1 II 2 IX	MWF MWF Th Th	150Ph 150Ph 150Ph 150Ph	Mr. Zeleny
44w	Electricity Laboratory (1 cred.; all; prereq., 4, 43, or reg. in 43)	Sec. 1 VI, VII 2 VIII, IX 3 VI, VII	Th Th M	231Ph 231Ph 231Ph	Mr. Zeleny and assts.
44s	Electricity Laboratory (See 44w)	Sec. 1 VI, VII 2 VI, VII 3 VIII, IX 4 I, II	M T T T	231Ph 231Ph 231Ph 231Ph	Mr. Zeleny and assts.
<i>Intermediate Courses</i>					
52f,w,s	Laboratory Arts (3 cred.; jr., sr.; prereq., 16 cred. and approval of department)	VI, VII, VIII	TTh	39Ph	Mr. Haliday
101f-103w-105s	Theoretical Physics (15 cred.; jr., sr., grad.; prereq., 12 cred. in phys., Math. 51)	IV	MTWFS	145Ph	Mr. Tate
104	<i>Precision Mechanics</i> (3 cred.; jr., sr., grad.; prereq., 12 cred. and Math. 51)	<i>Not offered</i>			
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	Electricity Measurements (3 cred.; jr., sr., grad.; prereq., 43 and 44)	See 144f, Engineering program			Mr. Zeleny
146w	Advanced Electricity Measure- ments (3 cred.; by permission from in- structor; prereq., 144)	Ar	Ar	232Ph	Mr. Zeleny

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
148s	Radioactivity (3 cred.; jr., sr., grad.; prereq., 43, 44)	VII, VIII, IX	TTh	145Ph	Mr. Erikson
150w	Conduction Through Gases (3 cred.; jr., sr., grad.; prereq., 144)	VII, VIII, IX	TTh	145Ph	Mr. Erikson
152f	X-Rays (3 cred.; jr., sr., grad.; prereq., 43, 44)	I	TThS	166Ph	Mr. Erikson
154w,s	X-Ray Spectroscopy (3 cred.; by permission from in- structor; prereq., 152, Math. 51)	Lect. Ar Lab. Ar	Ar Ar Ar Ar		Mr. Valasek

For graduate courses see bulletin of the Graduate School.

POLITICAL SCIENCE

Major Adviser: W. Anderson

For a teacher's certificate in government.—Major recommendation: at least 36 credits in political science including 1-2, American Government and Politics, and either 3, Comparative European Government or 15, Elements of Political Science or 25, World Politics, and at least 12 credits in senior college courses not including Courses 51-52-53.

Minor recommendation: at least 18 credits in political science including 1-2, American Government and Politics, and either 3, Comparative European Government or 15, Elements of Political Science or 25, World Politics, and 3 credits in senior college courses not including 51-52-53.

For specialized curriculum in social studies, see College of Education bulletin, Part I.

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w†	American Government and Politics (10 cred.; soph., jr., sr., and fr. with 10 cred. in hist., econ., or geog.; no prereq.)	Lect. IV Sec. 1 I 2 I 3 II 4 III 5 III 6 VI	MW MWF TThS TThS TThS MWF MWF	OLAud 111OL 111OL 112OL 112OL 209OL 112OL	Mr. Anderson

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

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
1w-2s†	American Government and Politics (See 1f-2w)	Lect. VI	TTh	211OL	Mr. Anderson, Mr. Field
		Sec. 1 VI	MWF	211OL	
		2 II	MWF	209OL	
		3 III	TThS	124F	
		4 II	TThS	209OL	
1st	American Government and Politics (First qtr. of 1-2; see 1f-2w)	Lect. IV	MW	OLAud	Mr. Anderson
		Sec. 1 I	MWF	25F	
		2 I	TThS	111OL	
		3 II	TThS	112OL	
		4 III	TThS	112OL	
2f*	State Government (5 cred.; soph., jr., sr.; prereq., 1)	Lect. IV	MW	211OL	Mr. Lambie
		Sec. 1 VI	MWF	211OL	
		2 II	MWF	209OL	
		3 II	TThS	209OL	
		4 III	TThS	124F	
3w,s	Comparative European Government (5 cred.; soph., jr., sr.; prereq., 10 cred.)	I	MWThFS	209OL	Mr. Starr
15f,w	Elements of Political Science ... (5 cred.; soph., jr., sr.; prereq., 10 cred.)	VI	MTWThF	209OL	Mr. Lippincott
25f,s	World Politics (5 cred.; soph., jr., sr.; prereq., Hist. 1-2)	Lect. III	MWF	211OL	Mr. Mills
		Sec. 1 III	TTh	3F(f), 109F(s)	
		2 I	MW	221OL	
		3 IV	TS	209OL	
51f-52w-53s	Business Law (See bulletin of the School of Business Administration)				
81f-82w-83s†	Readings in Political Science ... (Cred. ar., not to exceed 9; jr., sr.; prereq., 15 cred.)	Ar	Ar	Ar	Consult Mr. Anderson
91f-92w-93s†	Readings and Theses for Honors (Jr., sr.; cred. ar.; prereq., 15 cred.)	Ar	Ar	Ar	Consult Mr. Anderson
101f-102w†	Constitutional Law I, II (6 cred.; jr., sr., grad.; prereq., 15 cred.)	VI	MWF	221OL	Mr. Field
103s	Constitutional Law III (3 cred.; jr., sr., grad.; prereq., 101-102, or consent of instructor)	VI	MWF	221OL	Mr. Field

* Offered for the last time.

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

‡ Students may enter this course any quarter.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
104f	American Constitutional Development I: To 1800 (3 cred.; jr., sr., grad.; prereq., 15 cred. or Hist. 7-8)	II	MWF	221OL	Mr. Young
105W	American Constitutional Development II: 1800-1865 (3 cred.; jr., sr., grad.; prereq., 15 cred., or Hist. 7-8)	II	MWF	221OL	Mr. Young
106S	American Constitutional Development III: Since 1865 (3 cred.; jr., sr., grad.; prereq., 15 cred. or Hist. 7-8)	II	MWF	221OL	Mr. Young
107f	Recent Social Legislation (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. 10 cred. in pol. sci.)	II	TThS	221OL	Mr. Young
108W	Legislative Power and Methods .. (3 cred.; jr., sr., grad.; prereq., 15 cred.)	II	TThS	221OL	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	221OL	Mr. Young
111	Law of Public Utilities (3 cred.; grad. and sr. of suitable prep.)	See Law School bulletin			
113f-114w†	Administrative Law (6 cred.; sr., grad.; prereq., 20 cred.)	I	TThS	221OL	Mr. Field
115S	Topics in Constitutional and Administrative Law (3 cred.; sr., grad.; prereq., 101-102, or 113-114, or consent of instructor)	I	TThS	221OL	Mr. Field
116S	Municipal Powers and Functions (3 cred.; jr., sr., grad.; prereq., 15 cred., or 11)	I	MWF	111OL	Mr. Anderson
117f	Municipal Administration (3 cred.; jr., sr., grad.; prereq., 11, or 15 cred.)	III	TThS	111OL	Mr. Anderson
119*	Jurisprudence (2 cred.; grad., and sr. of suitable prep.)	See Law School bulletin			Mr. Rottschaefer
131f-132w†	Principles of Public Administration (6 cred.; sr., grad., and jr. with consent of instructor; prereq., 20 cred. in soc. sci. incl. 10 cred. in pol. sci.)	II	MWF	111OL	Mr. Lambie
133S	Problems in Public Administration (3 cred.; jr., sr., grad.; prereq., 131-132, or consent of instructor)	II	MWF	111OL	Mr. Lambie

* Second semester.

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

No.	Title	Hour	Day	Bldg.	Instructor
145f-146w	Comparative Government and Politics	III	TThS	209OL	Mr. Starr
	(6 cred.; jr., sr., grad.; prereq., 3, or consent of instructor)				
149-150	Government and Politics of the British Empire	Not offered			
	(6 cred.; jr., sr., grad.; prereq., 15 cred.)				
151	Problems in the British Empire	Not offered			
	(3 cred.; jr., sr., grad.; prereq., 149-150, or consent of instructor)				
153-154	Far Eastern Government and Politics	Not offered			
	(6 cred.; jr., sr., grad.; prereq., 3, or 10 cred. and Hist. 1-2)				
161w-162s†	Current Political Thought	III	MWF	111OL	Mr. Anderson
	(6 cred.; sr., grad.; prereq., 20 cred.)				
163	Topics in Current Political Thought	Not offered			
	(3 cred.; sr., grad.; prereq., 20 cred. in soc. sci., or 10 cred. in phil.)				
165w	Develop. of Political Thought . .	I	MWThFS	322F	Mr. Wilde
	(5 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 10 cred. in phil. Same as Phil. 129)				
169	Problems of Democracy	Not offered			
	(3 cred.; jr., sr., grad.; prereq., 20 cred., incl. 15)				
171s	Political Psychology	See Psychology 141			
	(3 cred.; jr., sr., grad.)				
175s	Political Parties	III	TThS	111OL	Mr. Starr
	(3 cred.; jr., sr., grad.; prereq., 15 cred.)				
176f-177w†	Scope and Methods of Political Science	3:30-5:00	Th	227OL	Mr. Anderson
	(3 cred.; grad., and sr. with approval of instructor)				
181f-182w	International Law	IV	MWF	209OL	Mr. Quigley
	(6 cred.; sr., grad.; prereq., 20 cred. in soc. sci., incl. 10 cred. in pol. sci.)				
183s	International Organization	IV	MWF	209OL	Mr. Quigley
	(3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci.)				
184s	Problems in International Law . .	3:30-5:00	WF	312Lib	Mr. Quigley
	(3 cred.; sr., grad.; prereq., 181-182)				
191f-192w†	Far Eastern Diplomacy	VII	MWF	209OL	Mr. Quigley
	(6 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. 25, or 10 cred. in pol. sci. and Hist. 1-2)				

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

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
193	<i>Problems of the Pacific</i>	Not offered			
	(3 cred.; jr., sr., grad.; prereq., 153-154 or 191-192)				
195f-196w†	Colonial Government and Administration	VI	MWF	111OL	Mr. Mills
	(6 cred.; jr., sr., grad.; prereq., 15 cred., or 20 cred. in soc. sci. incl. 10 cred. in pol. sci.)				
197s	Problems in Colonial Administration	VI	MWF	111OL	Mr. Mills
	(3 cred.; jr., sr., grad.; prereq., 195-196, or consent of instructor)				

*Seminars Primarily for Graduate Students**

201f-202w-203s†	Public Law	Ar		Ar Ar	Mr. Anderson, Mr. Young, Mr. Field
211f-212w-213s†	Modern Government and Political Theory	Ar		Ar Ar	Mr. Anderson, Mr. Lippincott, Mr. Mills, Mr. Starr
221f-222w-223s†	Local Government and Public Administration	Ar		Ar Ar	Mr. Anderson, Mr. Lambie
231f-232w-233s†	International Law and Relations	Ar		Ar Ar	Mr. Quigley, Mr. Mills

PSYCHOLOGY

Major Adviser: R. M. Elliott

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w†	General Psychology				Mr. Elliott and others
	(6 cred.; soph., jr., sr.; no prereq.)				
	Sec. 1	I	MWF	OLAud	
	2	III	MWF	OLAud	
1w,2w	General Psychology	Ar		Ar Ar	
	(See 1f-2w. Registration limited. Written permission must be obtained from junior college office‡. 6 cred.)				
1s,2s	General Psychology	Ar		Ar Ar	
	(6 cred.; see 1f-2w. Registration limited. Written permission must be obtained from junior college office‡)				
3s	Psychology Applied to Daily Life	III	MWF	301F	Mr. Paterson and others
	(3 cred.; soph., jr., sr.; prereq., 1-2)				

* These courses are open to qualified seniors with the consent of the department.

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

‡ Offered II MTWThFS.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
4f-5w††	Intro. 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
	2	III, IV	TS	211Psy	
	3	VI, VII	TTh	211Psy	
	4	VIII, IX	TTh	211Psy	
	5	III, IV	MW	211Psy	
7s‡	Intro. Lab. Psychology (Identical with 4-5 combined. See 4f-5w)				
	Sec. 1	VI, VII	MTThF	211Psy	Mr. Tinker and others
	2	III, IV	MTWF	211Psy	
9s	Intro. to Animal Psychology ... (3 cred.; soph., jr., sr.; prereq., 1-2)	III	MWF	109Psy	Mr. Heron
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
72f	Psychological Esthetics (3 cred.; jr., sr.; prereq., 1-2, and 4-5, or Music 1-2-3, or Art Educ. 20-21 or 9 cred. fine arts)	III	MWF	115Psy	Miss Hevner
84f	Psychology of Learning (3 cred.; jr., sr.; prereq., 1-2; 4-5 or 7)	IV	MWF	109Psy	Mr. Heron
90f,91w,92s	Readings in Psychology (Cred. ar.; jr., sr.; prereq., 1-2; 4-5 or 7, or Zool. 1-2; and per- mission of instructor)	Ar	Ar	Ar	Mr. Elliot, Mr. Paterson, Mr. Bird, Miss Heid- breder, Miss Hevner, Mr. Heron, Mr. Tinker
101f-102w†-103s	Experimental Psychology (3 cred. per qtr.; cred. ar. for honors students; 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 Heid- breder
114w-115s†	Human Behavior (6 cred.; sr., grad.; prereq., 1-2; 4-5 or 7, or Zool. 1-2)	II	TThS	115Psy	Mr. Elliott
125f-126w†-127s	Psy. of Individual Differences .. (3 cred. per qtr.; cred. ar. for honor students; sr., grad.; pre- req., 1-2; 4-5 or 7, or Ed. Psy. 116-117)	II	MWF	115Psy	Mr. Paterson

† A laboratory fee will be charged for the courses in Elementary Laboratory Psychology: \$1 per quarter for Course 4-5, \$2 for Course 7.

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

No.	Title	Hour	Day	Bldg.	Instructor
130s	Vocational Psychology (2 cred.; jr., sr., grad.; prereq., 1-2, 4 additional cred. in psy., educ., or a soc. sci.)	IX, X	F	301F	Mr. Paterson
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
144f-145w§	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	115Psy	Miss Heid- breder
151f-152w§-153s	Animal Psychology (3 cred.; jr., sr., grad.; prereq., honor students; sr., grad.; pre- req., 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.)	VI	MWF	115Psy	Mr. Longstaff

ROMANCE LANGUAGES

Major Adviser: F. B. Barton

For a teacher's certificate.—Major recommendation: 36 credits in one language numbered above 4, these courses to include in the case of French, Survey of French Literature and one other literary course; 49; 53-54-55 (or 20); 63, and 103-104-105.

Minor recommendation: 18 credits in one language in courses numbered above 4.

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.

FRENCH

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w†*	Beginning French (10 cred.; fr., soph., jr., sr.; no prereq.)	I II IV VI VII	MWThFS MWThFS MTWFS MTWThF MTWThF	213F 227F 227F 226F 202F	Ar Ar Ar Ar Ar
1w-2s†*	Beginning French (See 1f-2w)	IV VI	MTWFS MTWThF	202F 202F	Ar Ar
1s†*	Beginning French (See 1f-2w)	I IV	MWThFS MTWFS	227F 124F	Ar Ar
2f†*	Beginning French (2nd qtr. of 1-2. See 1f-2w)	I VI	MWThFS MTWThF	202F 213F	Ar Ar
3f-4w	Intermediate French (10 cred.; fr., soph., jr., sr.; prereq., 1-2, or 2 yrs. high school French)	I III VII	MWThFS MTWFS MTWThF	124F 226F 213F	Ar Ar Ar
3w-4s	Intermediate French (See 3f-4w)	I VI	MWThFS MTWThF	202F 213F	Ar Ar

* Credit is usually not given for more than one beginning language. See page 6, Science, Literature, and the Arts bulletin, Part II.

† The entire course 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 Courses 140 or 20 credits in social science.

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

No.	Title	Hour	Day	Bldg.	Instructor
3s	Intermediate French (First qtr. of 3-4. See 3f-4w)	I	MWThFS	213F	Ar
		II	MWThFS	227F	Ar
		IV	MTWFS	227F	Ar
		VI	MTWThF	226F	Ar
		VII	MTWThF	202F	Ar
4f	Intermediate French (Second qtr. of 3-4. See 3f-4w)	II	MWThFS	113F	Ar
		IV	MTWFS	124F	Ar
		VI	MTWThF	202F	Ar
8f-9w-10s§	Scientific French (pre-med) ... (9 cred.; pre-med.; prereq., 3 or equiv.)	I	MWF	201F	Ar
20f	Oral and Written French (5 cred.; all; prereq., 4 or 3 yrs. high school French)	III	MTWFS	303F	Mr. Borglum
		VII	MTWThF	227F	Mr. Frelin
20s	Oral and Written French (See 20f)	I	MWThFS	124F	Ar
		III	MTWFS	226F	Ar
		VII	MTWThF	213F	Mr. Frelin
21f-22w-23s†	Survey of French Lit. (9 cred.; all; prereq., 3-4 or 20 or 4 yrs. high school French)	II	TThS	226F	Mr. Barton
		III	MWF	201F	Mr. Clefthon
		VII	MWF	201F	Mr. Searles
24w-25s†	Survey of French Lit. (10 cred.; all; prereq., 3-4 or 20 or 4 yrs. high school French)	III	MTWFS	303F	Mr. LeCompte
		VII	MTWThF	226F	Mr. Owens
49f,w,s	French Pronunciation (3 cred.; all; prereq., 3-4 or 4 yrs. high school French)	II	TThS	303F	Mr. Owens
53f	French Composition (3 cred.; jr., sr.*; prereq., 3-4)	III	TThS	201F	Mr. Boyer
		VI	MWF	201F	Mr. Borglum
54w-55s	French Conversation (4 cred.; jr., sr.*; prereq., 53 or 20)	III	TThS	201F	Mr. Boyer
		VI	MWF	201F	Mr. Borglum
62w	Practical French Phonetics (3 cred.; jr., sr.*; prereq., 49)	II	TThS	203F	Miss Guinotte
63f	Adv. French Composition (3 cred.; jr., sr.*; prereq., 53 or 20 with a grade of B)	II	MWF	203F	Miss Guinotte
		VII	MWF	203F	Miss Guinotte
64w-65s	Adv. French Conversation (6 cred.; jr., sr.*; prereq., 54, 55 or 20 with a grade of B)	II	MWF	203F	Miss Guinotte
		VII	MWF	203F	Mr. Borglum
80f-81w-82s	French Lit.: 19th Century (9 cred.; jr., sr.*; prereq., 21- 22-23 or 24-25)	IV	MWF	201F	Mr. Barton
		VII	MWF	207F	Mr. Clefthon
100s	French Oral Diction (4 cred.; jr., sr., grad.; prereq., 62)	I	MWThF	203F	Miss Guinotte
103f-104w-105s†	French Syntax and Comp. (3 cred.; jr., sr., grad.; prereq., 63)	VI	F	217F(f,w) 306F(s)	Mr. Barton
115f	Fr. Lit.: 17th Cent.: Formation of Classic Ideal (4 cred.; jr., sr., grad.; prereq., 21-22-23, or 24-25)	IV	MTWF	203F	Mr. Searles
116w	Fr. Lit.: 17th Cent.: Molière, Racine, LaFontaine (4 cred.; jr., sr., grad.; prereq., 21-22-23 or 24-25)	IV	MTWF	203F	Mr. Searles

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

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

‡ Students may enter any quarter. No student may receive credit for more than two quarters.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
117S	Fr. Lit.: 17th Cent.: Moral and Didactic Literature	IV	MTWF	203F	Mr. Searles
	(4 cred.; jr., sr., grad.; prereq., 21-22-23 or 24-25)				
118f-119w-120S	French Lit.: 18th Century	III	TThS	217F	Mr. Sirich
	(9 cred.; jr., sr., grad.; prereq., 21-22-23 or 24-25)				
121-122-123	French Lit.: 16th Century	<i>Not offered</i>			
	(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. Boyer
	(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	306F	Mr. LeCompte
	(4 cred.; jr., sr., grad.; prereq., 21-22-23 or 24-25)				
157w	Modern French Novel	VI	MTWTh	217F	Mr. Boyer
	(4 cred.; jr., sr., grad.; prereq., 21-22-23 or 24-25)				
171f-172w-173S†	History of French Language	VIII	Th	203F	Mr. LeCompte
	(3 cred.; jr., sr., grad.; prereq., 63)				
174f-175w-176S	Contemp. French Novel and Drama: Lectures in French	IX	TTh	201F	Mr. Boyer
	(6 cred.; jr., sr., grad.; prereq., 53-54-55 (or 20); and 80-81-82)				

ITALIAN

NOTE.—Students may receive credits for Italian 1-2 in addition to one other beginning language.

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w†	Beginning Italian	IV	MTWFS	226F	Miss Nissen
	(10 cred.; fr., soph., jr., sr.; no prereq.)				
3S	Intermediate Italian	IV	MTWFS	226F	Miss Nissen
	(First qtr. of 3-4. 10 cred.; fr., soph., jr., sr.; prereq., 1-2)				
4	Intermediate Italian	<i>Not offered</i>			
	(See 3S)				
70f	Survey of Italian Lit.	II	MWF	217F	Miss Nissen
	(3 cred.; jr., sr.*; prereq., 3-4‡)				
71	Modern Poetry (Leopardi, Carducci)	<i>Not offered</i>			
	(3 cred.; jr., sr.*; prereq., 3-4‡)				
72w	Modern Drama (Giacosa, Bracco, Pirandello)	II	MWF	217F	Miss Nissen
	(3 cred.; jr., sr.*; prereq., 3-4‡)				
73	Boccaccio	<i>Not offered</i>			
	(3 cred.; jr., sr.*; prereq., 3-4‡)				

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

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

‡ For students beginning Italian in the Senior College. 1-2 and permission of instruction.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
74s	Petrarch	II	MWF	217F	Miss Nissen
	(3 cred.; jr., sr.*; prereq., 3-4†)				
159f-160w	Dante	II	TThS	217F	Miss Nissen
	(6 cred.; jr., sr., grad.; prereq., one course above 50)				
161-162	<i>The Sixteenth Century</i>	<i>Not offered</i>			
	(6 cred.; jr., sr., grad.; prereq., one course above 50)				
164s	Dante (in English)	II	TThS	212F	Miss Nissen
	(3 cred.; jr., sr., grad.; prereq., French 21-22-23 or 24-25, or 8 cred. in Eng. above 50)				

SPANISH

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w†||	Beginning Spanish	I	MWThFS	226F	Ar
	(10 cred.; fr., soph., jr., sr.; no prereq.)	IV	MTWFS	125F	Ar
		VI	MTWThF	212F	Ar
1w-2s†||	Beginning Spanish	VII	MTWThF	227F	Ar
	(See 1f-2w)				
1s†||	Beginning Spanish	II	MWThFS	201F	Ar
	(First qtr. of 1-2)				
2f	Beginning Spanish	III	MTWFS	202F	Ar
	(Second qtr. of 1-2. See 1f-2w)				
3f-4w	Intermediate Spanish	II	MWThFS	201F	Ar
	(10 cred.; fr., soph., jr., sr.; prereq., 1-2 or 2 yrs. high school Spanish)	VI	MTWThF	102F	Ar
3w-4s	Intermediate Spanish	III	MTWFS	202F	Ar
	(See 3f-4w)				
3s	Intermediate Spanish	I	MWThFS	226F	Ar
	(First qtr. of 3-4. See 3f-4w)	IV	MTWFS	125F	Ar
		VI	MTWThF	212F	Ar
4f	Intermediate Spanish	II	MWThFS	202F	Ar
	(Second qtr. of 3-4. See 3f-4w)	VI	MTWThF	227F	Ar
20s	Oral and Written Spanish	III	MTWFS	213F	Ar
	(5 cred.; all; prereq., 4, or 3 yrs. high school Spanish)				
30s	Spanish Commercial Correspondence	VII	MWF	209F	Mr. LeFort
	(3 cred.; all; prereq., 3)				
53f	Spanish Composition	II	MWF	304F	Mr. LeFort
	(3 cred.; jr., sr.*; prereq., 3-4)				
54w-55s	Spanish Conversation	II	MWF	304F	Mr. LeFort
	(4 cred.; jr., sr.*; prereq., 53 or 20)				
60f	Adv. Spanish Composition	VI	MWF	203F	Ar
	(3 cred.; jr., sr.*; prereq., 53 or 20 with grade of B)				
61w-62s	Adv. Spanish Conversation	VI	MWF	203F	Ar
	(6 cred.; jr., sr.*; prereq., 54-55 or 20 with grade of B)				
65f-66w-67s†	Survey of Spanish Lit.	II	TThS	109F	Mr. LeFort
	(9 cred.; jr., sr.*; prereq., 3-4)				

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

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

‡ 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 page 6, Science, Literature, and the Arts bulletin, Part II.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
68w-69s†	Survey of Spanish Lit. (10 cred.; jr., sr.*; prereq., 3-4)	VI	MTWThF	227F	Mr. LeFort
70w-71s	Latin American Culture and Development (6 cred.; jr., sr.*; prereq., 3-4)	III	MWF	108F	Mr. LeFort
110f-111w-112s	Spanish Lit.: 19th Century (9 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	IV	MWF	108F	Ar
115-116-117	<i>Spanish Lit.: 17th Century</i> (9 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	<i>Not offered</i>			
141s	Modern Spanish Novel (4 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	VII	MTThF	102F	Ar
150	<i>Modern Spanish Drama</i> (4 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	<i>Not offered</i>			
156f-157w-158s	Spanish Lit.: 16th Century (9 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	II	TThS	304F	Ar
174f-175w-176s	Contemporary Spanish Literature: Lectures in Spanish (6 cred.; jr., sr., grad.; prereq., 20 (or 53-54-55) and 65-66-67)	IX	TTh	202F	Ar

SCANDINAVIAN

Major Adviser: A. A. Stomberg

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w||	Beginning Norwegian (10 cred.; fr., soph., jr., sr.; no prereq.)	I	MWThFS	206F	Mr. Madsen
3s	Intermediate Norwegian (5 cred.; fr., soph., jr., sr.; prereq., 1-2, or 1 yr. high school)	I	MWThFS	206F	Mr. Madsen
4f-5w	Adv. Norwegian (Survey) (10 cred.; soph., jr., sr.; prereq., 1-2-3 or 2 yrs. high school)	III	MWThFS	206F	Mr. Madsen
7f-8w||	Beginning Swedish (10 cred.; fr., soph., jr., sr.; no prereq.)	II	MWThFS	206F	Mr. Stomberg
9s	Intermediate Swedish (5 cred.; fr., soph., jr., sr.; prereq., 7-8 or 1 yr. high school)	II	MWThFS	206F	Mr. Stomberg
10f-11w	Advanced Swedish (10 cred.; soph., jr., sr.; prereq., 7-8-9 or 2 yrs. high school)	I	MWThFS	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	MWThFS	110F	Mr. Stomberg

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

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

|| Credit is usually not given for more than one beginning language. See page 6, Science, Literature, and the Arts bulletin, Part II.

No.	Title	Hour	Day	Bldg.	Instructor
42w	Survey of Scandinavian Literature (3 cred.; soph, jr., sr.; prereq., 1-2-3 or 7-8-9)	IV	MWF	206F	Mr. Stomberg
45s	Scandinavian Mythology (3 cred.; jr., sr. §; prereq., none)	IV	MWF	206F	Mr. Stomberg
101-102-103	Modern Norwegian Lit. (9 cred.; jr., sr., grad.; prereq., 4-5)	<i>Not offered</i>			
104f	Modern Scandinavian History (3 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 Literature (9 cred.; jr., sr., grad.; prereq., 10-11)	VI	MWF	206F	Mr. Stomberg
110	Ibsen (3 cred.; sr., grad.; prereq., 101-102-103)	<i>Not offered</i>			
111-112-113	Old Norse (Icelandic) (6 cred.; sr., grad.; prereq., consent of instructor)	<i>Not offered</i>			
114f	Strindberg (3 cred.; sr., grad.; prereq., 107-108-109)	Ar	Ar	Ar	Mr. Stomberg
117	Earlier Norwegian Literature (5 cred.; jr., sr., grad.; prereq., 4-5)	<i>Not offered</i>			
130-131-132	Danish Lit. of the 19th Century (9 cred.; jr., sr., grad.; prereq., 4-5)	<i>Not offered</i>			
136	Björnson (3 cred.; sr., grad.; prereq., 101-102-103, or 130-131-132)	<i>Not offered</i>			
140f	History of the Norwegian Language and Literature (3 cred.; jr., sr.; prereq., 4-5 or 10-11, or equivalent)	II	TThS	2F	Mr. Seip †
209f-210w-211s	Seminar in Modern Swedish Language and Literature	Ar	Ar	Ar	Mr. Stomberg
220f	Seminar in Ibsen (3 cred.; sr., grad.; prereq., consent of instructor)	Ar	Ar	Ar	Mr. Seip

SOCIOLOGY AND SOCIAL WORK

Major Advisers: F. S. Chapin, R. L. Finney

Major in social theory.—37 or 38 credits as follows: 1, 6, 14, 49, 53, 93, 100, 101; 102 or 103; 110 or 114; 116 or 119 or 120; 140 or 141.

Major in applied sociology.—36 or 37 credits as follows: 1, 14, 49, 52; 60 or 53; 70 or 90; 93; 100 or 101; 121 or 123; 110 or 114 or 128; 119 or 134.

Requirement for a minor.—19 or 20 credits including 1 and 6 or 14.

§ Does not count as a senior college course. Not open to sophomores. See Course Numbering, page 24, Science, Literature, and the Arts bulletin, Part II.

† Dr. Didrik A. Seip, professor of Scandinavian linguistics, of the University of Oslo will serve as visiting professor of Scandinavian during the fall quarter.

PROGRAM

NOTE.—Students majoring in sociology must complete two teaching minors in addition to the required professional courses. Teachers who already hold a teacher's certificate may be relieved of this requirement upon petition.

For specialized curriculum in social studies see College of Education bulletin, Part I.

No.	Title	Hour	Day	Bldg.	Instructor			
if,w	Introd. to Sociology (5 cred.; 3rd qtr. fr., soph., jr., sr.; no prereq.)	Lect.	I	TTh	OLAud	Mr. Willey		
		Sec. 1	I	MWF	109OPh	and others		
		2	III	MWF	104OPh			
		3	IV	MWF	109OPh			
		4	V	MWF	109OPh			
		5	VI	MWF	104OPh(f), 2OPh(w)			
		6	VII	MWF	2OPh			
		7	III	TThS	109OPh			
		8	IV	MWF	‡			
		(Univ. Farm, 3 cred.)						
1s	Introduc. to Sociology (See 1f)	Lect.	I	TTh	OLAud	Mr. Willey		
		Sec. 1	I	MWF	109OPh	and others		
		2	II	MWF	2OPh			
		3	III	MWF	104OPh			
		4	IV	MWF	109OPh			
		5	V	MWF	109OPh			
		6	VI	MWF	109OPh			
		7	VII	MWF	104OPh			
		8	II	TThS	104OPh			
		9	III	TThS	109OPh			
(Univ. Farm, 3 cred.)	10	IV	MWF	‡				
6f,w	Social Interaction (3 cred.; soph., jr., sr.; prereq., 1)	Lect.	II	WF	OPhAud	Mr. Kirkpatrick		
		Sec. 1	I	T	2F	and others		
		2	II	M	2OPh			
		3	II	T	104OPh			
		4	IV	T	109OPh			
		6s	Social Interaction (See 6f)	Lect.	III	MF	OPhAud	Mr. Kirkpatrick
				Sec. 1	III	T	104OPh	and others
				2	III	W	113F	
				3	III	Th	104OPh	
				4	II	T	104OPh	
14f,w,s	Rural Sociology (3 cred.; soph., jr., sr.; prereq., 1)			Lect.	IV	MW	OPhAud	Mr. Zimmerman
				Sec. 1	III	Th	2OPh	and others
				2	III	S	2OPh	
				3	VI	Th	104OPh(f,s), 2OPh(w)	
				4	VI	Th	109OPh	
		45f*	Social Statistics (5 cred.; soph., jr., sr.; prereq., 1)	IV	MTWFS	104OPh	Mr. Vold	
				VI	MTWThF	104OPh	Mr. Vold	
		45w*	Social Statistics (See 45f)	VI	MTWThF	104OPh	Mr. Vold	

* No student may receive credit for both Course 45 and Economics 14.

‡ Consult the bulletin of the College of Agriculture, Forestry, and Home Economics.

No.	Title	Hour	Day	Bldg.	Instructor
49f,w,s	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	2OPh	Mrs. Fenlason
52f,w,s	Elem. Case Work	I	TThS	109OPh	Miss Vaile
53f,w,s	Elem. of Criminology	III	MWF	109OPh	Mr. Vold
	(3 cred.; jr., sr.; prereq., same as for 49)				
55s	Social Aspects of Housing Prob- lems	I	MWF	6F	Miss Salsberry
	(3 cred.; jr., sr.; prereq., same as for 49)				
60f,w	Social Protection of the Child ..	VI	MWF	109OPh	Mrs. Doyle
	(3 cred.; jr., sr.; prereq., 49 and 52)				
70f,w¶	Group Work in the Community	I	MWF	10OPh	Miss Mead
	(3 or 4 cred. on consulting with training course adviser; jr., sr.; prereq., 49)				
71f,w-72f,w‡	Elementary Field Training in Group Work	Ar	Ar	Ar	Miss Vaile, Miss Jones, Mrs. Fenlason
	(3 or 4 cred. each qtr.; jr., sr.; prereq., 49, 70, or simultane- ously and consent of adviser in social work)				
90f,w,s‡‡	Field Survey and Social Case Work	Ar	Ar	Ar	Ar
	(2 cred.; jr., sr.; prereq., 52, or simultaneously)				
91f,w,s-92f,w,s‡	Elementary Field Training in Case Work	Ar	Ar	Ar	Ar
	(4 cred. each qtr.; jr., sr.; pre- req., 52; and 91 for 92 and consent of adviser in social work)				
93f,s	The Social Heritage and the Individual	I	MWF	133Ph	Mr. Finney
	(3 cred.; jr., sr.; prereq., Soc. 1 and 15 cred. in soc. sci., ed., phil., or psy.)				
100f	Social Psychology	II	TThS	109OPh	Mr. Kirkpatrick
	(3 cred.; jr., sr., grad.; prereq., Soc. 1 and 6, or Psy. 1-2, and 9 cred. in soc. sci., educ., phil., or psy.)				
101s	Social Organization	II	MWF	110F	Mr. Chapin
	(3 cred.; jr., sr., grad.; prereq., 4 courses in soc., or Soc. 1 and 15 cred. in soc. sci., educ., phil., or psy.)				
102s	Social Control and Criminal Be- havior	II	MWF	109OPh	Mr. Vold
	(3 cred.; jr., sr., grad.; prereq., same as for 101)				

‡ Field work fee of \$3.50 each quarter.

¶ An additional hour for students not going into social work.

§ Designed to meet the needs of nurses and other students not going into social work.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
103w	Sociology of Conflict (3 cred.; jr., sr., grad.; prereq., same as for 101)	II	TThS	109OPh	Ar
110f	Rural Organization (3 cred.; jr., sr., grad.; prereq., same as for 101)	V	MWF	104OPh	Mr. Zimmerman
112w	The Rural Social Survey (2 cred.; jr., sr., grad.; prereq., same as for 101)	V	MW	104OPh	Mr. Zimmerman
114s	Rural Social Institutions (3 cred.; jr., sr., grad.; prereq., same as for 101)	I	MWF	*	Ar
115w	Religion As a Social Institution (3 cred.; jr., sr., grad.; prereq., same as for 101)	III	MWF	207F	Mr. Kirkpatrick
116w	The Newspaper As a Social In- stitution (3 cred.; jr., sr., grad.; prereq., same as for 101)	IV	MWF	104OPh	Mr. Willey
119f	The Family (3 cred.; jr., sr., grad.; prereq., same as for 101)	III	TThS	104OPh	Ar
120f	Social Progress (3 cred.; jr., sr., grad.; prereq., same as for 101)	II	MWF	109OPh	Mr. Wallis
121f-122w	Advanced Statistical Methods .. (6 cred.; jr., sr., grad.; prereq., 4 courses in soc., and for 122, Course 45 or 121 or equiv.)	VII	MWF	109OPh	Mr. Chapin
123s	Methods of Social Investigation .. (3 cred.; jr., sr., grad.; prereq., same as for 101)	VIII	MWF	109OPh	Ar
126s	Technique of Leadership in Group Work (3 cred.; sr., grad.; prereq., 70, 71)	I	TThS	104OPh	Miss Mead
128s	Principles of Administration, Publicity and Finance Applied to Social Work (2 cred.; jr., sr., grad.; prereq., same as for 101)	VIII, IX	Th	109OPh	Mr. Bradley
129w	Selected Problems in Social Case Work (3 cred.; jr., sr., grad.; prereq., 52; 91, or simultaneously)	IV	MWF	2OPh	Mrs. Fenlason
130s	Advanced Case Work (3 cred.; sr., grad.; prereq., 92, 129)	IV	MWF	2OPh	Mrs. Fenlason
131w	Rural Social Case Work (3 cred.; sr., grad.; prereq., 92)	III	MWF	2OPh	Miss Vaile
132	Juvenile Courts and Probation .. (2 cred.; jr., sr., grad.; prereq., 49, 52, 53)	<i>Not offered</i>			
133f	Social Case Work in Health Problems (3 cred.; sr., grad.; prereq., 52, 91 and Prev. Med. 50, or 53, or simultaneously)	IX IV	Th S	109OPh	Miss Gardiner

* Consult the bulletin of the College of Agriculture, Forestry, and Home Economics.

No.	Title	Hour	Day	Bldg.	Instructor
134s	Legal Protection of the Child .. (3 cred.; jr., sr., grad.; prereq., same as for 101 incl. 60)	I	MWF	109F	Mr. Waite
135f,w,s†	Field Practice in Legal Protection of the Child	Ar	Ar	Ar	Miss Vaile, Mrs. Fenlason
136f	Essentials of Medicine for Social Workers	IX	MWF	2OPh	Med. Staff U.H., Miss Gardiner
137w	The History and Theory of Social Work	I	TThS	2OPh	Miss Salsberry
138w-139s	Mental Case Work	II	TS and ar	2OPh	Miss Leahy
140w	History of Social Theory	II	MWF	109OPh	Mr. Wallis
141s	Contemp. Social Theory	II	TThS	109OPh	Mr. Wallis
152f	Public Welfare Administration ..	II	TThS	2OPh	Miss Vaile
153f,w,s-154f,w,s- 155f,w,s†	Advanced Field Training in Group or Case Work	Ar	Ar	2OPh	Miss Vaile Mrs. Fenlason
160s	Population Problems	III	MWF	9F	Ar

SPEECH

Major Advisers: F. M. Rarig, B. Bryngelson

For a teacher's certificate.—Major recommendation: Speech 41-42-43 or 45-46; 55-56, 61, 67, 71-72, 81-82, 121-122; total, 40 or 41 credits. Psy. 4-5 or 7 advised.

Minor recommendation: a minimum of 25 credits including 41-42-43 or 45-46; 61 and 67; 55-56-57 or 71-72-73 or 81-82-83.

Minor recommendation in Speech Correction; 28 or 29 credits, including 41-42-43 or 45-46; 61, 67, 161-162; Psy. 144-145.

All students majoring or minoring in Speech must present satisfactory evidence of interest and effective participation in one or more activities, such as debating, dramatics, oratory, public reading, or public speaking.

Because of the close relation between English and speech in the high schools of Minnesota, students majoring in Speech should have a minor in English.

† Field work fee of \$3.50 each quarter.

Students intending to take further work in Speech Correction, specializing in that field alone, should include in their undergraduate course Physiology 4.

Students majoring in Speech should register for Special Methods and Practice Teaching in Ed.T. 52-53-54.

NOTE.—Students who desire treatment for stuttering should register for Course 41f-42w-43s, III MWF.

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	III	MWF	409F	
	4	VI	MWF	308F	
	5	I	TThS	305F	
	6	II	TThS	308F	
	7	III	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	226F	
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	MTWFS	402F	
	2	IV	MTWFS	402F	
	3	VI	MTWThF	402F	
	4	VII	MTWThF	308F	
	5	VIII	MTWThF	308F	
45w-46s†*	Fundamentals of Speech (See 45f-46w)				
	Sec. 1	IV	MTWFS	102F(w), 25F(s)	
	2	VI	MTWThF	6F	
45s†*	Fundamentals of Speech (First qtr. of 45-46. See 45f- 46w)				
	Sec. 1	III	MTWFS	402F	
	2	IV	MTWFS	402F	
	3	VI	MTWThF	402F	
	4	VII	MTWThF	308F	
46f†*	Fundamentals of Speech (Second qtr. of 45-46. See 45f- 46w)				
	Sec. 1	IV	MTWFS	6F	
	2	VI	MTWThF	104F	
51s*	Advanced Public Speaking (3 cred.; jr., sr.; prereq., 41- 42-43 or 45-46)	II	MWF	212F	Ar

* 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. Students in Education not majoring in Speech may receive credit for Course 41-42. Other students must take all three quarters.

No.	Title	Hour	Day	Bldg.	Instructor
55f-56w-57s*||	Arg. and Debating (9 cred.; jr., sr.; prereq., 41-42-43 or 45-46)	{ VII VII, VIII	{ T Th }	OLAud	Mr. Gilkinson
61f	Speech Correction (4 cred.; jr., sr.; prereq., 41-42-43 or 45-46; Psy. 1-2)	VI	MTThF	6F	Mr. Bryngelson
67s*||	Phonetics (3 cred.; jr., sr.; prereq., 41-42-43 or 45-46)	II	MWF	402F	Mr. Bryngelson
71f-72w-73s*†	Elements of Play Production ... (9 cred.; jr., sr.; prereq., 41-42-43 or 45-46)	III	MWF	19Mu	Mr. Staadt
81f-82w-83s*	Interpretative Reading (9 cred.; jr., sr.; prereq., 41-42-43 or 45-46)	IV	MWF	308F	Mr. Rarig
81w-82s*	Interpretative Reading (See 81f-82w-83s)	I	TThS	308F	Mr. Rarig
91f-92w-93s†	Stagecraft and Direction (9 cred.; jr., sr.; prereq., 71-72-73, 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, Mr. Gilkinson
101-102†	<i>Advanced Speech Composition</i> .. (6 cred.; jr., sr., grad.; prereq., 41-42-43 or 45-46; Psy. 1-2; 10 cred. soc. sci.)	<i>Not offered</i>			
105s	Theory of Reading and Acting (3 cred.; jr., sr., grad.; prereq., 41-42-43 or 45-46; 81-82-83, and Psy. 1-2)	III	MWF	308F	Mr. Rarig
121w-122s†*	Advanced Speech Problems (6 cred.; jr., sr., grad.; prereq., 41-42-43 or 45-46, Psy. 1-2)	II	TThS	409F	Mr. Holmes
141f-142w-143s*	Voice Science (9 cred.; jr., sr., grad.; prereq., 41-42-43, Psy. 1-2 and 4-5 or 7)	Ar	Ar	Ar	Mr. Holmes
162w-163s†*	Speech Pathology (6 cred.; jr., sr., grad.; prereq., 41-42-43 or 45-46; 61; 67; Psy. 1-2)	Ar	Ar	Ar	Mr. Bryngelson
207f-208w-209s	Seminar in Orators Ar		Ar	Ar	Mr. Rarig
261f-262w-263s	Seminar in Speech Correction .. Ar		Ar	Ar	Mr. Bryngelson
291f-292w-293s	Research and Thesis Ar		Ar	Ar	Mr. Rarig, Mr. Bryngelson, Mr. Holmes

* 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.

|| Students intending to take Speech Pathology should take Phonetics the preceding spring.

¶ The entire course must be completed before credit is received for any quarter. Students in Education not majoring in Speech may receive credit for Course 41-42. Other students must take all three quarters.

ZOOLOGY

Major Adviser: J. E. Wodsedalek

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

For teacher's certificate.—Major recommendation: General Zoology, and at least 20 additional credits in the department. Medical Physiology (Course 4) is included among the electives.

Minor recommendation: General Zoology, and at least ten additional credits chosen from the following: Genetics and Eugenics, General Physiology, General Ecology, Histology, Entomology, General Embryology, Ornithology, and Human Physiology (Medical Physiology, Course 4).

No.	Title	Hour	Day	Bldg.	Instructor	
1f-2w†	General Zoology: Lectures					
	(6 cred.; all) Sec. 1	I	TThS*	313Z	Mr. Wodsedalek	
	Sections limited to 160 2	II	TThS	313Z	Mr. Wodsedalek	
		3	III	TThS	313Z	Mr. Minnich
1w-2s†	General Zoology: Lectures					
	(See 1f-2w) Sec. 1	II	MWF	313Z	Mr. Turner	
	Sections limited to 160 2	III	MWF	313Z	Mr. Wodsedalek	
3f-4w†¶	General Zoology: Laboratory . . .					
	(4 cred.; fr., soph., jr., sr., with or after 1-2. <i>Must be completed if zoology is offered as the required laboratory science.</i>)					
	Sec. 1	I, II	MWF	101Z	Mr. Dawson	
	2	III, IV	MWF	101Z	Ar	
3w-4s†¶	General Zoology: Laboratory . . .					
	(See 3f-4w) Sec. 1	VI, VII	MWF	101Z	Mr. Dawson	
	2	VIII, IX	MWF	101Z	Ar	
5f-6w-7s†¶	General Zoology					
	(12 cred.; pre-medical and pre-dental students, fr., soph., jr., sr.; no prereq.)					
	Lab. Sec. 1	I, II	ThS(f)	101Z	Mr. Eddy	
		I, II	TS(w,s)			
	(Pre-dental) Lect.	I	MWF	313Z		
	Lab. 2	III, IV	TS	101Z		
	(Pre-medical) Lect.	IV	MWF	313Z	Mr. Sigerfoos	
14f-15w-16s†¶	General Zoology	See	College of Agriculture	bulletin.		
17f-18w†¶	General Zoology	See	College of Agriculture	bulletin.		
21s‡	General Zoology					
	(6 cred.; H.E.; no prereq.)					
	Intro. to General Physiology . .					
	(5 cred.; fr., soph., jr., sr.; pre-req., 1-2, 3-4, chem. desirable)					
	Lect.	VI	MWF	10Z	Mr. Minnich	
	Lab. Sec. 1	VII, VIII	MWF	10Z		
	2	VI, VII, VIII	TTh	10Z		
22s	General Ecology					
	(5 cred.; fr., soph., jr., sr.; pre-req., 1-2, 3-4)					
		VI, VII, VIII, IX	MW	211Z,	Mr. Eddy	
		F	401Z			

* Section 1 is not open to first term freshmen in the fall quarter.

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

‡ Not open to pre-medical or pre-dental students or to those who have had college physiology.

¶ A laboratory fee of \$1 a quarter is charged for this course.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
23f	Introd. Entomology (5 cred.; soph., jr., sr.; prereq., 1-2, 3-4)	Lect. VI Lab. VI, VII, VIII	MWF TTh	211Z 208Z	Mr. Mickel
24f	Introd. Animal Parasitology (5 cred.; soph., jr., sr.; prereq., 1-2, 3-4)	VI, VII, VIII	MWF	208Z	Mr. Christenson
25W	Histology (5 cred.; soph., jr., sr.; prereq., 1-2, 3-4, and permission of the head of the dept.)	Lect. VI Lab. Sec. I 2	MWF MWF	211Z 201Z	Mr. Ringoen
26W [†]	Comp. Anatomy (5 cred.; soph., jr., sr.; prereq., 1-2, 3-4)	Lect. III Lab. Sec. I 2	TThS MWF	211Z 3SZ 3SZ	Mr. Eddy
Sections limited to 25					
27f	Technique (3 cred.; stud. in zool.; major and grad.; prereq., 15 cred.)	Lect. III Lab. VI, VII, VIII	Th	211Z	Miss Slider
46W-47S [†]	Ornithology (6 cred.; soph., jr., sr.; prereq., 1-2, 3-4 and permission of in- structor)	VI, VII, VIII	M or T & Ar MW	202Z 314Z	Dr. Roberts
75S	Nature Study (3 cred.; jr., sr.; prereq., 20 cred. incl. 1-2, 3-4)	VI, VII, VIII	TTh	213Z	Mr. Wodsedalek
107f-108W [†]	Protozoology (6 cred.; jr., sr., grad.; prereq., 15 cred.)	I, II	TThS	Ar	Mr. Sigerfoos
109f-110W-111S	Experimental Zoology (9 cred.; jr., sr., grad.; prereq., 20 cred.)	IV	MWF	10Z	Mr. Minnich
117f-118W-119S	Animal Ecology (9 cred.; jr., sr., grad.; prereq., 15 cred.)	VI, VII, VIII	TTh	401Z	Mr. Eddy, Mr. Hodson
125f-126W-127S	Advanced Entomology (9 cred.; jr., sr., grad.; prereq., 15 cred.)	Ar	Ar	208Z	Mr. Mickel
144f,S-145W-140S	Animal Parasites and Parasitism (9 cred.; jr., sr., grad.; prereq., 15 cred., or 1-2, 3-4 and 1 yr. chem.)	VI, VII, VIII	WF	208Z	Mr. Christenson
148f-149W-150S	Histology and Organology (9 cred.; jr., sr., grad.; prereq., 15 cred. in zool., or 1-2, 3-4, and 1 yr. chem. Permission of head of dept. necessary)	III, IV	MWF	201, 211Z	Mr. Ringoen

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

[‡] A laboratory fee of \$2 a quarter is charged for this course.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
160f-161w	Cytology (6 cred.; jr., sr., grad.; prereq., 20 cred., incl. 27, with the con- sent of the instructor)	Ar	Ar	Ar	Mr. Wodsedalek
181w-182s	Embryology (6 cred.; jr., sr., grad.; prereq., 25 or equiv.)	VI, VII, VIII	TTh	201Z	Mr. Ringoen
183s	Genetics and Eugenics (3 cred.; jr., sr., grad.; prereq., 1-2, 3-4 and 5 other cred. in zool. or bot. or psych.)	III	TThS	313Z	Mr. Wodsedalek
197f-198w-199s	Problems (5 or more cred.; jr., sr., grad.; prereq., 1-2, 3-4, spec. require- ments)	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 the bulletin of Science, Literature, and the Arts). Students interested in such courses may consult the chairman of the Students' Work Committee.

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The Bulletin *of the University of* **Minnesota**

The Graduate School
Announcement for the Years
1931-1933



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1931							1932													
JULY							JANUARY							JULY						
Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa
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UNIVERSITY CALENDAR

1931-32

1931

September 22-Oct. 10		Registration of graduate students
September 28	Monday	Fall quarter classes begin, 8:30* a.m.
October 8	Thursday	Examinations in German and French for candidates for advanced degrees
November 5	Thursday	Last day for filing theses of candidates for the Ph.D. degree for the fall quarter
November 14	Saturday	Last day for filing subject-matter of Master's thesis for the spring quarter
November 19	Thursday	Last day for filing theses of candidates for Master's degrees for the fall quarter
December 17	Thursday	Commencement Convocation
December 19	Saturday	Fall quarter ends, Christmas vacation begins, 5:20 p.m.

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January 4	Monday	Christmas vacation ends, winter quarter begins, 8:30* a.m.
January 14	Thursday	Examinations in German and French for candidates for advanced degrees
February 4	Thursday	Last day for filing theses of candidates for the Ph.D. degree for the winter quarter
February 18	Thursday	Last day for filing theses of candidates for Master's degrees for the winter quarter
March 17	Thursday	Commencement Convocation
March 19	Saturday	Winter quarter ends, spring vacation begins, 5:20 p.m.
March 28	Monday	Spring vacation ends, spring quarter begins, 8:30* a.m.
April 7	Thursday	Examinations in German and French for candidates for advanced degrees
April 25	Thursday	Last day for filing theses of candidates for the Ph.D. degree in June
May 9	Monday	Last day for filing theses of candidates for Master's degrees for June
June 6	Monday	Sixtieth annual commencement
June 11	Saturday	Spring quarter closes
June 15	Wednesday	Summer quarter, first term begins
June 21	Thursday	Commencement Convocation
June 23	Thursday	Last day for filing theses of candidates for advanced degrees for first term of summer quarter
July 21	Thursday	Commencement Convocation
July 25	Monday	Summer quarter, second term begins
August 27	Saturday	Summer quarter, second term closes

* First hour classes begin at 8:15 at University Farm.

THE GRADUATE SCHOOL

ORGANIZATION

The Graduate School has exclusive control of all graduate work carried on in the University. The graduate faculty is composed of those properly approved and qualified to offer courses carrying graduate credit. It determines the general educational policy of the Graduate School, and recommends candidates for degrees. The administration of the Graduate School is committed to the dean and an executive committee of seven members. They are assisted by group committees representing allied lines of work grouped together for administrative purposes. The groups are as follows:

- a. Social Sciences and Law
- b. Physical Sciences, Mathematics, and Engineering
- c. Biological Sciences
- d. Philosophy, Psychology, and Education
- e. Language and Literature
- f. Medicine
- g. Agriculture

ADMISSION

Any graduate holding a Bachelor's degree or its equivalent from a reputable college or university who has made a satisfactory record in his college course or who has shown special aptitude in some field of study will be admitted to the Graduate School, and may register for such graduate work as he may be found prepared to enter upon.

All inquiries concerning admission to the Graduate School should be addressed to the dean. The student should obtain and fill out an application for admission before presenting himself for registration and accompany this with an official transcript of his college record.

If the rating of the institution from which he received his first degree is such that he will need additional work before beginning graduate work at the University of Minnesota, he is advised to enter one of the undergraduate colleges of the University and obtain the preliminary training and an acceptable Bachelor's degree.

College graduates who simply desire to take additional work of undergraduate grade without a view to preparation for an advanced degree should register as unclassified students in the college giving the work.

Advanced standing may be granted for work done in other approved graduate schools. Credits for advanced courses earned while the student is registered in an undergraduate college, even if in excess of the credits required for the baccalaureate degree, cannot be transferred to the Graduate School. In exceptional cases, with permission of the dean of the undergraduate college concerned and of the dean of the Graduate School, undergraduates lacking not more than 9 quarter credits may be permitted to

register also in the Graduate School for partial credit. No transfer of graduate credits will modify the minimum requirements of one academic year in residence as a graduate student in this University for those who are candidates for an advanced degree.

REGISTRATION

Full directions concerning registration will be found in a booklet issued by the registrar's office for the information of new students. The essential document is an official transcript of the student's college record.

FEES

	Quarter
Tuition fee for residents (except for clinical medicine).....	\$20.00
Tuition fee for non-residents.....	30.00
Credit hour tuition for students carrying less than full work	
Residents	1.75
Non-residents	2.50
Matriculation deposit (first quarter in residence).....	3.00
Special deposit for Chemistry laboratory.....	5.00

Voted to approve effective, beginning with the academic year 1929-30, a fee of \$60 plus the established graduation fee for the professional degrees in engineering, architecture, and chemistry for work done in absentia.

Registration in the Graduate School includes the making out of the program which must be approved by a departmental adviser and the dean.

Fees must be paid not later than one week following the approval of the registration by the dean of the Graduate School in order to avoid a \$2 penalty fee.

All the fees above mentioned apply to the regular session. For the summer quarter fees, see special bulletin.

FELLOWSHIPS AND SCHOLARSHIPS

Four graduate fellowships have been established by the late Thomas H. Shevlin, of Minneapolis. These are awarded one each in the College of Agriculture, Forestry, and Home Economics, the School of Chemistry, the Medical School, and the College of Science, Literature, and the Arts. Each fellowship yields \$500 per annum. They are awarded annually. Candidates for these fellowships should file their applications before March 1 with the dean of the Graduate School.

Shevlin fellows will devote their entire time to the graduate work for which they are registered, and may not engage in private tutoring or be required to render any service to the University.

CALEB DORR RESEARCH FELLOWSHIP IN AGRICULTURE, FORESTRY, AND HOME ECONOMICS

By request of the late Caleb Dorr, of Minneapolis, the income from twenty thousand dollars is available for graduate fellowships in the Department of Agriculture of the University of Minnesota. Usually three fellowships of \$500 each will be awarded each year. The holders of these fellowships are exempt from all tuition fees. The basis of the award is scholarship and the prospect and promise of productive research.

Caleb Dorr fellows will devote their entire time during the academic year (nine months) to the graduate work for which they are registered and may not engage in private tutoring or be required to render any service to the University.

Candidates for these fellowships should file their applications before March 1 with the dean of the Graduate School. Application blanks may be secured from the dean of the Graduate School or from the dean of the College of Agriculture, Forestry, and Home Economics.

THE DUPONT FELLOWSHIP IN CHEMISTRY

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

THE ALBERT HOWARD SCHOLARSHIP

This scholarship, founded by Mr. James T. Howard, yields \$240 annually. The holder is expected to do graduate work in liberal arts.

THE CLASS OF 1890 FELLOWSHIP

On the twenty-fifth anniversary of its graduation the class of 1890 founded a fellowship yielding \$200 and exemption from tuition. This fellowship is open to graduates of the Colleges of Science, Literature, and the Arts, and Engineering and Architecture desiring to pursue advanced work. Applications should be filed with the dean of the Graduate School before March 1.

CLARA UELAND FELLOWSHIP

The income from \$11,191.67 is awarded annually to a recent woman graduate of any acceptable college or university for graduate study of problems of government and citizenship. Recipient is exempt from tuition fees.

HONORARY FELLOWSHIPS FOR VISITING SCHOLARS

Professors or other eminent scholars from other institutions, who may desire temporarily the privileges of the library, research facilities, and seminars in the University, and who are not candidates for a degree, may upon recommendation of the dean of the Graduate School and the approval of the president of the University be appointed as honorary fellows without stipend.

Honorary fellows shall not be required to pay any fees except to cover the cost of unusually expensive supplies or equipment.

DEPARTMENTAL SCHOLARSHIPS

Besides the above stipends there are numerous assistantships with varying stipends assigned to various departments, and exemption from tuition and fees in the Graduate School. The amount of graduate work that can be carried is proportioned to the service burden of the assistantships.

Inquiries and requests for application blanks may be addressed to the dean of the Graduate School, or to the head of the department in question.

GRADUATE WORK IN THE SUMMER QUARTER

Work of graduate character done in the summer quarter of the University of Minnesota may be counted for residence credit for advanced degrees. In exceptional cases, the course work for the Master's degree may be completed in four summer terms of six weeks each, or in three full summer quarters. In the first case, the candidate may be permitted to carry *in absentia* thesis work to complete the equivalent of three quarters. Students working for the Master's degree in summer terms or quarters must file the subjects of their theses before the completion of the first half of the required work. Theses of summer quarter students must be completed at least four weeks before the end of the session in which they take the degree.

An increasing amount of graduate work in fields of interest to high school teachers is being offered in the summer quarter. The courses for any session may be found in the bulletin of the summer quarter.

Students who desire graduate credit for work in the summer must register through the office of the Graduate School.

GRADUATE WORK IN MEDICINE

Graduate work in the laboratory departments and in the clinical branches leading to advanced degrees is offered by the University of Minnesota. This work is under the direction of the Graduate School, and candidates for admission and degrees must meet the requirements of the Graduate School as outlined in the preceding pages. The work is offered by members of the medical faculty in Minneapolis and by members of the graduate faculty on the Mayo Foundation at Rochester, Minnesota, where part or all the residence work may be done. Several teaching fellowships supported by the University and others on the Mayo Foundation are open to qualified students pursuing graduate work in clinical medicine or in the laboratory branches. A special bulletin on graduate work in medicine is published and may be obtained from the registrar.

GRADUATE WORK BY UNDERGRADUATES

1. No graduate credit allowed for any courses taken without previous arrangement by petition with the Graduate School.
2. No credit is possible for courses taken by undergraduates who lack more than 9 quarter credits toward the Bachelor's degree.
3. If not more than 9 quarter credits of undergraduate credit are lacking, petition may be filed to carry a limited amount of graduate work (approved courses above 100) for graduate course credit, such courses not to be applied toward an undergraduate degree.
4. With permission of the dean of the undergraduate college concerned, undergraduates lacking not more than 6 quarter credits may be permitted to register also in the Graduate School. This will be permitted in exceptional cases only.

GRADUATE WORK IN LAW

Under certain properly approved conditions graduate students may offer courses in law as a minor for an advanced degree when their major work is in the Department of Political Science or Economics.

A course leading to the degree of master of laws may be taken under the direction of the Graduate School of the University. 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. No specific course of study is required, but the course elected must be approved by an adviser. Subjects in the curriculum of the Law School not counted towards the first degree may be elected and additional work in subjects already studied. The candidate may also elect studies in the social sciences in the College of Science, Literature, and the Arts, and in the School of Business Administration. The candidate must complete eight year hours of classroom work and prepare a thesis that will be accepted for publication in the *Minnesota Law Review*. The course may be shaped to secure a more extensive survey of the law and related subjects, or to give a more thoro training in some special branch.

GRADUATE MEDICAL SOCIAL WORK

A course in medical social work leading to the degree of master of arts in sociology may be taken under the direction of the Graduate School of the University. Candidates must hold a Bachelor's degree from a reputable college or university. Students who have not had adequate preparation in their chosen field will require more than one year to attain the Master's degree. For prerequisites, see page 127. Graduate students holding Bachelor's degrees will find it practically necessary to have taken these courses, or take them here. The courses elected within the major subject of sociology and social work must be approved by the adviser, as must the choice of a minor, such as Public Health and Preventive Medicine, Psychology, or Child Welfare. The student must prepare a thesis which will fulfill the Graduate School requirements hereinafter set forth. The field work courses, which are a necessary part of the preparation for a Master's degree in this field, will be given in the Minneapolis General Hospital, and the University Hospital, Minneapolis, the Wilder Dispensary, St. Paul, and the Mayo Clinic, Rochester, Minn. The Mayo Foundation offers several fellowships to qualified students who have completed one quarter of satisfactory work at the University.

MASTER OF SCIENCE IN PSYCHOMETRICS

The degree of master of science in psychometrics is awarded to candidates who complete a special curriculum in the technique of psychological examining. This curriculum, while conforming to the general requirements for the Master's degree, provides for the distribution of work, with certain options, among courses in the Departments of Psychology, Educa-

tional Psychology, Sociology, and Child Welfare. One or more advisers will be designated in each of these departments to direct the work of candidates for this degree. These advisers should be consulted with reference to the details of the curriculum and the opportunities it offers to the student who proposes to become a psychological examiner in schools, personnel work, courts, welfare work, etc.

REQUIREMENTS FOR THE MASTER'S DEGREE

The degree of master of arts is, in general, conferred for advanced non-technical study; the degree of master of science, for advanced technical study, such as agriculture, industrial chemistry, engineering, etc.

The requirements for the degree of master of arts or master of science are covered in general by the statement that these degrees may be earned by properly qualified students only by at least one full academic year's work (three quarters) in residence at this University. Students who have not had adequate preparation in the specific chosen field of work, or who are doing outside work in excess of ten hours a week, will require more than one year to attain the Master's degree.

Upon entrance to the Graduate School, the candidate, with the approval of the dean, will select his adviser in the field of his major work. With the approval of his adviser and the dean, he will also select a minor, and will outline a study program for the year.

PROGRAM OF STUDY

A full program for a student who expects to meet the requirements in one academic year must cover the necessary courses in the fields of the major and minor and the preparation of a satisfactory thesis. The work must be selected from graduate courses offered in this bulletin and must amount to not less than 6 nor more than 9 credit hours each quarter. In addition, thesis work (or courses upon which the thesis is based) should be carried to make a total of not less than 15 hours per week for three quarters. In general, 9 quarter credits in the minor and 18 quarter credits in the major, in addition to the thesis (or courses upon which the thesis is based), is regarded as the minimum program for the Master's degree.

In all courses open to graduates only the student must secure a mark of "Pass." This will be interpreted as the instructor's approval upon the quality of the student's work viewed from the level upon which real graduate work is supposed to be carried on. In the courses open to both graduates and undergraduates the system of marking by letters may be continued for the present. A grade of not less than B must be obtained in any course of this character offered as fulfilling the requirements in the major. A grade of not less than C must be obtained in minor courses.

THE MAJOR

The major work must be in a department in which the candidate has had at least three years of work (18 semester or 27 quarter credits) if it be a department open to freshmen, or two years of work (12 semester or

18 quarter credits) if it be a department not open to freshmen. Part or all of this preliminary work may consist of designated prerequisite courses in the same or allied departments. Any special requirements will be noted in the corresponding departmental statement. At the end of the year, a final written examination (in addition to the usual course examinations) will be given in the major as noted below.

THE MINOR

The minor subject must be selected in a department in which the candidate has had at least one year's work (6 semester or 9 quarter credits), or he must have had in a closely allied department a year's work (6 semester or 9 quarter credits), which is actually designated as a prerequisite to the minor subject. Any special requirements will be noted in the corresponding departmental statements.

The choice of the minor must be in a department whose work can be logically related to that of the department in which the student is doing his major work. The dean and the group committee may in exceptional cases allow the minor subject to be taken in the same department as that of the major.

LANGUAGE REQUIREMENT

A reading knowledge of a foreign language, modern or ancient, the language to be determined by the major department, is required of candidates for the Master's degree, unless exemption is made in individual cases with the approval of the Executive Committee of the Graduate School. When no other statement is made in the departmental announcement in this bulletin, a knowledge of either French or German is expected. The candidate shall present to the dean of the Graduate School, not later than the close of the second quarter of residence, a certificate of proficiency in the designated language, signed by the professor in charge of the corresponding language department or his representative.

Candidates for the Master's degree in any department in the language and literature group will be required to have a reading knowledge of two foreign languages before they are recommended for the degree.

All examinations to meet the language requirement of the Graduate School, unless otherwise arranged with the language departments, shall be held on the days specified in the calendar at the beginning of this bulletin.

A candidate who fails in a language examination for an advanced degree shall not be given a second examination until the following quarter.

MASTER'S THESIS

Before the middle of the first quarter in residence the candidate shall file at the office of the Graduate School the subject of his thesis. This subject must be approved by his adviser and by the corresponding group committee. It should be on a topic falling within the field of the major. The candidate will ordinarily devote approximately one-half his time to the preparation of the thesis, including courses on which the thesis is based. The thesis must be written in acceptable English and show ability to work

independently, and give evidence of power of independent thought both in perceiving problems and making satisfactory progress toward their solution. Familiarity with the bibliography of the special field and correct citation of authorities are expected.

The thesis is required to be in quadruplicate in order to facilitate its consideration. Two copies are retained for the University Library (as noted below), the third copy being finally returned to the candidate. The fourth copy is necessary in cases where the department or adviser desires to retain a copy. Since one copy is usually desired by the adviser or department concerned, a fourth copy should be provided for this purpose. One copy must be upon the specially required red-ruled twenty-pound linen stock of 60 or 70 per cent rag content and the others may be carbon copies on bond paper. The original and first copy must contain all illustrative material. Ample margin should be left for binding purposes. Samples in the dean's office of both the linen stock and carbon paper should be examined before the thesis is typewritten. The body of the thesis should be double spaced, but footnotes may be single spaced.

The thesis must be finished and four copies deposited in the office of the dean of the Graduate School at least four weeks before the candidate presents himself for his degree.

The thesis will be examined by a committee of three, appointed by the dean on the recommendation of the group committee. The student's adviser will, as a rule, be the chairman of this committee. Unanimous approval by this committee will be necessary for the acceptance of the thesis.

If the thesis is accepted, the candidate must deposit with the registrar, at least one week before commencement, the sum of one dollar and fifty cents for binding the two copies of this thesis, which will be cataloged and deposited in the University Library. This copy cannot be taken from the library. The second copy, however, may be borrowed from the library.

EXAMINATIONS

All candidates for the M.A. degree will meet the regular requirements as to examinations, topics, reports, etc., of the classes in which they are registered. A special examination in the field of the minor is not required, but this does not excuse the candidate from the regular course examinations. Besides the usual course examinations, where such are given, the candidate for the Master's degree must pass a final written examination in the major and after acceptance of the thesis, a final oral examination.

The final written examination will be held not later than two weeks before the end of the quarter in which he takes his degree. It will cover the work of the candidate in the field of the major, and may include any work fundamental thereto. This examination will be held by his instructors in the major department, the adviser acting as chairman.

If the final written examination is satisfactory, and the thesis accepted, the final oral examination of the candidate will be held, not later than two weeks before the end of the quarter in which he takes his degree. The adviser will act as chairman of the examining committee, which will include

all the instructors with whom the candidate has taken work, the thesis committee, and, ex-officio, the head or chairman of the department in which the major work is done. Any member of the graduate faculty may attend as a visitor. The final oral examination will cover all the work offered for the degree, and may include other work fundamental thereto. At the close of the examination, the committee will vote upon the candidate, taking into account all of his work. A majority vote is required for approval.

TABULAR SUMMARY OF REQUIREMENTS FOR
THE MASTER'S DEGREE

WORK	UNDER THE DIRECTION OF	DATE
Program, major and minor	Adviser and dean of the Graduate School	On entrance
Approval of thesis subject	Adviser and group committee	Middle of first quarter in residence
Language requirement	Adviser and language department	Before close of second quarter
Approval of candidacy	Executive committee	Beginning of third quarter
Filing of thesis	Dean of the Graduate School	At least six weeks before graduation
Examination of thesis	Thesis committee	Before admission to final oral examination
Final written examination in major	Major department members of the graduate faculty	Not later than four weeks before commencement and before final oral examination
Final oral examination on all work	Thesis committee; all candidate's instructors; head of major department	Not later than two weeks before commencement
(Course examinations as required at the usual times)		
Fee for binding thesis	Registrar	One week before commencement

Candidates who are eligible for the "preliminary examination" for the Doctor's degree may substitute this examination for the final oral examination for the Master's degree, provided that all other requirements for the preliminary examination (see p. 18) have been met.

Reports.—Special blanks are provided for signed reports concerning the thesis and the final oral examinations. All reports must be filed in the office of the dean of the Graduate School at least one week before the end of the last quarter.

Candidates meeting the requirements as above outlined will be reported by the dean to the executive committee of the graduate faculty, who will by vote recommend to the Board of Regents those approved for degrees.

Candidates upon whom degrees are to be conferred are required to be present at commencement unless especially excused by the dean of the Graduate School and the president of the University.

MASTER OF SCIENCE IN ENGINEERING OR ARCHITECTURE

The requirements and procedure for the degree of master of science in civil, mechanical, electrical, chemical, or architectural engineering or architecture will correspond to those outlined for this degree in other subjects. The major subject and thesis will lie in the field represented by the degree. The thesis will be filed and final written examination taken at least six weeks before graduation. The language requirement will be waived in all of these cases except chemical engineering, in which German is required.

THE ENGINEER DEGREES

REQUIREMENTS

The advanced professional degrees, civil engineer, mechanical engineer, electrical engineer, chemical engineer, and architectural engineer will be conferred upon the recommendation of the Graduate School faculty as a result of the satisfactory completion of the following requirements:

a. Bachelor's degree, from an approved school in the corresponding branch of engineering.

b. One full academic year of graduate engineering study (three quarters) in residence at this University. Graduates of this University may be permitted to carry on this study *in absentia* under the direction of the faculty. Work done *in absentia* may not be substituted for the residence work required for the master of science.

c. Four years in engineering experience in positions of responsibility, subsequent to receiving the Bachelor's degree. (If the graduate study is done *in absentia*, five years of experience are required.)

d. A thesis of professional grade.

Candidates for the degree of chemical engineer must have a reading knowledge of German.

For graduates of this University, a Master's degree in the corresponding branch of engineering will be accepted as fulfilling the requirements of the year of graduate study.

The Engineer degree will not be granted in less than five years after the Bachelor's degree was received.

If the Bachelor's degree is in another branch of engineering than that in which the professional degree is sought, the student must complete the equivalent of the subjects required for the Bachelor's degree in the new field before admission to candidacy for the desired degree.

MASTER'S DEGREE WITH THE ENGINEER DEGREE

It is recommended that the student who is entering upon the graduate year's study in residence for the Engineer degree register for and obtain the Master's degree for this year's work, that is, the degree of master of science in the corresponding branch of engineering. The essential difference lies in the requirement of a thesis if the Master's degree is sought. However, the aggregate amount of work is intended to be the same in both cases, namely, from 15 to 18 credit hours per week for the three quarters. If the graduate study does not lead to the Master's degree, the student is not required to prepare a thesis as a part of the year's work. The Master's thesis, however, will not satisfy the requirement for the professional thesis which is intended to be related to the practical experience after the Bachelor's degree was received.

PLAN OF STUDY

Upon entrance to the Graduate School, the candidate, with the approval of the dean, will select his adviser in the field represented by the desired degree, in which field the major work and the thesis, if one be taken, will lie. With the approval of his adviser and the dean, he will also select a minor, and will outline a study program for the year.

If the student registers for the Master's degree in engineering or architecture, he will conform to the requirements for that degree as regards major and minor work, thesis, examinations, etc.

If the graduate study during the year of residence or *in absentia* is towards the Engineer's degree only, it will be divided into major and minor work, of which the major will usually constitute about two thirds and the minor one third of the total of 12 to 15 credit hours which will be carried each quarter.

STUDY IN ABSENTIA

Only graduates of this University will be permitted to undertake the graduate study *in absentia* towards one of the Engineer degrees. This permission must be obtained from the head of the department represented by the degree, who will usually act as the adviser, and from the dean of the Graduate School. It is not necessary that this study be coincident with the academic year; it may be undertaken at any time.

The proposed plan of study should be arranged with the approval of the adviser. A flat fee of sixty dollars must be paid in advance. The study may, and generally will, extend over more than nine months. There is also the usual graduation fee of ten dollars. At least 1,500 actual hours of work should be performed as the equivalent of a year's study in residence.

The detailed requirements of reports and examinations will be established by the adviser. A separate written report must be submitted at the end of each quarter's work. A written examination covering the entire study, both major and minor, will be held at the close of the year's work. Under favorable circumstances this examination may be held in the place where the candidate resides.

Upon the satisfactory completion of the year's work, the proper credits will be recorded toward the engineering degree.

FEEES

A fee of \$60 is required for the year of graduate study towards the professional engineer degrees in engineering, architecture, and chemistry *if taken in absentia*. This is in addition to the regular graduation fee of \$10 paid at the time of qualifying for the degree.

STUDY IN RESIDENCE

The work will consist of regular courses offered in this bulletin and may include research if desired by the student, even tho the Master's degree be not sought.

THESIS

At least six months before the graduate degree is expected, the thesis subject must be approved by the adviser and the group committee. The thesis itself must be filed with the dean at least six weeks before the commencement at which the degree is to be obtained together with a deposit of one dollar and fifty cents to cover binding the thesis.

STATEMENT OF EXPERIENCE

With the thesis, the candidate must file a detailed statement of his professional experience since receiving his Bachelor's degree. This should amount to at least four years, if the graduate study was in residence, or five, if *in absentia*.

TABULAR SUMMARY OF REQUIREMENTS FOR THE ENGINEER'S DEGREE

WORK	UNDER THE DIRECTION OF	DATE
Program, major and minor	Adviser and dean of the Graduate School	On registration
Quarterly reports if <i>in absentia</i>	Adviser	
Written examination	Adviser and major and minor staff	At end of year's study or later, as arranged
Thesis subject	Adviser and group committee	Six months before graduation
Experience statement	Adviser and major staff ..	Six weeks before graduation
Filing thesis	Dean of Graduate School..	Six weeks before graduation
Fee for binding thesis ...	Registrar	One week before graduation

ATTENDANCE AT COMMENCEMENT

Unless specifically excused for an important reason, the candidate will be present in person to receive the degree.

DOCTOR'S DEGREE

In the Graduate School, one Doctor's degree, doctor of philosophy (Ph.D.), is conferred by the University of Minnesota. This degree is granted, not on the basis of successful completion of a definite amount of prescribed work but chiefly in recognition of the candidate's high attainments and ability in this special field, to be shown, first, by the preparation of a thesis, and second, by successfully passing the required examinations covering both the general and the special fields of the candidate's subjects as detailed later.

Candidates for the Doctor's degree must devote at least three years* of graduate study to approved subjects. The first two years or the last year must be spent in residence at the University of Minnesota.

A member of the staff of instruction above the rank of instructor will not be permitted to enroll for a Doctor's degree at this University. There is no objection, however, to his registering for graduate work at this University and credit so obtained may be presented elsewhere.

PROGRAM OF WORK

First year.—Upon entrance to the Graduate School, the student shall select his adviser with the approval of the dean. With the approval of his adviser he shall submit to the dean a program covering his first year's work.

Second and third years.—Before beginning the work of the second year, the student shall submit to his adviser and the group committee for approval a tentative outline of his work for the second and third years, including both the major and minor subjects. This program is then to be submitted to the dean for final approval. During the second quarter of the second year he shall file with his adviser's approval the subject of his Doctor's dissertation.

LANGUAGE REQUIREMENTS

Before admission to* the preliminary examination, the student must present to the dean of the Graduate School statements from the French and German departments, certifying that the applicant has a reading knowledge of those languages.† In addition, a knowledge of other languages may

* This time requirement will be met in three years only by those students who devote all their time to graduate study. Students who merely devote the intervals of professional or other regular employment to graduate study will need to extend their total period of work over a longer period of time. Credit for such work will be given in proportion to the amount of time actually spent in the pursuit of graduate work.

† The substitution of other foreign languages of greater service in the major field may be permitted by the executive committee on recommendation of the group committee.

be required in certain cases, as the candidate's major department may prescribe. The student's adviser or his representative shall attend the language examinations and provide literature in the major field from which the test passages are selected. For the dates of these language examinations consult the calendar at the beginning of this bulletin.

THE MAJOR WORK

The major work must be in a department in which the candidate has had, in his undergraduate study, at least the equivalent of three years of work (18 semester or 27 quarter credits) if it be a department open to freshmen, or two years of work (12 semester or 18 quarter credits) if it be a department not open to freshmen. Part or all of this preliminary work may consist of designated prerequisite courses in the same or allied departments.

During the period of work for the Doctor's degree a student shall spend not less than two thirds of his time* on the major subject, including the work on the thesis. During the last two years, he shall carry an average of at least one course per quarter in his major in addition to the work from which this thesis is developed.

At the close of the second year's work, and before admission to the preliminary examination, the student must obtain the written recommendation of the major department members of the graduate faculty. Such written recommendation should state that in view of the work already done by the applicant, the department is convinced of his probable capacity and ability to meet all the requirements for the degree, including the thesis, the subject of which must be stated.

In the case of a student who comes from the last year of residence only, provision for the examination will be made by the dean and the major department.

THE MINOR WORK

The minor work must be selected in a department in which the student is prepared to pursue courses advanced enough in character to be included in the group designated "For Undergraduate and Graduate Students," and numbered 100 or above.

The choice of the minor must be in a department the work of which can be logically related to that of the department in which the student is doing his major work.

In exceptional cases, the dean and the group committee may allow the minor subject to be taken in the same department as that of the major or in two related departments.

Not less than one sixth of the total work of the three years shall be devoted to the minor subjects and all of this work shall be completed and certified to by the department in which the minor is taken before admission to the preliminary examination.

* In estimating the distribution of time, a week of 15 credit hours may be assumed.

THESIS

The thesis, for which the accumulation of material may well be started not later than the middle of the second year, must give evidence of originality and power of independent investigation, and embody results of research, which form a real contribution to knowledge as well as exhibit mastery of the literature of the subject and familiarity with the sources of knowledge. The matter must be presented with a fair degree of literary skill.

Not later than six weeks before the commencement at which he expects to take the degree, the student shall deposit at the dean's office his thesis, typewritten, in triplicate copy to facilitate reading by the thesis committee. After the final oral examination has been passed, the candidate should file in the office of the Graduate School one bound carbon copy of the thesis. The requirements concerning form, copyrighting, and printing adopted in June, 1922, may be consulted in the Graduate School office.

The dean will appoint a thesis committee, of which the student's adviser will usually be the chairman. The duty of this committee will be to read the thesis and vote upon its acceptance. Unanimous approval by this committee will be necessary to such acceptance.

Printing of the thesis.—If the thesis be accepted, the student shall deposit with the registrar, not later than one week before graduation, a sufficient bond or such sum of money as is needed to print one hundred copies of the thesis for the use of the University and as many additional copies as the candidate may require for himself. If the thesis is to be published elsewhere, reprints will be acceptable, if bound with covers in the special form required by the University.

EXAMINATIONS

Preliminary.—After the language examination (see p. 16) and at least seven months before the degree is conferred, a preliminary examination of the student shall be given by a committee appointed by the dean and including the student's adviser as chairman, a representative of the group committee other than his adviser, the chairman or head of the major department, a representative of the minor department, and such other members as the dean may consider advisable. Certificates of proficiency in French and German and completion of the minor and the recommendation of the major department shall be required before admission to this examination. The examination shall cover graduate work previously taken by the student, and *may include any work fundamental thereto*, except the thesis and the field of definite specialization. This examination shall be in addition to the usual course examinations. It may be written or oral, or both, at the discretion of the committee. Only after the successful completion of this examination may the student be enrolled as a candidate for the Doctor's degree. Students failing to pass this preliminary examination may be excluded from the candidacy for the degree and in any case shall not be re-examined until at least one quarter has passed.

Final written.—After the thesis is presented, and at least four weeks before examination, there shall be a written examination in the major subject, to be given by the members of the graduate faculty in the major department. This examination shall cover all the work done in the major, and *may include any work fundamental thereto.*

Final oral.—After successful completion of the written examination and acceptance of the thesis and not less than two weeks before graduation, the final oral examination shall be given. This examination shall be conducted by a committee consisting of the adviser as chairman, of the members of the thesis committee, and at least two other members of the graduate faculty appointed by the dean. At least one member of this committee shall be from a group other than the one in which the major department is included. This examination has special reference to the thesis and the field of the candidate's special studies and shall not exceed three hours.

The date of the final oral examination shall be publicly announced and the examination shall be open to any member of the graduate faculty. Upon completion of the examination, a formal vote of the committee shall be taken, and an affirmative vote of at least two thirds of the members shall be necessary for recommendation of the candidate for the degree.

Reports.—Special blanks are provided for signed reports concerning the thesis and the final oral examinations. All reports must be filed in the office of the dean of the Graduate School at least one week before graduation.

Candidates meeting the requirements as above outlined will be reported by the dean to the executive committee of the graduate faculty, who will by vote recommend to the Board of Regents those approved for degrees.

Candidates upon whom degrees are to be conferred are required to be present at commencement, unless especially excused by the dean of the Graduate School and the president of the University.

THE GRADUATE SCHOOL

TABULAR SUMMARY OF REQUIREMENTS FOR
THE DOCTOR'S DEGREE

WORK	UNDER THE DIRECTION OF	DATE
FIRST YEAR		
Major	Adviser and dean of the Graduate School	On registration
Minor		
SECOND YEAR		
Tentative program of entire second and third year's work	Adviser, group committee, and dean of Graduate School	Before beginning work of second year
Major, including thesis ...	As for tentative program..	} Before admission to preliminary examination
Minor	Adviser and minor department	
Language	Adviser and language department	
Recommendation	By major department	
Preliminary examination ..	Special committee	Seven months before degree is to be conferred
THIRD YEAR		
Major, including thesis ...	Advisers, group committee, and dean of Graduate School	Six weeks before taking the degree
Filing of thesis	Dean	
Examination of thesis	Thesis committee	Before admission to final oral examination
Final written examination..	Major department members of the graduate faculty..	Four weeks before taking degree and before final oral examination
Final oral examination ..	Special committee	Not later than two weeks before taking the degree
Bond for publication of thesis	Registrar	Not later than one week before taking the degree

DESCRIPTION OF COURSES

EXPLANATIONS

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

AERONAUTICAL ENGINEERING

Professor John D. Akerman; Assistant Professors Charles Boehnlein, Joseph A. Wise.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 100f-101w-102s. Aerodynamics. Atmospheric properties. Fluid mechanics. Stream functions and velocity potential. Motion of body in liquids in three dimensions. Prandtl's wing theory. Dynamic loads, stability, maneuverability, controllability. Prerequisites: Course 3 and M.&M. 26. Three credits. Mr. Boehnlein.
- 115f. Airplane Stresses. Deflections of structures. Theory of statically indeterminate structures. Analysis of fuselage trusses, landing gear, wing beams. Structural details and connections. Prerequisite: Course 83. Three credits. Mr. Wise.
- 116w. Advanced Airplane Stresses. Theory and design of monocoque fuselages. Multispar and unit construction wings. Vibrations. Wing and control-surface flutter. Analysis and design of seaplane hulls and floats. Prerequisite: Course 115. Three credits. Mr. Wise.
- 120f-121w-122s. Airplane Design. Stress analysis of wings, fuselages, chassis, control surfaces, etc. Specifications. Performance and design calculations. Propellers. Prerequisites: Courses 83, 102, M.&M. 128. 120f, two credits; 121w, four credits; 122s, three credits. Mr. Akerman.
- 123f,w,s-125f,w,s. Advanced Airplane Design. Problems in airplane design or development. Prerequisite: Course 121. Two to five credits per quarter. Mr. Akerman.
- 126f,w,s-127f,w,s-128f,w,s. Advanced Problems in Airscrew Design. Graphical and analytical methods of investigation. Prerequisite: Course 122. Two to five credits per quarter. Mr. Akerman.
- 140f. Aeronautical Laboratory. Study of airplane parts and their construction. Fittings. Rigging. Inspections and accessories. Prerequisite: Course 102. Two credits. Mr. Akerman.
- 141w. Aerodynamics Laboratory. Measurement of air flow. Calibration of Pitot tubes and anemometers. Distribution of air pressure on surfaces. Wind tunnel tests of wing, propeller, and airplane models. Prerequisite: Course 102. Two credits. Mr. Boehnlein.
- 160s. Airships. Theory and design. Rigid and non-rigid types. Stresses. Performance. Prerequisites: Courses 83, 102, M.&M. 128. Three credits. Mr. Akerman.

- 170s. Air Transport. Economics. Airports and airways and their equipment. Air commerce rules and regulations. Communication. Prerequisite: Aero.E. 102. Two credits.
- 190f-191w-192s. Seminar. Readings, reports, conferences, and discussions. Prerequisite: Course 102. One credit. Mr. Akerman.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 260s. Advanced Airship Stresses. Coplanar and space rigid frameworks. Secondary stresses. Buckling and elastic instability. Framework of dirigibles, gondolas, and cabins. Prerequisite: Course 115. Three credits. Mr. Wise.
- 272f-273w-274s. Research in Aeronautical Engineering. Two to five credits per quarter. Mr. Akerman, Mr. Boehlein, Mr. Wise.

AGRICULTURAL BIOCHEMISTRY

Professors Ross Aiken Gortner, Clyde H. Bailey, Leroy S. Palmer; Associate Professor Cornelia Kennedy; Assistant Professor William M. Sandstrom.

Prerequisites.—For major work, credit in general chemistry and qualitative analysis, in organic chemistry, in quantitative analysis, and at least ten quarter credits in biological science. The instructor with whom the student wishes to work may require additional prerequisites.

For minor work, credit in general chemistry and qualitative analysis, in organic chemistry, and 10 quarter credits in biological science. Minors should be arranged only after consultation with the instructors concerned.

All students majoring in this division and all minoring for the Doctor's degree must include either Course 201 or 202 in their study programs.

Candidates for the Master's degree must have a reading knowledge of German or French. (In special cases, where other languages are needed for the development of the thesis, Russian, Italian, or the Scandinavian languages may be substituted.)

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 101f-102w. Agricultural Quantitative Analysis. Includes estimation of inorganic and organic constituents of biological products, proximate analysis of foods and feeding stuffs, and the use of special apparatus. Prerequisite: quantitative analysis. Three credits each quarter. MWF VI, VII, VIII; 208BCh. Mr. Bull.
- 103s. Dairy Chemistry. Lectures and laboratory work on the physical, colloidal, and chemical properties of milk and dairy products, and of the processes involved in the manufacture of dairy products. Lect. three credits, lect. and lab. five credits. Lect. MWF VI; lab. MWF VII, VIII, IX; 116 and 208BCh. Mr. Palmer.
- 108s. Chemistry of Wheat and Wheat Products. A lecture course, with collateral library reference work, on the chemical technology of the production and milling of wheat and its conversion into food. Pre-

- requisite: organic chemistry. Three credits. MWF I; 211BCh. Mr. Bailey.
- 110s. Flour Laboratory Methods. A laboratory course. Analysis of wheat and its products. Designed to train students for research in the cereal industry. Prerequisites: Course 101-102 or food analysis. Three, four, or five credits depending on the amount of work completed. MWF VI, VII, VIII, IX; 202BCh. Mr. Bailey.
- 111f,su-112w,su. Biochemistry. An advanced course dealing with the colloidal state, and the chemistry of proteins, carbohydrates, glucosides, tannins, fats, plant acids, enzymes and pigments, and their physico-chemical relations to vital processes. Prerequisites: organic chemistry, biology, 1 year. Three credits each quarter. Lect. MWF III; Rec. Th VI; 113BCh. Mr. Gortner, Mr. Sandstrom.
- 113f,su-114w,su-115s. Biochemical Laboratory Methods. A laboratory course paralleling the lectures in 111-112. Prerequisite: quantitative analysis, parallel 111-112. Two credits each quarter. T VI, VII, VIII, Th VII, VIII, IX; 202-208BCh. Mr. Sandstrom.
- 116w. Advanced Animal Nutrition. Recent developments in animal nutrition, covering the field of proteins, mineral metabolism, and vitamins. Prerequisite: Course 111 or physiologic chemistry. Three credits. TThS III; 116BCh. Mr. Palmer, Miss Kennedy.
- 117f,w,s. Laboratory Problems in Animal Nutrition. A laboratory course on methods used in nutrition studies. (Because of limited laboratory facilities permission must be obtained from the instructor before registration.) Prerequisite: Course 116.* Three credits. Ar. Miss Kennedy.
- 118f,w,s,su. Laboratory Problems in Biochemistry. Special laboratory work in the preparation and isolation of pure compounds, and in special methods of identification or determination of biochemical products. Prerequisites: Courses 111-112, 113-114; or 103 or 110. Three or five credits. Mr. Gortner, Mr. Bailey, Mr. Palmer, Mr. Sandstrom, Miss Kennedy.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201f,w,s. Seminar in Plant Chemistry, Colloids, and Proteins. One credit. F IX; 310 BCh. Mr. Gortner, Mr. Bailey.
- 202f,w,s. Seminar in Nutrition and Dairy Chemistry. One credit. Ar. Mr. Palmer, Miss Kennedy.
- 203f,w,s,su. Research Problems. Special work on particular research problems other than the student's major thesis. Facilities are provided for biochemical investigations and for advanced studies in plant or animal nutrition. Two to five credits. Mr. Gortner, Mr. Bailey, Mr. Palmer, Miss Kennedy, Mr. Sandstrom.
- 205f,w,s,su. Special Topics in Biochemical Literature. Library work followed by the preparation of written reports upon either the historical

* Graduate students with acceptable prerequisites may be permitted on request to parallel Courses 116 and 117.

- development or the current literature of special biochemical problems. A reading knowledge of German is necessary and of French desirable. Prerequisite: Course 206, 207, or 208. Three credits. Mr. Gortner, Mr. Bailey.
- 206f. Colloids. Lectures dealing with the colloidal state, the preparation and properties of colloidal systems, and the relation of these to biochemical processes. Prerequisite: Course 111-112 or physical chemistry. Three credits. MWF II; 113BCh. Mr. Gortner.
- 207s. Enzymes. A lecture and library course on the nature of enzyme action, including methods of preparation and investigation of enzymes, their physical and chemical properties and their methods of action. Prerequisite: Course 111-112 or physiologic chemistry. Three credits. MWF III; 116BCh. Mr. Sandstrom.
- 208w. Proteins. Lectures on the composition, structure, physical chemistry, biochemical reactions, and functions of the proteins and amino acids. Prerequisite: Course 111-112. Three credits. MWF II; 113BCh. Mr. Gortner.
- 209w. Carbohydrates. A lecture and library course on the synthesis, structure, reactions, and functions of carbohydrates, with especial reference to those which play a rôle in biochemical or industrial processes. Prerequisite: Course 111-112 or advanced organic chemistry. Three credits. MWF II; 116BCh.
- 212f,w,s. Special Topics in Nutritional Chemistry. A special library course with written reports on assigned readings in protein, mineral, and vitamin nutrition, primarily to train the student as a critic in this field. Prerequisites: Course 116 and reading knowledge of German. Three credits. Mr. Palmer.

AGRICULTURAL ENGINEERING

Professor Harry B. Roe; Assistant Professors Arthur J. Schwantes, Hall B. White.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 101f-102w-103s. Advanced Drainage Problems. Special drainage problems including surface run-off, soil permeability, relation of soil and crop type to drainage, shape and regulation of water table in relation to root growth, etc. Prerequisite: Course 68. Three to six credits per quarter. Ar. Mr. Roe, Mr. Neal.
- 111f-112w-113s. Farm Building Problems. Investigations in building materials, methods of construction, cost and efficiency of farm buildings. Prerequisite: Course 67. Three to six credits per quarter. Ar. Mr. White.
- 121f-122w-123s. Farm Power and Machinery Problems. Special studies of farm machinery and mechanical power for the farm, including tests, design, and adaptability to various farm conditions. Prerequisite: Course 126. Three to six credits per quarter. Ar. 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. Prerequisites: Courses 14 and 71. Three credits. MWF III; 106 En(UF), F III-IV; 49 En(UF). Mr. Schwantes.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201f-202w-203s. Reclamation Research. Studies of design and functioning of reclamation works with especial reference to soil types and soil water conditions. Prerequisites: Course 101 and one quarter's work in mathematical theory of statistics. Three to six credits per quarter. Ar. Mr. Roe.
- 211f-212w-213s. Farm Structures Research. Studies in farm structures as related to other factors in the farm business. Prerequisite: Course III. Three to six credits per quarter. Ar. Mr. White.
- 221f-222w-223s. Farm Power and Machinery Research. Studies involving the design or utilization of power and machinery used in connection with farm operations. Prerequisite: Course 121. Three to six credits per quarter. Ar. Mr. Schwantes.

AGRONOMY AND PLANT GENETICS

Professor Herbert K. Hayes; Associate Professor Albert C. Army; Assistant Professor Harold K. Wilson.

Prerequisites.—In agronomy, sufficient work in plant science to satisfy the adviser that advanced work may be pursued profitably. Further courses may be required without credit if in the opinion of the adviser this is necessary. With the approval of the adviser, courses in agricultural biochemistry, botany, pathology, plant genetics, plant physiology, and soils may be accepted as part of the major work.

In plant genetics, for major or minor work, sufficient credits in plant sciences must be presented to satisfy the adviser. With the approval of the adviser, courses in agricultural biochemistry, agronomy, botany, horticulture, plant physiology, and plant pathology may be accepted as major work. Students majoring in plant genetics are required to continue study during at least one summer. Exemption is made if similar training has been obtained at some other institution.

COURSES IN AGRONOMY

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 121f. Grain Crops. Structure, function, culture, improvement, and uses of corn, wheat, oats, barley, rye, flax, and buckwheat. Prerequisites: Bot. 4, 5, 6. Three credits. TTh VI, VII, VIII; 100Ad(F). Mr. Wilson.
- 122w. Grain and Hay Grading. History and methods of grain grading. Problems involved and applications of work. Judging crops on basis of quality for seed. Prerequisite: Agron. 121, or equiv. Three credits. TTh VI, VII, VIII; 100Ad(F). Mr. Wilson.

- 123s. Forage Crops. A study of the structure, function, culture, improvement, and uses of forage crops including meadow and pasture management. Prerequisites: Bot. 4, 5, 6. Three credits. TTh VI, VII, VIII; 100Ad(F). Mr. Arny.
- 124w,s. Problems in Farm Crops. Correlation of theory and practice of crop production and management by the problem method. Prerequisites: Agron. 1, 121, and 123 (parallel). Three credits. Ar.; 109Ag(F). Mr. Wilson.
- 125su. Advanced Farm Crops. The important phases of crop production in the light of modern scientific knowledge. Studies of the important agricultural crops with emphasis as follows: ecology in relation to crop distribution and adaptation, physiology of crop production and plant nutrition, anatomy of the plant as related to growth responses, environmental factors as diseases, insects, etc., tillage practices, maintenance of soil productivity, and methods of plant improvement through plant breeding. Prerequisites: qualified teachers in agriculture. Three credits. Ar. Mr. Wilson.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201f,w,s. Research in Farm Crops. Special problems in crop physiology, production, and classification of crop plants. Prerequisites: Agron. 121, 123. Three to nine credits. Ar. Mr. Arny, Mr. Wilson.
- 202f,w,s. Farm Crops Seminar. Reviews and discussions of research articles and thesis problems. Prerequisite: Nine credits in farm crops. One and one-half credits per quarter. W VII, VIII; 109Ag(F). Mr. Arny.
- 203s. Crop Research Results and Methods. Studies of the results of investigations with crop plants and applications to agronomic problems. Practice in formulating research plans and in carrying out laboratory technique. Prerequisites: Agron. 121, 123. Three credits. 109Ag(F). Mr. Arny, Mr. Wilson.
- 204s. History and Classification of Crop Plants. Assignments, discussions, and laboratory work dealing with (a) the botany of crop plants and their evolution; (b) use of plant characters in the identification and systematic classification of species and varieties. Prerequisites: Bot. 113 or 114 or 115; Agron. 121 and 123. Three credits. 109Ag(F). Mr. Wilson.

COURSES IN PLANT GENETICS

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 131f,w. Principles of Genetics. Fundamental principles of breeding, heredity, variation, biometry, and evolution. Prerequisite: 9 credits in botany or zoology. Three credits. ThS I, T I, II; 102Ad(F). Mr. Powers.
- 132s. Farm Crops Plant Breeding. Applied genetics. Methods of breeding each of the important agricultural crops. Prerequisites: Course 131 or its equiv. Three credits. TTh VI, VII, VIII; 102Ad(F). Mr. Powers.

- 134f,w. Laboratory Problems in Genetics. Methods of taking and arranging genetics data. Special inheritance problems with *Drosophila*. Construction of chromosome map. May parallel Course 131. Ar; 303 Ag(F). Mr. Doxtator.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 241f,w,s. Research in Plant Genetics. Special problems in plant genetics, inheritance of plant characters, and cytological studies in relation to plant genetics. May be taken as major or minor work. Ar. Mr. Hayes, Mr. Powers.
- 242f,s. Plant Breeding Seminar. Plant genetics in relation to plant breeding, and a discussion of research problems. One credit per quarter. F VII, VIII; 109Ag(F). Mr. Hayes.
- 243f. Methods in Plant Breeding. The application of biometrical methods to field plot technique, the results of inbreeding and outbreeding, and the results of selection and crossing as a means of improving crop plants. Practice in outlining the correct mode of attack for special plant breeding problems. Three credits. Ar; 109Ag(F). Mr. Hayes.
- 244su,f. Laboratory Methods in Plant Breeding. Supplementing 243f. Practice in plant breeding technique, methods of controlling pollination, and handling of plant cultures. Three credits. Ar. Mr. Powers.
- 245w. Advanced Genetics. The establishment of a genetic factor hypothesis, linkage, gene mutations, chromosomal aberrations, and the goodness of fit of Mendelian ratios will be emphasized. Three credits. Ar; 109 Ag(F). Mr. Hayes.
- 246w. Genetics Seminar. Important contributions to genetic theory and practice. Two credits. F VII, VIII; 109Ag(F). Mr. Hayes.

ANATOMY

Prerequisite's.—The Institute of Anatomy offers excellent facilities to students who wish to take advanced work or to pursue investigations in anatomy.

The prerequisite work for all students for major or minor in the Department of Anatomy includes general zoology (animal biology), 6 credits, and advanced zoology or elementary courses in anatomy (including histology, embryology, and neurology), 6 credits. In addition each student desiring a major in anatomy must have had the elementary courses in that branch of anatomy in which he desires to specialize—gross anatomy, histology, embryology, or neurology.

For staff and the description of courses, see the special bulletin on graduate work in medicine.

ANIMAL BIOLOGY

For offerings see Zoology.

ANIMAL GENETICS

Animal genetics may be elected as a field for major or minor study. For prerequisites and courses see those listed under Poultry Husbandry.

ANIMAL HUSBANDRY

Professors Walter H. Peters, Evan F. Ferrin; Associate Professor Laurence M. Winters; Assistant Professor Alfred L. Harvey.

Prerequisite.—For major work 18 quarter credits in Animal Husbandry or closely allied subjects.

Major and minor.—Upon approval of the graduate faculty, candidates doing their major work for the Master's degree in animal husbandry may take their minor in animal breeding or in meats. Candidates doing their major work for the Doctor's degree in animal husbandry must take a minor in some other department. With the approval of the adviser, courses in agricultural biochemistry, genetics, botany, economics, dairy husbandry, veterinary medicine, and zoology may be accepted, as major work.

Language requirement.—Students majoring in animal husbandry are exempted from the language requirement for the Master's degree.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 101f. Advanced Livestock Judging. Competitive judging of market and breed types of beef cattle, hogs, sheep, and draft horses, supplemented by visits to near-by stock farms. Three credits. MWF VI, VII; center arena, St(F). Mr. Harvey.
- 106v. Advanced Meats. Practice work in cutting carcasses and a study of carcass values of animals. Three credits. WF VI, VII, VIII; MS(F). Mr. Anderson.
- 107s. Meat Problems. The wholesale cuts and grades of meat, the packing industry and utilization of by-products, special problems and visits to meat packing establishments. Three credits. Lect. TS IV, lab. T VI, VII, VIII; MS(F). Mr. Anderson.
- 108f. Seminar. Special assignments and review of research problems pertaining to the livestock industry. One credit. T IX; 3St(F). Mr. Peters.
- 109w. Seminar. Continuation of 108. One credit. Mr. Peters.
- 110s. Seminar. Continuation of 109. One credit. Mr. Peters.
- 111w. Utilization of Meats. A study of the characteristics of different cuts of pork, beef, veal, mutton, and lamb with reference to palatability, nutritive value, chemical composition, economy, uses, and market value; a study is made of edible by-products, cured meats, and meat specialties. (For Home Economic students.) Three credits. ThS III, T III, IV; MS(F). Mr. Anderson.
- 112w. Animal Breeding. The application of the principles of genetics to the breeding of livestock; a review of the master-breeders' methods and consideration of the practical breeders' problems. Three credits. MWF IV; 3St(F). Mr. Winters.

- 113s. Livestock Management. Fitting the different types of livestock production into farm management systems. Management problems involved in beef cattle, sheep, swine, and horse production. Three credits. Lect. TS III; lab. Th VI, VII, VIII; 3St(F). Mr. Peters.
- 114s. Advanced Study of the Breeds of Livestock. A study of the history and blood lines in any of the leading breeds of livestock. Three credits. TThS II; 3St(F). Mr. Winters.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201s. Advanced Study of Animal Breeding. A review of recent scientific literature in the fields of the physiology of reproduction and animal genetics. Three to ten credits. Mr. Winters.
- 202f,w. Advanced Livestock Feeding. A study of experimental results bearing on feeding questions and review of scientific literature applicable to them. Three to ten credits. Mr. Ferrin.
- 203f. The Marketing of Livestock. A study of the methods used in the principal livestock markets; selling purebred livestock. Three credits. Mr. Peters.
- 205s. Experimental Methods. Theory, plan, and conduct of experimental work in animal husbandry. Factors affecting results, sources of error, interpretation of data. Three credits. Mr. Ferrin.
- 207s. Research in Meats. Special problems assigned to fit the needs of each student. Three to ten credits. Mr. Anderson.
- 208f,w,s. Research in Animal Husbandry. Special problems assigned to fit the needs of each student. Three to ten credits. Mr. Peters, Mr. Ferrin, Mr. Winters, Mr. Anderson.

ANTHROPOLOGY

Professors Albert Ernest Jenks, Wilson D. Wallis.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 106w. Types of Prehistoric Men and Cultures. Problems of chronology and distribution. MWF III; 12F. Mr. Jenks.
- 107s. American Archeology. Prehistoric man and cultures in America. MWF III; 9F. Mr. Jenks.
- 108s. Philippine Peoples. Not offered in 1931-32.
- 110f. Physical Anthropology The physical types of man, prehistoric and contemporary. TThS III; 12F. Mr. Wallis.
- 112s. The American Negro. The physical types. Problems and methods of interracial adjustments. MWF II; 3F. (Alternates annually with 108.) Mr. Jenks.
- 113s. Peoples of Europe. Racial and cultural characteristics. MWF IV; 6F. Mr. Jenks.
- 114w. The American People. The physical, psychic, and cultural characteristics of the peoples in America. MWF VII; 25F. Mr. Jenks.

- 121w. Advanced Physical Anthropology. A critical study of problems in physical anthropology. Based on Course 110. Ar.; ar.; 12F. Mr. Wallis.
- 122f-123w-124s. Problems in Anthropology. Advanced work with individual guidance. Also honors course, anthropological backgrounds of the social sciences, on recommendation of their advisers. Hours and credits arranged. 12F. Mr. Jenks, Mr. Wallis.
- 150.‡ Field Trip in Archeology. Summer. One to 8 credits. Ar. Mr. Jenks.
- 161f. Primitive Religion. The religious concepts and practices of primitive peoples. MWF I; 12F. Mr. Wallis.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 204f-205w-206s. Seminar in Anthropology. Individually directed research. Hours and credits arranged. 12F. Mr. Jenks, Mr. Wallis.

ARCHITECTURE

Professors Frederick M. Mann, Leon E. Arnal, Robert T. Jones, Roy C. Jones; Associate Professor S. Chatwood Burton.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 121f,w,s-122f,w,s-123f,w,s. Freehand Drawing. Advanced life drawing, painting, or modeling and decoration. Prerequisite: Course 29. Two credits per quarter. Mr. Burton.
- 131f,w,s-132f,w,s-133f,w,s.* Architectural Design, Grade III. Long, short, and sketch problems under individual criticism dealing with complex compositions, and with subjects involving special character and a decorative and imaginative interest. Prerequisite: Course 39. Ten credits per quarter for 131 and 132; nine credits for 133. Mr. Arnal, Mr. R. C. Jones.
- 134f,w,s-135f,w,s-136f,w,s.* Interior Architectural Design. Problems done under individual criticism dealing with the decorative treatment, furniture, and accessories of interiors, for students in interior decoration. Prerequisite: Course 36. Seven credits per quarter. Mr. Arnal.
- 141f-142w-143s. Building Construction. An advanced study of the technology of building materials, soils, foundations, systems of framing, and fireproof and mill construction. Prerequisite: C.E. 41 or M.&M. 26. Two credits per quarter. Mr. R. T. Jones.
- 151f. Architectural Seminar. Literature of architecture; special topics, papers, and discussions. Prerequisite: senior standing. One credit. Mr. Mann.

‡ This course may be taken for credit only once.

* 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. Advancement is based upon design "points" earned.

- 153s. Business Relations. Relations of the architect, owner, and builder; professional ethics and practice; office administration. Prerequisite: Senior standing. Two credits. Mr. Mann.
- 163s. History of Sculpture and Painting. Historical study of ancient, Renaissance, and modern sculpture, and of the Renaissance and modern schools of painting. Prerequisite: Arch. 16. Two credits. Mr. Burton.
- 182f-183w-184s. Furniture and Decoration. Historical and technical study, for students in interior architecture, ornament, decoration, furniture, textiles, etc. Discussion of the use of color in decoration. Prerequisites: Courses 16, 26. Three credits per quarter.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 219f,w,s. Special Researches in Architectural History. Prerequisite: completion of undergraduate architectural history. Five credits or less per quarter. Ar; 320ME. Mr. Mann.
- 220f,w,s. Archeology. Prerequisite: completion of undergraduate architectural history. Three credits or less per quarter. Hrs. ar. Mr. Arnal.
- 221f,w,s-222f,w,s-223f,w,s. Life Drawing and Figure Composition. Prerequisite: completion of undergraduate freehand drawing. Two credits per quarter. Hrs. ar. Mr. Burton.
- 239f,w,s. Advanced Architectural Design. Prerequisite: completion of undergraduate design. Ten credits or less per quarter. MTWThF VI, VII, VIII, IX, S I, II, III, IV; 317ME. Mr. Arnal.
- 240f,w,s. Technology of Building Materials. Prerequisite: Arch. 143. Three credits per quarter. Hrs. ar. Mr. R. T. Jones.
- 243f,w,s. Advanced Interior Decoration Design. Prerequisite: Arch. 136. Ten credits or less per quarter. Ar. Mr. Arnal.
- 287f,w,s-288f,w,s-289f,w,s. Advanced Modeling. Continuation of Arch. 89. Prerequisite: Course 89. Two credits per quarter. Mr. Burton.

ASTRONOMY

Assistant Professor Willem J. Luyten.

The Astronomical Observatory contains a ten and one-half inch refracting telescope furnished with a third lens for converting it into a photographic telescope; a five-inch star camera; a filar micrometer; a spectrocope by Brashear; a meridian circle and zenith telescope; a Repsold photographic measuring machine; a chronograph, and astronomical clocks.

Prerequisites.—For major work, Course 51-52-53 and Mathematics 50; for minor work, Mathematics 50 and 3 credits in astronomy.

Exemptions from the language requirement for the Master's degree may be made in individual cases.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 121f-122w-123s. Astrophysics. An introductory course, with particular reference to stellar spectroscopy. Practice in measurement of spectrographic plates. Three credits. Ar. Mr. Luyten.

- 140w. Method of Least Squares. Applied especially to engineering, physics, and astronomy. Prerequisite: Mathematics 51. Three credits. Ar. Mr. Luyten.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 211f-212w-213s. Seminar. For students who are prepared for advanced work along particular lines. One, two, or three credits. Ar. Mr. Luyten.

BOTANY

Professors C. Otto Rosendahl, William S. Cooper, Josephine E. Tilden; Associate Professors George O. Burr, Frederic K. Butters; Assistant Professor Alan E. Treloar.

NOTE.—For courses in plant pathology and mycology, see Department of Plant Pathology.

Prerequisites.—For major work, 36 quarter credits in botany; for minor work, 20 credits.

Language requirements.—Candidates for the Master's degree must have a reading knowledge of German or French; for the Doctor's degree, both are required.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 101f. Biometric Principles. An introduction to the mathematical analysis of biological data, dealing with uni-variate distribution, probability, correlation and linear regression. Three credits. Lect. TThS III; lab. ar.; 202Bo. Mr. Treloar.
- 101s. Biometric Principles. (See 101f.) Lect. TThS I; lab. ar.; 202Bo. Mr. Treloar.
- 108w. Morphology and Taxonomy of the Pteridophytes. An intensive study of lycopods, ferns, and their allies, their structure and history, with special attention to the classification of living forms. Lectures, reference reading, and laboratory work. Prerequisites: Courses 7 and 23. Five credits. Ar.; 304Bo. Mr. Butters.
- 110w. Morphology and Taxonomy of the Gymnosperms. An intensive study of cycads, conifers, and their allies, their structure and history, with special attention to the classification of living forms. Lectures, reference reading, and laboratory work. Prerequisites: Courses 7 and 63. Five credits. Mr. Butters.
- 113f-114w-115s. Advanced Taxonomy of the Flowering Plants. An advanced course in which special attention is given to the taxonomy of difficult natural groups, involving systematic principles and practice, rules of nomenclature, systems of classification, etc. Prerequisite: 15 credits, including Course 7. Nine credits. MWF VI, VII, VIII; 303Bo. Mr. Rosendahl.
- 118w. Cytology. A survey of cell structure and the various phenomena of division, fusion, and metamorphosis, together with a review of the

- history of cytological investigations. Methods of cytological research indicated in the laboratory. Prerequisite: 18 credits. Five credits. MTWThF I, II; 303Bo. Mr. Rosendahl.
- 124s, 125su, 126f.* Morphology and Taxonomy of Algae: Algal types. Advanced studies in selected groups. Prerequisite: 15 credits including Course 12, or consent of instructor. Three to five credits. TThS III, IV; 110Bo. Miss Tilden.
- 127s. Anatomy of Vascular Plants. The microscopic structure of vascular plants with particular attention to the development and evolution of the vascular system in the root, stem, and leaf. Prerequisite: 18 credits. Five credits. Lect. MWF I; lab. ar.; 304Bo. Mr. Butters.
- 131f. Field Ecology. A survey of the local plant communities and successions, and a study of the general principles of plant association and succession. Prerequisite: Course 21. Five credits. MWF VI, VII, VIII; 214Bo. Mr. Cooper.
- 132w. Ecological Anatomy. The individual plant and its parts as related to environment; special plant forms and structures, their causes and significance. Prerequisite: Course 21. Five credits. MWF VI, VII, VIII; 214Bo. Mr. Cooper.
- 133s. Plant Geography of North America. Preliminary discussion of the principles of plant distribution followed by a detailed study of the vegetation regions of North America. Prerequisite: Course 21. Five credits. MWF VI, VII, VIII; 214Bo. Mr. Cooper.
- 134s. Research Methods in Ecology. Theory and practice of instrumental study of the habitat and of precise investigation of community and succession. Prerequisite: Course 21. Five credits. MWF VI, VII, VIII; 214Bo. Mr. Cooper.
- 140w. General Plant Physiology. Advanced survey of the whole field of plant physiology. Prerequisites: Course 22 and elementary inorganic chemistry. Five credits. MTWThF VI, VII; 102Bo. Mr. Burr.
- 141f. Physico-chemical Principles in Plant Physiology. Properties of solution, buffers; osmosis, transpiration, electrometric measurements. Prerequisites: Course 22 and general organic chemistry. Five credits. Lect. MWF 7:55 a.m.; lab. MF II, III, IV; 104Bo. Mr. Burr.
- 142w. Photosynthesis. A detailed discussion of conditions, theories, and energy relations in the assimilation of carbon. Prerequisites: Course 22 and general organic chemistry. Five credits. Lect. MWF 7:55 a.m.; lab. MF II, III, IV; 104Bo. Mr. Burr.
- 143s. Plant Metabolism. Nitrogen assimilation and protein synthesis, metabolism of carbohydrates, fats and proteins, biological oxidation, respiration. Prerequisites: Course 22 and general organic chemistry. Five credits. Lect. MWF 7:55 a.m.; lab. MF II, III, IV; 104Bo. Mr. Burr.
- 145w. Advanced Biometry (1). Theory and practical exercises in biometric analysis involving the correlation ratio, contingency methods,

* Any of the above courses may be taken separately.

- partial correlation and multiple prediction. Prerequisite: Course 101. Three credits. Lect. TThS III; lab. ar.; 202Bo. Mr. Treloar.
- 146s. Advanced Biometry (2). Theory and practical exercises in biometric analysis, involving a discussion of frequency curves, the normal surface, bi-serial, tetrachoric and equivalent probability correlation methods. Prerequisite: Course 145. Three credits. Lect. TThS III; lab. ar.; 202Bo. Mr. Treloar.
- 149s-150su-151f.* Advanced Phycology. A general survey based on studies in the field and laboratory. Designed for teachers and research workers who wish to acquire a practical knowledge of the algae. Problems assigned and reports required. Prerequisite: 15 credits including Courses 124, 125, or 126, or consent of instructor. Three to ten credits. TTh VI, VII, VIII; 110Bo. Miss Tilden.
- 153f. Biometric Methods. A discussion of particular methods in biometric analysis with special reference to the trustworthiness of constants and the significance of differences. Prerequisite: Course 101. Three credits. Lect. TThS I; lab. ar.; 202Bo. Mr. Treloar.
- 153w. Biometric Methods. See 153f. Lect. MWF I; lab. ar.; 202Bo. Mr. Treloar.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201-202-203. Research Problems in the Morphology of Vascular Plants. Mr. Butters.
- 205-206-207. Research Problems in the Taxonomy of Angiosperms. Mr. Rosendahl.
- 209s-210su-211f. Research Problems in Algae. Miss Tilden.
- 213-214-215. Research Problems in Embryology. Mr. Butters.
- 217s-218su-219f. Special Research Problems in the Taxonomy and Distribution of Algae. Directed work in special areas approved by the instructor. Miss Tilden.
- 221-222-223. Research Problems in Ecology. Mr. Cooper.
- 225-226-227. Research Problems in Plant Physiology. Mr. Burr.
- 229-230-231. Research Problems in Cytology. Mr. Rosendahl.
- 233-234-235. Seminar. Students may register for one-hour seminar credit per quarter in any of the research subjects.
- 237f-238w-239s. Research Problems in Biometry. Mr. Treloar.
- 241s-242su-243f. Review of Phycological Literature with Reference to Selected Problems. Miss Tilden.

CHEMICAL ENGINEERING

Professor Charles A. Mann; Associate Professors George H. Montillon, Ralph E. Montonna.

Prerequisites.—Before being admitted to major work in chemical engineering, the student should have received the Bachelor's degree in chemical engineering or its equivalent. If he has not met this requirement, it will be necessary for him to pursue such additional preparatory studies as may be prescribed by the adviser.

* Any of the above courses may be taken separately.

The student selecting chemical engineering as a minor must present as prerequisites mathematics including integral calculus, physics, analytical and organic chemistry, and mechanical drawing.

Requirements.—For the Master's degree in chemical engineering, the major subject and the thesis must be taken in chemical engineering.

Students may not select chemical engineering in combination with any branch of chemistry as major and minor subjects except with the approval of the group committee.

The candidate for the Master's or the Doctor's degree with chemical engineering as a major must have completed, as undergraduate or graduate, a year's work in physical chemistry, such as, for example, Phys. Chem. 101f-102w-103s or their equivalent.

For the requirements for the professional degree of chemical engineer, see pages 13, 14, and 15.

Languages.—Candidates for the Master's degree in chemical engineering must have a reading knowledge of German or French; German is preferable in this field. For the Doctor's degree, both are required.

Examinations.—The written and oral preliminary examinations in chemistry for the Doctor's degree will be given at only four periods during each year. Normally, these will be during the first two weeks of each regular quarter and of the first term of the summer quarter. The exact schedule will be announced at the beginning of each quarter.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 101f,su. Unit Processes. Principles and methods of operation, construction, and uses of machinery for the unit processes. Lectures and recitations. Visits to chemical plants. Prerequisites: Anal. Chem. 1, 2. Three credits. MTWFS 1; 225C. Mr. Mann.
- 102s,su. Unit Process Problems. Problems in combustion, furnaces, and kilns, the study of crystallization on a commercial scale. Prerequisite: Course 101. Three credits. MWF II; 111C or ar. Mr. Montillon, Mr. Ruth.
- 103f. Unit Process Problems. Problems in heat transfer, the use and design of heat exchangers, the applications of the laws of fluid flow, filtration, filter presses and centrifugals. Prerequisite: Course 101. Three credits. MWF II; 111C or ar. Mr. Montillon, Mr. Ruth.
- 104w. Unit Process Problems. Problems in leaching and dissolving, counter-current extraction, gas absorption, and distillation. Drying by air, steam, and direct heat dryers, single and multiple effect evaporators. Prerequisite: Course 101. Three credits. MWF II; 111C or ar. Mr. Montillon, Mr. Ruth.
- 111f-112w-113s. Design of Chemical Equipment and Plants. Design of equipment and layout of plants based on collected data. Classroom and laboratory work. Prerequisites: Courses 102-103-104, 117, 131, 132. Two credits per quarter. Ar. Mr. Montillon.
- 117s. Chemical Engineering Equipment Design. Fundamental principles in the design of simple chemical engineering equipment. Laboratory work.

- Prerequisite: Course 104. Three credits. Lect. T IV; lab. TTh VI-IX; 410C. Mr. Montonna.
- 121w. Chemical Engineering Economics. The economic and business considerations controlling chemical engineering industries. Statistical analysis of the characteristics of those industries. Raw and finished products. Principles of plant location, layout, and design. Unit operation cost, principles of management, operation, and control. Lectures and recitations. Prerequisite: Course 132. Three credits. MWF III; 111C. Mr. Montonna.
- 131w. Industrial Inorganic Chemistry. Operations common to chemical industries, chemistry involved, apparatus used, marketing of products, utilization of by-products, use of trade journals. Topics: acids and alkalies, salts, chlorine, ammonia, glass, pigments, etc. Lectures and recitations. Prerequisite: Course 101. Four credits. MTWFS I; 325C. Mr. Mann.
- 132s. Industrial Organic Chemistry. Similar to 131 but covering organic field. Destructive distillation of coal and wood, petroleum oils, paper unit organic processes, vegetable and animal oils, fats, waxes, soap, sugar, starch, etc. Lectures and recitations. Prerequisite: Course 101. Four credits. MTWThF I; 325C. Mr. Mann.
- 133f. Chemistry of Explosives. The history and development of modern explosives, their manufacture and uses. Lectures, required reading, and reports. Prerequisite: Course 132. Three credits. MWF I; 111C. Mr. Montonna.
- 134f. Intermediates and Dyestuffs. Their technical chemistry and manufacture. Processes, purification, uses, etc. Lectures and recitations. Prerequisite: Course 132 or equiv. Three credits. (May be accompanied by laboratory work in 160.) TThS I; 111C. Mr. Montonna.
- 136w. Chemistry and Technology of Cellulose. Discussions on processes and industries based on the use of cellulosic materials including the chemical and technological considerations. Pulp and paper, plastics, esters, artificial silks, etc. Lectures and recitations. Prerequisite: Org. Chem. 52 or equiv. Three credits. TThS I; 111C. Mr. Montonna.
- 141s. Gas Manufacture and Distribution. Fundamental principles of manufacture of coal gas, carbureted water gas, and other industrial fuel gases, and the apparatus for manufacture and distribution. Open to chemists and chemical engineers. Prerequisite: Org. Chem. 52. Three credits. Ar. Mr. Montillon.
- 150s. Unit Process Laboratory. Operation and testing of chemical engineering equipment. Laboratory work and reports. Prerequisite: Course 101. One credit. Lab. Sec. 1, M VI-VIII, Sec. 2, W VI-VIII, Sec. 3, S I-III, Sec. 4, ar.; 90C. Mr. Ruth.
- 151f,su. Chemical Manufacture (Inorganic). Manufacture of technical products on a scale large enough to afford data for the determination of costs of manufacture. Use of semiplant scale equipment. Technical trade journals used. Laboratory. Prerequisite: Course 101. Three or more credits. Ar. Mr. Montonna.

- 152w,su. Chemical Manufacture (Organic). Similar to 151 but covering the organic field. Laboratory. Prerequisite: Course 101. Three or more credits. Ar. Mr. Montonna.
- 153f-154w-155s-156su. Special Laboratory Problems. Laboratory investigations on equipment and the manufacture of special chemical products on a large scale. Prerequisites: Courses 151, 152. Three or more credits. Ar. Mr. Montonna.
- 160s. Intermediates and Dyestuffs Laboratory. The manufacture of intermediates and dyestuffs on a large scale using semi-works equipment. Operations on sulphonation, hydroxylation, nitration, reduction, alkylation, diazotization, coupling, etc. Laboratory. Prerequisite: arranged. Three or more credits. Ar. Mr. Montonna.
- 176f-177w. Applied Electrochemistry. Application of the electric current to chemical processes. Laws and phenomena of electrochemistry, batteries, electroplating, electric furnace construction and operation, and electrochemical products. Class and laboratory work. Prerequisite: Phys. Chem. 103. Four credits per quarter. Lect. MWF I; 115C. Lab. W or Th VI-VIII; 25C. Mr. Montillon.
- 179s. Advanced Applied Electrochemistry. The more recent development in the manufacture of inorganic and organic products. Lectures and recitations. Laboratory optional. Prerequisites: Courses 176, 177. Three credits. MWF III. Mr. Mann.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201f-202w-203s. Seminar. Presentation and discussion of papers concerning the newer developments in chemical industries. One credit per quarter. Ar. Mr. Mann.
- 301f-302w-303s. Research in Chemical Engineering. Unit processes, applied electrochemistry and electric furnace work, and chemical manufacture. Credits arranged. Mr. Mann, Mr. Montillon, Mr. Montonna.

CHEMISTRY

Professor and Director, Samuel C. Lind.

The work in the School of Chemistry is organized in six divisions or branches, namely, Inorganic, Analytical, Organic, Physical, Technological Chemistry, and Chemical Engineering. Course numbers must be preceded by the name of the division in which they occur, as Org. Chem. 151f.

In addition to the completion of the prescribed work, the candidate for a higher degree is expected to show a maturity acquired by intensive personal study of the literature and of the methods of chemistry.

Prerequisites.—(a) A branch of chemistry as a *major* subject: All candidates who choose chemistry as a major subject for an advanced degree must offer the following courses or their equivalent as prerequisites: at least 12 quarter credits in general inorganic chemistry and qualitative analysis, at least 10 credits in quantitative analysis, and at least one year of organic chemistry. All candidates must present at least one year of college physics and one year of college mathematics. (b) Chemistry or a branch

of chemistry as a *minor* subject: Students may not select two branches of chemistry as major and minor subject except with the approval of the graduate faculty in the School of Chemistry.

Students whose major work lies in another field and who desire to minor in chemistry, must present as preparation prerequisite at least 12 credits of general inorganic chemistry and qualitative analysis, and 5 credits of quantitative analysis or 5 credits of organic chemistry.

The choice of the particular courses to be presented in fulfillment of a minor in graduate work will be made after consultation with the student's adviser. Organic Chemistry, Courses 151-152-153 will be acceptable as a minor for the Master's degree, or for not more than 9 credits of a minor for the Doctor's degree, if the student is not taking major work in chemistry.

Language requirements.—Candidates for the Master's degree must have a reading knowledge of German or French; German is preferred. For the Doctor's degree, both are required.

Examinations.—The written and oral preliminary examinations in chemistry for the Doctor's degree will be given at only four periods during each year. Normally, these will be during the first two weeks of each regular quarter and of the first term of the summer quarter. The exact schedule will be announced at the beginning of each quarter.

CHEMISTRY, ANALYTICAL

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

Professor Izaak M. Kolthoff; Associate Professor Isaac W. Geiger;
Assistant Professor Landon A. Sarver.

- 123f-124w-125s. Advanced Analytical Chemistry. A systematic survey by general lectures with typical procedures selected for laboratory practice. Drill in application of modern chemical theory to analytical problems. One lecture, seven laboratory hours per week. Prerequisites: Courses 101 and 102 or 7. Three credits. Lect. T VI; 315C. Lab. T VII-IX, Th VI-IX; 310C. Mr. Sarver.
- 127f-128w-129s. Analytical Chemistry of the Rare Elements. A survey of the quantitative methods for the estimation of the rare elements other than the rare earths. Analyses of commercially important alloys, ores, and compounds. One lecture and seven laboratory hours per week. Prerequisite: Anal. Chem. 101, 102. Three credits per quarter. Mr. Mr. Geiger.
- 131f. Applications of Indicators to Neutralization Reactions and to P_h Determinations. Prerequisites: Anal. Chem. 1 and 2 and Phys. Chem. 103. Three credits. Mr. Kolthoff.
- 132w-133s. Electrometric Measurements and Titrations. The application of potentiometric and conductometric methods to analytical work. Prerequisites: Anal. Chem. 1 and 2 and Phys. Chem. 103. Three credits. Mr. Kolthoff.
- 134f,w,s. Seminar: Modern Problems in Analytical Chemistry. Prerequisites: Anal. Chem. 1 and 2 and Phys. Chem. 103. One credit. Mr. Kolthoff.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201f-202w-203s. Selected Topics in Analytical Chemistry. Credits arranged. Lect. and lab. Mr. Kolthoff.
- 301f-302w-303s. Research in Quantitative Analysis. Credits arranged. Mr. Kolthoff, Mr. Geiger, Mr. Sarver.

CHEMISTRY, INORGANIC

Professors M. Cannon Sneed, Lloyd H. Reyerson; Associate Professors Lillian Cohen, George Glockler; Assistant Professors Hervey H. Barber, Henry N. Stephens.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 101s. History of Chemistry. The theories of chemistry from the period of the ancients, with particular emphasis on modern theories and laws. Prerequisite: Org. Chem. 52. Two credits. Miss Cohen.
- 102w. Advanced Qualitative Analysis. Includes an analysis of minerals, alloys, paints, and the methods of detecting some of the rarer elements. Prerequisites: Anal. Chem. 1 and 2. Two or three credits. Mr. Sneed.
- 103f-104w-105s. Advanced Inorganic Chemistry. A discussion of the periodic system and the chemistry of the elements and their compounds and of special subjects of inorganic chemistry such as valency, oxidation and reduction, complex ions, etc. Prerequisites: Anal. Chem. 1 and 2, Org. Chem. 52. Three credits per quarter. Lect. MWF IV; 111C. Mr. Sneed.
- 106f-107w-108s. Chemistry of the Rare Elements. History, occurrence, preparation, and properties of the less usual elements. Classification, valence, and atomic structure of these elements as related to the natural system of the chemical elements. Preparation and properties of their compounds. Use of the microscope and the spectroscope in following the course of the purification. Prerequisite: Anal. Chem. 1 or 2 or by permission. Three credits. Mr. Glockler.
- 134f-135w-136s. Seminar. Modern problems in inorganic chemistry. Prerequisites: Anal. Chem. 1 and 2 and Phys. Chem. 103. One credit. Mr. Sneed.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 301f-302w-303s. Research Work in Inorganic Chemistry. Credits arranged. Mr. Sneed, Mr. Reyerson.

CHEMISTRY, ORGANIC

Associate Professor Lee I. Smith; Assistant Professors Walter M. Lauer, Henry N. Stephens.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 101f-102w-103s. Advanced Organic Chemistry. An introduction to the literature of organic chemistry. Structure, reaction mechanism, and relation of physical properties to constitution. May be accompanied by appropriate laboratory work in Course 139. Prerequisite: Course 53. Three credits per quarter. TThS III; 315C. Mr. Sprung.

- 111f. Reagents in Organic Chemistry. A discussion of typical reagents used in organic reactions: their limits of applicability, methods of use, and types of substances with which they react. May be accompanied by appropriate laboratory work in Course 137. Prerequisite: Course 53. Four credits. MWF II; 325C. Mr. Smith.
- 113s. The Aliphatic Compounds. An advanced descriptive course, with special emphasis upon the compounds having more than one functional group. May be accompanied by appropriate laboratory work in Organic Chemistry 139. Prerequisite: Course 53. Three credits. MWF II; 315C. Mr. Smith.
- 115w. The Heterocyclic Compounds. A discussion of the nomenclature, preparation, properties, and uses of the typical heterocyclic systems. May be accompanied by appropriate laboratory work in Course 139. Prerequisite: Course 53. Three credits. Mr. Smith. (Not offered in 1931-32.)
- 116f. The Terpenes. The terpenes and their oxygen derivatives. The constituents of essential oils. The constitution of the rubber hydrocarbon with the important theories of oxidation and of vulcanization. Prerequisite: Course 53. Mr. Stephens.
- 122s. The Aromatic Compounds. The chemistry of the aromatic compounds with special reference to dye intermediates and synthetic drugs. Prerequisite: Course 53. Three credits. Mr. Lauer. (Not offered in 1931-32.)
- 123w. Dyes. A study of the important classes of dyes from the viewpoint of the organic chemist. Prerequisite: Course 53. Three credits. Mr. Lauer. (Not offered in 1931-32.)
- 137f,w,s. Advanced Organic Chemistry Laboratory. Difficult preparations and problems. It is intended primarily to supplement the student's knowledge of the methods of organic chemistry. Prerequisite: Course 53. Two to five credits. Laboratory arranged. 390C. Mr. Lauer.
- 139f,w,s. Advanced Organic Chemistry Laboratory. Selected laboratory problems of an advanced nature, including some original work. An introduction to research work. These advanced laboratory courses may be taken under any member of the Division of Organic Chemistry. Students may also register for this course who desire appropriate laboratory work for other advanced courses. Prerequisite: Course 53. Two to five credits. Mr. Sprung.
- 151f-152w-153s. Organic Chemistry. An introduction to the chemistry of carbon compounds. The laboratory work will include the preparation of characteristic substances. Not offered to students taking major work in chemistry. See introductory statement. Prerequisite: Fifteen credits in chemistry. Three credits per quarter. Lect. MWF III; 315C. Rec. S III. Lab. TTh VI-VII; 390C. Mr. Sprung.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201f-202w-203s. Organic Chemistry Seminar. One hour per week. One credit. Open only to students taking research in organic chemistry. Mr. Sprung.

301f-302w-303s. Research in Organic Chemistry. Credits arranged. Mr. Smith, Mr. Lauer, Mr. Stephens.

CHEMISTRY, PHYSICAL

Professors Samuel C. Lind, Frank H. MacDougall, Lloyd H. Reyerson; Associate Professor George Glockler; Assistant Professors Robert S. Livingston, Nelson W. Taylor.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

101f-102w-103s. Physical Chemistry. A general survey of the subject. Three lectures and one recitation. Laboratory work three or six hours per week. Prerequisites: Two years college chemistry, one year college physics. Three, four, or five credits, depending on the amount of laboratory work. Lect. MWF IV; 325C. Rec. S IV; 115C. Lab. WF VI-VIII; 15C, 117C. Mr. MacDougall.

116f-117w-118s. Advanced Physical Chemistry. Three lectures and one recitation. Laboratory work for one three-hour period may be taken if desired. Prerequisites: Course 103 and calculus. Three credits per quarter, or four with laboratory. Mr. Taylor.

129s. Principles of Colloidal Chemistry. Prerequisites: Course 103 and calculus. Two credits. Mr. Reyerson.

130s. Applications of Colloidal Chemistry. Prerequisite: Course 103. Two credits. Mr. Reyerson.

131f-132w-133s. Colloid Chemistry Laboratory. Credits and hours arranged. Must be preceded or accompanied by Course 129 or 130. Mr. Reyerson.

PHOTO AND RADIO CHEMISTRY

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

161f-162w. Radioactivity. Discovery; theory of atomic disintegration; properties, transformations, and preparation of radioactive elements; properties and effects of alpha, beta, and gamma rays; radioactive and non-radioactive isotopes. Prerequisite: Phys. Chem. 103. Two credits per quarter. Mr. Lind.

164f,w,s. Radioactivity Laboratory. Use and standardization of electroscopes, radioactive measurements, and quantitative determination of radium in ores, minerals, waters, and plant products. One or two credits. Must be preceded or accompanied by Radioactivity 161. Mr. Lind.

175s. Photochemistry. History, development, and present status of photochemistry. Prerequisite: Optics and Phys. Chem. 103. Three credits. Mr. Lind.

COURSES PRIMARILY FOR GRADUATE STUDENTS

201f-202w-203s. Thermodynamics and Chemistry. A detailed study of the principles of thermodynamics and their application to physical and chemical phenomena. Prerequisites: Course 103 and calculus. Four credits per quarter. Mr. MacDougall.

- 204f-205w-206s. Kinetic Theory and Atomistics. Kinetic theory of gases and liquids, crystal structure, structure of atom, quantum theory. Prerequisites: Course 103 and calculus. Four credits per quarter. Mr. MacDougall.
- 211f-212w-213s. Advanced Physical Chemistry Laboratory. To accompany or follow any of the advanced courses in physical chemistry. Prerequisite: Course 103. Credits arranged. Mr. MacDougall.
- 251f-252w-253s. Physical Chemistry Seminar. One hour a week. For students taking advanced courses in physical chemistry. One credit. Mr. MacDougall, Mr. Reyerson, Mr. Taylor.
- 271f-272w-273s. Chemical Activation. (Seminar 1 hour per week for graduate students.) The current theories of chemical activation, including photochemical excitation, gaseous ionization, and the kinetics of cluster and of chain reactions. Prerequisites: Physics and physical chemistry. One credit per quarter. Mr. Lind.
- 301f-302w-303s. Research in Physical Chemistry. Including work in electrochemistry, photo and radio chemistry, and colloids. Credits arranged. Mr. Lind, Mr. MacDougall, Mr. Reyerson, Mr. Glockler, Mr. Livingston, Mr. Taylor.

CHEMISTRY, TECHNOLOGICAL

Associate Professor Everhart P. Harding; Assistant Professor Arthur E. Stoppel.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 100f-101w-102s. Food Analysis. Prerequisites: Anal. Chem. 1 and 2. Three credits per quarter. Lect. T IV; 215C. Lab. TF VI-VIII; 217C. Mr. Stoppel.
- 103w. Exact Gas Analysis. Prerequisites: Anal. Chem. 1 and 2. One or two credits. Mr. Harding.
- 104s. Microchemistry. The precipitation, examination, and identification of minute quantities of substances and the examination of food materials, fibers, etc., by means of the microscope. Prerequisites: Anal. Chem. 1 and 2. One or two credits. Mr. Harding.
- 105f. Gas and Fuel Analysis. The chemical analysis and calorimetry of solid and gaseous fuels and methods of testing municipal gas. Prerequisites: Anal. Chem. 1 and 2. Three credits. Lect. S II; 225C. Rec. Sec. 1, S IV, Sec. 2, W VI; 215C. Lab. Sec. 1, T II-IV, Th I-III, Sec. 2, W VII-IX, F VI-VIII; 10C. Mr. Harding.
- 106w. Petroleum and Petroleum Products. Examination and testing principally of gasoline, illuminating, and lubricating oils. Prerequisites: Anal. Chem. 1 and 2. Three credits. Lect. S II; 225C. Rec. Sec. 1, S IV, Sec. 2, W II; 215C. Lab. Sec. 1, T II-IV, Th I-III, Sec. 2, MW VI-VIII; 10C. Mr. Harding.
- 107f,w,s. General Technical Analysis. Includes any one or several of such topics as: textiles and paper, paints and varnishes, asphalt and tars, boiler waters, soaps, edible oils and fats, and various other food mate-

- rials and food products. Prerequisites: Anal. Chem. 1 and 2. One, two, or three credits. Mr. Harding.
- 130f. Chemistry of Foods. Course in the origin, composition, and manufacture of foods. Systems of food inspection, legal food standards, and adulteration. Lectures and recitations. Three credits. Mr. Stoppel.
- 140w. Sanitary Chemistry. Discussion of the chemistry of potable waters and sewage. Purification of water supplies, and the treatment of municipal and industrial wastes. May be accompanied by appropriate laboratory work in Tech. Chem. 107-108-109. Lectures and recitations. Prerequisite: Bact. 41 or by permission. Three credits. Mr. Stoppel.
- 160s. Paints, Oils, Varnishes, Lacquers, and Enamels. Their technical chemistry, properties, and composition. May be accompanied by appropriate laboratory work in Tech. Chem. 107-108-109. Lectures and recitations. Three credits. Mr. Stoppel.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 301f-302w-303s. Research in Technological Chemistry. Credits arranged. Mr. Harding, Mr. Stoppel.

CHILD WELFARE

Professors John E. Anderson, Florence L. Goodenough; Associate Professors Josephine C. Foster, Esther McGinnis; Assistant Professors Edith Boyd, Mary M. Shirley.

Prerequisites.—For graduate work in the Institute of Child Welfare, students are normally expected to have had the equivalent of an undergraduate major in either psychology, sociology, education, or home economics. Aside from or including the major, the student normally is expected to have had at least 10 hours in psychology, 8 hours in sociology, and 3 hours in statistics. In special cases or where the background lies in other fields, such as nursing or medicine, adjustments may be made.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 120s. Health Care of the Young Child. Physical care, illnesses, prevention of disease, and health problems of the young child, primarily for nursery school teachers and those in charge of groups of children and for parental education workers. Two credits. Sr., grad. and permission of instructor; T V, and 1 hr. ar.; 202Pt. Dr. Boyd.
- 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. Prerequisite: 12 credits in psychology or equivalent, and permission of instructor. Three credits. MWF I; 202Pt. Mr. Anderson.
- 133f-134w-135s. Observational and Experimental Methods in the Study of the Development of the Young Child. The various methods and techniques such as growth records, mental tests, ratings, controlled observations, etc., used in the experimental study of the young child. Practical exercises and problems on institute records and data will be

- given. Prerequisite: 10 credits in psychology or educational psychology, including one laboratory course, or the equivalent, and permission of instructor. Six to nine credits. M VI, WF VI-VII; 202Pt. Miss Goodenough, Miss Shirley.
- 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. Prerequisite: 15 credits in education, or psychology or sociology, or preventive medicine. Three credits. MWF III; 110P. Miss McGinnis.
- 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. Prerequisite: C.W.I. 170 and permission of instructor. Six credits. Hrs. ar. 202Pt. Miss McGinnis.
- 190w-191s. Mental Examination of Pre-School Children. A study of the methods used in testing young children together with practice in such testing. Prerequisite: Ed. Psy. 143-144-145 or 134-135-136, or equivalent, and permission of instructor. Two or four credits. TTh III, 202Pt. Miss Goodenough.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 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. Attendance of graduate students who are candidates for degrees is required. Prerequisite: permission of instructor. Three credits. Hrs. ar.; 202Pt. Mr. Anderson.
- 233-234-235. Research in the Development of the Young Child. Credits arranged. Mr. Anderson, Miss Goodenough.
- 250w. Nursery School Education. Discussion of historical background and current practices, fundamental problems and theory, problems of administration and organization. Prerequisite: permission of instructor. Three credits. MWF; VIII; 202Pt. Mrs. Foster.

CIVIL ENGINEERING

Professors Frederic H. Bass, Alvin S. Cutler, Fred C. Lang, Frederick M. Mann, John I. Parcel; Associate Professor John V. Martenis; Assistant Professors Chester A. Hughes, Joseph A. Wise.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 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. Three credits. Mr. Bass.
- 162f,w. Water Supply and Sewerage. Sources of water supply; quality of water. Methods of testing, collection, distribution, and purification of water. Selection of pumping machinery and motive power. Sewer

- systems and sewage disposal works. Prerequisite: M.&M. 129. Three credits. Mr. Bass.
- 163w,s. Water Supply and Sewerage. Prerequisite: Course 162. Three credits. Mr. Bass.
- 164f,w,s. Water Power. Types of low, medium, and high head developments. Details of developments. Dams. Turbine settings and characteristics. Prerequisite: M.&M. 129. Three credits. Mr. Bass.
- 171w. Building Sanitation. Location and orientation of buildings; lighting, ventilation, water supply plumbing, sewage, and refuse disposal. Prerequisite: sr. arch. and grads. only. Two credits. WF II; 5E. Mr. Bass, Mr. Martenis.
- 172s. City Planning. Physical elements of the city; topography, drainage, geology. Public works and structures. Internal and external transportation. Zoning. Subsurface structures. Esthetic features of the city. Prerequisite: Course 52. Three to five credits. MWF III; 21E. Mr. Bass, Mr. Mann.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 261f-262w. Water and Sewage Purification. Design and water purification and sewage disposal works. Prerequisite: Course 163. Three to five credits. Mr. Bass.
- 280f-281w-282s. Civil Engineering Research. Original work in concrete, structural steel, hydraulics, municipal or transportation problems. Investigations, reports, tests, designs. Prerequisite: by permission. Five credits. Mr. Bass, Mr. Cutler, Mr. Lang, Mr. Parcel.

HIGHWAY ENGINEERING

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 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. Prerequisite: Course 52. Three credits. Mr. Lang.
- 157s. Highway Transport. Motor vehicle as a common carrier, analysis of road legislation, taxation. Principles of successful operation. Selling motor transportation. Prerequisite: Course 156. Three credits. Mr. Lang.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 251s. Highway Laboratory. Investigations in co-operation with State Highway Department. Prerequisite: Course 52. Three to five credits. 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. Prerequisite: Course 52. Three credits. Mr. Lang.

RAILWAY ENGINEERING

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 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 grade revision. Prerequisite: Course 23. Three credits. 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. Prerequisite: Course 23. Three credits. 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. Prerequisite: Course 23. Three credits. Mr. Cutler.
- 124w. Transportation. Development of railway and inland waterway transport. railway regulation and control with special reference to the 1920 Railway Transportation Act, geographical, financial, and rate grouping of railways, Interstate Commerce Commission method of accounting. Cost and value of service, present systems, and organization. Prerequisite: Course 121. Three credits. 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. Prerequisite: Course 122. Three credits. Mr. Cutler.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 221f-222w-223s. Railway Administration. Analysis of railway organization and methods of management and operation. Special problems. Prerequisite: Course 122. Three credits per quarter. Mr. Cutler.
- 224f. Railway Terminals and Yards. Continuation of Course 123. Prerequisite: Course 122. Three credits. Mr. Cutler.

STRUCTURAL ENGINEERING

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 131w,su. Bridge Analysis. Stresses in simple span bridges of the larger type and in cantilevers, arches, and continuous bridges. Prerequisite: Course 134. Three credits. MTh VII-IX, F III-IV; 229E. Mr. Parcel.
- 132s,su. Bridge Design. Design and detail drawing of railway pin connected truss span. Prerequisite: Course 131. Three credits. M III-IV, VI-IX; 227E. Mr. Parcel.

- 134f,su. Statically Indeterminate Structures. General theory of deflections and statically indeterminate stresses and application to simple problems in continuous girders, frames, and arches. Prerequisites: Course 33 and M.&M. 128. Three credits. F VI, S I-II; 227E. Mr. Parcel.
- 135s,su. Reinforced Concrete Design. Analysis of structures as rigid frames. Application to reinforced concrete buildings. Effect of temperature and shrinkage. Effect of settlement of foundations. Prerequisite: Course 142 or 142a. Four credits. M II-III, F VI-IX; 217E. Mr. Wise.
- 141f,su. Reinforced Concrete. Principles of reinforced concrete. Theory of beams, slabs, and columns and the application to ordinary structures. Prerequisite: M.&M. 128. Three credits. Mr. Wise.
- 141(a)f,su. Reinforced Concrete. Similar to Course 141 with problems of special interest to students in architectural engineering. Prerequisite: M.&M. 128. Three credits. M VI-VII, T III-IV, F VIII-IX; 217E. Mr. Wise.
- 142w,su. Reinforced Concrete Design. Continuation of Course 141 with special emphasis on the practical features of the design of buildings, bridges, retaining walls, etc. Prerequisite: Course 141. Three credits. Mr. Wise.
- 142(a)w,su. Reinforced Concrete Design. Similar to Course 142 with problems of special interest to students in architectural engineering. Prerequisite: Course 141(a). Three credits. MT VIII-IX, F VI-VII; 227E. Mr. Wise.
- 143s. Reinforced Concrete Analysis. Advanced problems in design including reinforced concrete arch. Prerequisites: Courses 134 and 142. Three credits. 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. Mixing and placing concrete. Testing and inspection of concrete work. Prerequisites: M.&M. 84 and 128, or M.&M. 127 and 128. Three credits. MW IV, 215E; Th VIII-IX; 201E. Mr. Wise.
- 146f,w,s. Plain Concrete. Theory of design and control of concrete mixtures. Practice in control tests of concrete and concrete materials. Lectures and laboratory work. Prerequisites: M.&M. 141. Three credits. Mr. C. A. Hughes.
- 147w. 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. Prerequisite: M.&M. 128. Two credits. Mr. Wise.
- 148f-149w-150s. Advanced Concrete. Short research problems in concrete. Prerequisite: Course 146. Two credits. Mr. C. A. Hughes.
- 234f-235w-236s. Advanced Theory of Structures. Application of the theory of indeterminate stresses to the more complex problems in structural analysis. Continuous and swing bridges, simple and multiple arch and

- suspension systems. Wind stresses in tall building frames. Secondary stresses. Special problems. Mr. Parcel.
- 237w-238s. Structural Laboratory. Experimental problems in structural steel. Strain gauge study of actual stress distribution in beams, columns, and riveted joints. Prerequisite: Course 133. Three to five credits per quarter. Mr. C. A. Hughes.
- 245f-246w-247s. Seminar. Special topics in the higher theory of structures. Prerequisites: Courses 134, 142. Three to six credits per quarter; Mr. Parcel, Mr. Wise.

COMPARATIVE LITERATURE*

Professor Oscar W. Firkins.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 101f-102w-103s. Drama. An outline of the history of drama, including the drama of today. Nine credits. TThS III; 113F. Mr. Firkins.
- 105f-106w-107s. Principles of Criticism. Lectures and readings. Nine credits. MWF VI; 113F. Mr. Firkins.
- 110w. The International Romantic Movement in Europe (1775-1825). Three credits. TThS II; 113F. Mr. Firkins.
- 111s. The Novel in Europe, 1875-1925. Three credits. MWF II; 113F. Mr. Firkins.
- 203f. The Arthurian Legend: from Geoffrey of Monmouth to Tennyson and Wagner. Mr. Firkins.
- 206s. French and English Literary Criticism: from the sixteenth century to the present time. Mr. Firkins.

COMPOSITION

- 111f-112w-113s. Essay Writing. Practice in writing didactic, biographical, critical, and informal essays. Prerequisites: Courses 11-12 or 18-19, and 10 or 20. Nine credits. MWF III; 304F. Mr. Nichols.
- 119f-120w-121s. Seminar in Writing. Open to students who write with facility. Criticism of manuscripts submitted. Prerequisites: permission of instructor. Nine credits. Th VI, VII; 304F. Mrs. Phelan.

DAIRY HUSBANDRY

Professors Clarence H. Eckles, Willis B. Combs; Associate Professors Harold Macy, William E. Petersen.

Students taking major work in dairy husbandry for a Master's degree may be exempted from the language requirement.

Students desiring major work in dairy production should make arrangements with the Division of Dairy Husbandry previous to registration.

* Prerequisites for graduate work same as English language and literature.

Prerequisites.—For a major in *production* the adviser must be satisfied that the student has had sufficient preparation in chemistry, genetics, and animal physiology; for a major in *dairy products*, bacteriology, chemistry, physics, and economics; for a major in *dairy bacteriology*, chemistry, bacteriology, and dairy products.

When the preparation appears inadequate the adviser may require that additional courses be taken to make up the deficiencies. With the approval of the adviser, certain courses in agricultural biochemistry, bacteriology, genetics, and animal husbandry may be accepted as part of the major.

Due to the limitation of available animals and the cost of animal experiments, students desiring a major in dairy production are expected to make arrangements previous to enrolment.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 101f. Milk Production. Problems of the dairy farmer. Three credits. MTWFS IV; 210HH. Mr. Eckles.
- 102s. Market Milk. Lectures and laboratory work. Three credits. MW IV, Th VI, VII, VIII; 210HH. Mr. Macy.
- 103w. Dairy Stock Feeding. Application of the principles of nutrition to special problems of feeding the dairy cow and growing the young animals. Three credits. MWF III; 210HH. Mr. Eckles.
- 104s. Dairy Stock Selection. Practice in comparative judging; selection and valuation; visits to pure-bred herds. Three credits. MW VI, VII, VIII, F VI; 210HH. Mr. Petersen.
- 105f-106w-107s. Seminar. Special investigations and study of selected topics. Reports on assigned subjects and reviews of recent scientific investigations. Three credits. S II; 214HH. Mr. Eckles.
- 110w. Dairy Products III. Similar to Course 111f with special application to ice cream. Three credits. TS IV, T VI, VII, VIII; 210HH. Mr. Combs.
- 111f. Dairy Products I. The chemical, bacteriological, and economic problems in the manufacture and marketing of butter. Three credits. MW VI, F VI, VII, VIII; 210HH. Mr. Combs.
- 112s. Dairy Products II. Similar to Course 111f with special application to cheese, condensed and powdered milk. Three credits. TS IV, T VI, VII, VIII; 210HH. Mr. Combs.
- 113s. Technical Control. Chemical and bacteriological laboratory methods used in technical control of milk and its products. Three credits. TTh I, II, III; 102HH. Mr. Combs, Mr. Macy.
- 115su. Problems in Dairy Husbandry. A study of special problems in dairy husbandry. Open only to the teacher of agriculture and the extension worker. (See summer quarter bulletin.) 210HH. Mr. Petersen.
- 115s. Advanced Dairy Bacteriology. Investigations of specific problems in the bacteriology of milk and dairy products. Prerequisites: Course 2 or equiv., Course 111 or 112. Ar. Mr. Macy.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201w. Dairy Bacteriology. Lectures, assignments, laboratory work. Types of milk organisms, relation to the bacteria of milk to dairy manufacturers and to public health, the bacteriology of dairy products. Three credits. MWF VI, VII, VIII; 210HH. Mr. Macy.
- 202f-203w-204s-208su-210su. Research in Dairy Husbandry. Facilities offered for study and investigation of subjects pertaining to dairy cattle. Students are allowed to assist at times with investigations under way in the experiment station. Arranged to meet the needs of the individual student. Open in the summer quarter only to those who have had preliminary graduate work. Mr. Eckles, Mr. Petersen.
- 205f-206w-207s-209su-211su. Dairy Products. Opportunity and facilities are offered for study and investigation of problems concerning dairy products. The work is arranged to meet the needs of the individual student. Open in the summer quarter only to those who have had preliminary graduate work. Mr. Eckles, Mr. Combs, Mr. Macy.

ECONOMICS

Professors Russell A. Stevenson, Roy G. Blakey, George Filipetti, Fred-eric B. Garver, Alvin H. Hansen, Arthur W. Marget, Bruce D. Mudgett, J. Warren Stehman, Roland S. Vaile; Associate Professors Ernest A. Heilman, John J. Reighard, Clare L. Rotzel; Assistant Professors Arthur M. Borak, Ralph Cassady, Walter R. Myers, Harry J. Ostlund, Emerson P. Schmidt, William H. Stead, Robert M. Weidenhammer.

Candidates for higher degrees will be accepted as majors in economics in the following fields: money and banking, public finance, economic theory, economic history, labor statistics; in accounting, only for the Master's degree.

GENERAL ECONOMICS AND BUSINESS ADMINISTRATION

Prerequisites.—For major work, 27 quarter credits for those offering Economics 1A, 1B and 3, or their equivalent; 18 quarter credits for those not presenting Economics 1A and 1B or an equivalent. These credits should include Money and Banking, Statistics, and Accounting. Candidates not presenting these fundamental courses upon registration in the Graduate School may be required to complete them in addition to the regular course requirements for the degree.

Majors and minors.—Major and minor work for the Master's degree may both be taken in economics if the candidate presents a program of courses properly complementing each other and not too closely related, if approved by the Executive Committee of the Graduate School. Agricultural economics, economic history, and accounting will usually be considered satisfactory as majors or minors distinct from general economics.

Required courses.—All candidates for advanced degrees must complete Economics 103-104, or Economics 203-204, or the equivalent of either. Other courses will be required according to the field in which the candidate

is working. Ordinarily at least one full graduate seminar must be carried throughout the year.

Language requirement.—Candidates for the Master's degree in economics are required to have a reading knowledge of a foreign language only when the thesis is written in the following fields: money and banking, public finance, economic theory, economic history, and labor.

General Economics

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

NOTE.—The following courses in other departments carry credit also in Economics: 180-181-182. Topics in Economic History; 210-211-212, Graduate Seminar in Economic History. Political Science: 107, Recent Social Legislation; 109, Government and Business; 111, Law of Public Utilities.

Business Administration

- 100f,w,s. Report Writing. One credit. Fall, T VI, winter, T IV, spring, T VI; 6B.
- 101f-102w. Advanced General Economics. Six credits. Sec. 1, MWF III; Sec. 2, MWF IV; 102B. Mr. Garver.
- 101w-102s. Advanced General Economics. Six credits. TThS I; 102B. Mr. Garver.
- 107f. Advanced General Economics. Combined course. Five credits. MTWThF II; 209B. Mr. Garver.
- 109f,s. Business Policy. Three credits. Fall, MWF VII, spring, MWF II; 202B. Mr. Stevenson.
- 112f,w,s. Business Statistics. Three credits. Fall, Sec. 1, MWF II, Sec. 2, TThS III, 102B; winter, Sec. 1, MWF I, 303B, Sec. 2, MWF II, 102B; spring MWF II, 102B. Mr. Mudgett.
- 130f,s. Cost Accounting. General survey. Three credits. Fall, TThS I, 303B; spring, TThS I, 303B. Mr. Ostlund.
- 132f,s. Cost Accounting. Five credits. MTWThF II; 303B. Mr. Ostlund.
- 133s. Cost Accounting Systems. Three credits. TThS II; 6B. Mr. Ostlund.
- 134f. Income Tax Accounting. Three credits. MWF I; 302B. Mr. Reighard.
- 135f-136s. Auditing. Six credits. MWF III; 301B. Mr. Reighard.
- 138f,s. Accounting Practice and Procedure. Five credits. Fall, MTWThF III, 303B; spring, MTWThF III, 302B. Mr. Heilman.
- 139f,w,s. Advanced General Accounting. Three credits. Fall, MWF IV, 303B; winter, Sec. 1, MWF III, 301B, Sec. 2, MWF VI, 303B; spring, MWF IV, 302B. Mr. Heilman.
- 142f,w,s. Money and Banking—Advanced Course. Three credits. Fall, Sec. 1, MWF II, Sec. 2, MWF VI, 6B; winter, Sec. 1, TThS II, 6B, Sec. 2 MWF IV, 303B; spring, TThS II, 209B. Mr. Marget, Mr. Myers.
- 145s. Foreign Exchange. Three credits. MWF IV; 303B. Mr. Myers.
- 146f. Investments. Three credits. MWF VI; 102B. Mr. Weidenhammer.

- 147s. Bank Administration. Three credits. MWF I; 6B. Mr. Marget.
 148w. The Securities Market. Three credits. TThS II; 202B. Mr. Weid-
 enhammer.
 155f,w,s. Corporation Finance. Three credits. MWF III; 202B. Mr.
 Stehman.
 156f. Finance Management. Three credits. TThS I; 102B. Mr. Stehman.
 165f,w,s. The Economics of Public Utilities. Three credits. TThS III;
 fall, 202B; winter, 102B; spring, 202B. Mr. Garver.
 167w. Personnel Administration. Three credits. TThS I; 202B. Mr.
 Stead.
 168s. Advanced Personnel Administration. Three credits. TThS I; 209B.
 Mr. Stead.
 177w. Foreign Trade. Three credits. MWF I; 202B. Mr. Blakey.
 180f-181w-182s. Seminars for Seniors and Graduates. Intensive study of
 problems in respective fields of specialization. In 1931-32 they will be
 offered as follows:

No.	Title	Credits	Day	Hour	Bldg.	Instructor
A.	Accounting*	6	MWF	I	Ar	Mr. Reighard
B.	Business Finance	6	T	VII-VIII	209B	Mr. Stehman and others
C.	Marketing	9	TTh	VI-VII½	301B	Mr. Vaile and others
D.	Personnel	9	TTh	VI-VII½	302B	Mr. Stead
E.	Secretarial Practice*	6	MWF	IV	1B	Mr. Ostlund and others
F.	Statistics	9	Ar	Ar	Ar	Mr. Mudgett
G.	Production Management†	9	MWF	VI	209B	Mr. Filipetti
H.	Insurance	3	Ar	Ar	Ar	
I.	Traffic Management†	3	MWF	VIII	209B	

- 183f,w,s. Senior Practice Course. Three credits. Ar. Members of the
 staff.
 194f-195w-196s. Advanced Advertising Procedure. Three credits. F IV;
 204B. Mr. Vaile.
 197f-198w-199s. Honors Course in Business Administration. Ar.

Economics

- 103f-104w. Value and Distribution. Six credits. MWF II; 204F. Mr.
 Garver.
 105s. History of Economic Ideas: The Classical Economists. Three credits.
 MWF VII; 102B. Mr. Garver.
 106s. History of Economic Ideas: The Critics of the Classical Economists.
 Three credits. Mr. Hansen.
 108w. Marketing Organization: Agricultural Products.
 113w-114s. Theory of Statistics. Six credits. MWF I; 102B. Mr.
 Mudgett.
 124f. Comparative Banking—British Systems. Three credits. MWF III;
 302B. Mr. Myers.
 125w. Comparative Banking—European Systems. Three credits. MWF
 III; 6B. Mr. Myers.

* Winter and spring only.

† Spring only.

- 127s. Comparative Banking—South American Systems. Three credits. MWF II; 209B. Mr. Myers.
- 141f,w,s. Monetary and Banking Policy. Three credits. Fall, MWF I, 102B; winter, MWF I, 6B; spring, MWF VI, 6B. Mr. Marget, Mr. Myers.
- 149f,w,s. Business Cycles. Three credits. Fall, TThS I, 202B. Winter, Sec. 1, MWF I, 209B; Sec. 2, MWF VII, 102B. Spring, MWF III, 102B. Mr. Marget, Mr. Myers.
- 154s. Public Utilities. Three credits. TThS II; 202B. Mr. Garver.
- 160w. The Modern Corporation. Three credits. MWF IV; 6B. Mr. Stehman.
- 161f,w,s. Labor Problems and Trade Unionism. Three credits. Fall, MWF IV, 202B; winter, TThS III, 209B; spring, TThS III, 102B. Mr. Hansen, Mr. Stead.
- 162w. Labor Movements. Three credits. MWF IV; 202B. Mr. Hansen.
- 163w. Economic Aspects of Population and Immigration. TThS III; 202B. Mr. Hansen.
- 164s. Labor Legislation and Social Insurance. Three credits. TThS III; 209B. Mr. Stead.
- 166s. International Economic Problems. Three credits. MWF VII; 102B. Mr. Hansen.
- 172f. Economics of Transportation. Three credits. MWF VIII.
- 176f,s. Commercial Policies. Three credits. MWF I; 202B. Mr. Blakey.
- 187f-188w-189s. Honors Course in Economics. Ar.
- 191f-192w. Public Finance. Three credits. MWF III; 209B. Mr. Blakey.
- 193s. State and Local Taxation. Three credits. MWF III; 6B. Mr. Blakey.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 203f-204w. Seminar in Economic Theory. Six credits. MW VIII½-IX; 204B. Mr. Garver.
- 206s. Seminar in Market Prices. Three credits. MW VII-VIII½; 204B. Mr. Vaile.
- 243f-244w. Seminar in Money and Banking. Six credits. TF VIII; 204B. Mr. Marget.
- 248f-249w-250s. Seminar in Unemployment and Business Cycles. Six credits. Th 3:30-5:30; 204B. Mr. Hansen.

AGRICULTURAL ECONOMICS‡

Professors O. B. Jesness, Andrew Boss, Warren C. Waite; Associate Professors Edwin C. Johnson, George A. Pond; Assistant Professors Rex W. Cox, Lewis F. Garey.

Prerequisites.—For major work 18 quarter credits consisting of courses acceptable to the student's adviser. Further courses may be required if in the opinion of the adviser this is necessary.

‡ For courses in General Economics and Business Administration, see Economics.

Majors and minors.—The thesis may be in any field of agricultural economics (marketing, farm management, economics of agricultural production, agricultural prices, farm finance, land economics). Candidates will be expected to take work in the different fields, the program depending upon the field of specialization. With the approval of the adviser, certain courses in general economics and business administration may be accepted as major work. The minor may be in general economics.

Language requirement.—Candidates for the Master's degree in agricultural economics may be exempted from the requirement of a reading knowledge of a foreign language.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 102w. Farm Management: Organization. The business side of farming with emphasis on farm organization and equipment. Three credits. MW I, Th VII, VIII, 312HH. Mr. Garey.
- 103s. Farm Management: Operation. A continuation of 102 with special attention to farm operation. Prerequisite: Course 102. Three credits. MW I, Th VII, VIII; 312HH. Mr. Garey.
- 104s. Types of Farming. A study of types of farming and of prevailing farm practices in the principal agricultural production areas. Prerequisites: Courses 102, 103, or equiv. Three credits. MWF II; 311HH. (Offered in 1931-32 and alternate years thereafter.) Mr. Boss.
- 110f-111w. Economics of Agricultural Production. The principles of production economics elaborated in terms of the production of the major farm products and producing areas. Economic geography of agriculture. National production policies. Six credits. TThS I; 312HH. Mr. Johnson.
- 126s. Economics of Consumption. Formulation of the economic principles relating to choice between different uses of income and time and energy of individuals and family organizations. Three credits. MWF I, 109HH; MWF II, 109HH. Mr. Waite.
- 131w. Market Prices. Analysis of the price making process as it works out in the market places where the major farm products are sold. Market quotations and price quoting. Three credits. TThS III; 312HH. Mr. Waite.
- 135s. Methods of Price Analysis. Statistical technique involved in analyzing seasonal and year-to-year movements in prices of farm products. Interpretation of results. Three credits. TThS III; 312HH. Mr. Waite.
- 140f. Marketing Organization: Staples. Principles of production economics applied to the organization of markets and marketing organization for the grains, tobacco, cotton, and wool. Especial attention to co-operative organization. Three credits. MWF II; 312HH. Mr. Johnson, Mr. Cox.
- 141w. Marketing Organization: Dairy and Poultry Products. Three credits. TThS II; 312HH. Mr. Jesness.
- 142s. Marketing Organization: Fruits and Vegetables. Two credits. MW III; 312HH. Mr. Cox.

- 143w. Marketing Organization: Livestock and Meats. Three credits. MWF III; 312HH. Mr. Johnson.
- 144f. Co-operative Organization. Three credits. TThS II; 312HH. Mr. Jesness.
- 150s. Advanced Farm Finance. Three credits. WF VI-VII½; 312HH. Mr. Johnson.
- 170s. Land Economics. Three credits. TTh VII-VIII½; 302HH. Mr. Johnson.
- 190f. Agricultural Statistics. Intended for beginning graduate students who have had no course in the elements of statistical method. Three credits. TThS III and two lab. periods ar.; 312HH. Mrs. Kittredge.
- 191w. Advanced Agricultural Statistics. Three credits. MWF IV; 312HH. Mrs. Kittredge.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 200f-201w-202s. General Seminar in Agricultural Economics.* Credits ar. Mr. Jesness and staff.
- 203f-204w. Current Problems and Literature. No credits. Required of all majors in agricultural economics. F IX; 312HH. Mr. Jesness.
- 206s. Seminar in Agricultural Policy. A study of economic problems of agriculture and policies adopted by governmental, agricultural, and individual agencies toward such problems. Three credits. MF VIII-IX½; 312HH. Mr. Jesness.
- 220s. Farm Surveys. An intensive study of the factors entering into farm organization. Special emphasis on selection, assembling, validity, and analysis of data. Attention given to studies in local production areas. Three credits. Ar. Mr. Garey.
- 221f. Farm Organization Studies. A seminar study of the principles involved in the analysis of farm organization data and the computation of farm costs. Attention will be given to methods used in collecting and compiling these data with special emphasis on farm records and accounts as a basis for farm organization study. Three credits. Mr. Pond.
- 223f-224w. Systems of Farming. A seminar course, including an intensive study of the factors determining the various systems of farming and production areas, with emphasis on specific types of farming. Three to six credits. Ar. Mr. Boss, Mr. Garey.
- 225w-226s. Advanced Farm Organization. Analysis of farm organization and the application of survey factors and cost factors in organizing the business of farming. Three to six credits. Ar. Mr. Boss, Mr. Pond.
230. Research Problems in Farm Organization and Operation. A study of methods of conducting research work and analyzing problems in farm organization and operation. Students will be assigned to individual research problems or to special phases of research work being conducted by members of the staff. Reports covering progress of work

* Under this head are arranged special seminars on subjects suited to the needs of the particular groups of graduate students, or on subjects upon which members of the staff are doing work at the time.

- and analysis of findings required as a basis for credit. Three to nine credits. Mr. Boss, Mr. Pond.
- 237w. Seminar in Research Methods in Price Analysis. A survey and analysis of the various types of research projects being worked upon in the field of prices of farm products. Three credits. MF VI-VII; 312HH. Mr. Waite.
- 240s. Seminar in the Marketing of Cereals. Three credits. MF VI-VII½; 312HH. (Offered in 1932-33 and in alternate years thereafter.) Mr. Jesness.
- 241f. Seminar in the Marketing of Livestock and Livestock Products. Three credits. MF VI-VII½; 312HH. (Offered in 1931-32 and in alternate years thereafter.) Mr. Jesness, Mr. Johnson.
- 244w. Seminar in Co-operative Marketing. Three credits. TTh VI-VII½; 311HH. (Offered in 1931-32 and in alternate years thereafter.) Mr. Jesness.
246. Seminar in Economics of Consumption. Ar.
- 247f. Seminar in Research Methods in Marketing. Three credits. MF VI-VII½; 312HH. Mr. Jesness.
- 251w. Seminar in Transportation of Farm Products. Consideration of special topics, such as rural highway economics, incidence of transportation costs of farm products. Ar.
- 265f. Seminar in Agricultural Taxation. Three credits. Ar.

EDUCATION

Professors Leo J. Brueckner, Harl R. Douglass, Fred Engelhardt, Albert M. Field, Melvin E. Haggerty, August Charles Krey, Wylle B. McNeal, Wilford S. Miller, Homer J. Smith, Ashley V. Storm; Associate Professors Charles W. Boardman, Clara M. Brown, Ross L. Finney; Assistant Professors Wesley E. Peik, John G. Rockwell, Dora V. Smith, Marvin J. Van Wagenen; Professorial Lecturers Anne D. Blitz, Herbert E. Chamberlain.

Prerequisites.—For major work at least six quarter credits in psychology and in addition to this a total of not less than 18 quarter credits of undergraduate work in education, which shall include Ed.Psy. 55 and Ed.Psy. 60 or equivalent. For minor work at least six quarter credits in psychology and in addition to this, a total of not less than 18 quarter credits of undergraduate work in education. Credit for seminar courses is not allowed.

Exemption from the language requirement for the Master's degree may be made in individual cases.

MAJORS AND MINORS

Major and minor work for advanced degrees may be arranged from courses listed below under the following groupings:

Doctor's Degree

Major.—Major may be designated as follows:

1. Educational administration and supervision.
2. Educational psychology.
3. Education. (Under this designation the student, with the approval of his adviser, may select a group of courses from among those listed below, excluding the field of his minor, centering about his special interest in education. The following are typical centers of interest: agricultural education, elementary education, history of education, home economics education, industrial education, techniques of instruction, secondary education, higher education.)

Minor.—Minors may be designated as follows:

1. Any other field of study offered in the University of Minnesota in which satisfactory courses of graduate character are available and which is obviously related to the major subject.
2. Students majoring in fields other than education may choose education or any of its subdivisions enumerated above as a minor when it appears that such a minor is appropriately related to the major field.

Master's Degree

Major.—Majors may be chosen as follows:

1. Educational administration and supervision.
2. Educational psychology.
3. Education. (Under this designation the student, with the approval of his adviser, may select a group of courses from among those listed below, excluding the field of this minor, centering about his special interest in education. The following are typical centers of interest: agricultural education, elementary education, history of education, home economics education, industrial education, techniques of instruction, secondary education, higher education.)

Minor.—Minors may be chosen as follows:

1. Educational administration and supervision.
2. Educational psychology.
3. Education. (Under this designation the student, with the approval of his instructor, may select a group of courses from those listed, excluding the field of his major, centering about his special interest in education. Typical centers of interest are listed above under Major.)
4. Any other field of study offered at the University of Minnesota in which satisfactory courses of graduate character are available and which is obviously related to the major field.

5. Students majoring in fields other than education may choose education or any of its subdivisions enumerated above as a minor when it appears that such a minor is appropriately related to the major field.

Program of classes.—For the schedule of classes for the year, including hours and place see College of Education bulletin, Part II. For descriptions of prerequisite courses see College of Education bulletin, Part I.

GENERAL COURSES

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- Ed.199su. Organization and Supervision of Vocational Education. A general course to consider objectives, methods, operation, and supervision of vocational education in the public schools, with special emphasis on agricultural education. Especially for superintendents, principals, and supervisors of vocational education. Prerequisite: Ed. T15, or equiv. Three credits. Mr. Field.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- Ed.208f. Methods in Educational Research. A study of the methods employed in treatment and presentation of educational problems. Designed to aid students in the preparation of theses. Suggested for all candidates for degrees. Two credits. S I, II; ar. Mr. Johnson.
- Ed.228f-229w-230s. Problems of College Education. Fall term: Problems of Student Personnel. Winter term: Problems of College Curricula and Instruction. Spring term: Problems of Organization and Administration. The course will consist of discussions and lectures by members of the university staff. May be taken for credit by graduate students. Six credits. Ar. Mr. Haggerty.

ADMINISTRATION AND SUPERVISION

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- Ed.Ad.113f. High School Curriculum. A study of methods of curriculum making, types of programs of study, curricula, subjects of study, constants, variables, electives, distribution of subject-matter by years and units. Prerequisites: 10 hrs. in education including Ed.Psy.55. Three credits. MWF II; 111Ed. Mr. Benjamin.
- Ed.Ad.115. Organization of the Elementary School. Problems relating to the organization for instruction and classification of pupils in elementary schools with critical examination of current practices. S III, IV. Mr. Cooper.
- Ed.Ad.119f. The Elementary School Curriculum. A study of the principles underlying the selection and organization of subject-matter for courses in the elementary school; survey of scientific methods of curriculum

- making; examination of curricula, syllabi, and texts in the light of their function; survey of the findings of research by subjects. Prerequisites: 9 hrs. in education including Ed.Psy. 55. Two credits. S III, IV; 100Pt. Mr. Peik.
- Ed.Ad.119T-120T. Elementary School Curriculum. (Same as above for teachers.) Four credits. (Not offered 1931-32.)
- Ed.Ad.121w. Educational Advising of Women and Girls. A course designed to acquaint students with the problems of educational advising of girls and young women, particularly those of high school age. Students admitted to the course through conference with instructor. Prerequisite: 15 cred. in education and psychology. Three credits. MWF VIII. Miss Blitz.
- Ed.Ad.123w. Supervision of High School Instruction. The present status of high school supervision; its proper scope and function. A course combining consideration of principles and their application to improving high school instruction in the academic and special subjects. Prerequisites: 10 hrs. in education. Three credits. MWF II; 100Pt. Mr. Boardman.
- Ed.Ad.124f. Public School Administration. The organization, administration, and general support of public schools in states and local school districts. Prerequisite: 10 hrs. in education. Three credits. MWF IX; 210Bu. Mr. Engelhardt.
- Ed.Ad.125w. Techniques in Administration. Standard practices regarding child accounting problems, records and reports; procedures having to do with personnel and school board relations and rules and regulations; standard office practices, including textbook and supply management. Prerequisite: Ed.Ad. 124. Three credits. MWF IX; 210Bu. Mr. Engelhardt.
- Ed.Ad.126s. School Plant Management. Plant program planning and financing, including operation and maintenance of public school buildings. Prerequisites: Ed.Ad. 124, 125. Three credits. MWF X; 210Bu. Mr. Engelhardt.
- Ed.Ad.127. The City School Superintendent. A practical consideration of the duties of the superintendent: history; qualifications; present status; relations to the board of education, the staff, the pupils, and the public; types of administrative procedures; records; reports; professional ethics. Prerequisite: 10 hrs. in education. Two credits. (Not offered in 1931-32.)
- Ed.Ad.128f,w,s. Special Problems in Educational Administration. This course is designed primarily for superintendents and principals qualified to make intensive studies of specific problems related to the administration of a school system. Prerequisite: Ed. 124-125-126 or equiv. One or two credits. S; 224Bu. Mr. Engelhardt.
- Ed.Ad.133w. Guidance in Secondary Schools. Emphasizes practices in educational and vocational guidance in junior and senior high schools, considering such phases as giving information about vocations, utilizing

- test results and school marks, and organizing the staff for guidance. Prerequisite: 10 hrs. in education including Ed.Psy. 55. Two credits. S I, II; 205aEd. Miss Merrill.
- Ed.Ad.150f. Supervision and Improvement of Instruction. An analysis of the functions and duties of a supervisor as related to the improvement of instruction; specific supervisory technique; objective analysis of classroom activity; concrete applications to present day problems; case studies. Prerequisite: Ed.T. 15 or equiv. Three credits. MWF III; 100Pt. Mr. Brueckner.
- Ed.Ad.151w. Supervision—Uses of Educational Tests in Improving Instruction. Objective evaluation of the results of teaching; diagnosis of pupil difficulty; remedial work; tests as aids to teaching; following up a testing program. Prerequisite: Ed.T. 15 or equiv. Two credits. S III, IV; 205aEd. Mr. Brueckner.
- Ed.Ad.152w. Supervision—The Adjustment of Schools to Individual Differences. The adaptation of the school, the curriculum, and classroom procedures to the abilities and interests of pupils. Typical provisions; classification, emphasis upon classroom procedure; survey of the evidence. Prerequisites: 15 hrs. in education. Two credits. Th IX, X; 210Bu. Mr. Peik.
- Ed.Ad.153s. Supervision of English in the Elementary Schools. Improvement of instruction in language, grammar, spelling, and handwriting; the results of scientific investigation; use of standardized and informal tests; remedial work. Prerequisite: Ed.T. 15 or equiv. Two credits. T IX, X; 100Pt. Mr. Brueckner.
- Ed.Ad.154s. Supervision of Social Sciences in the Elementary Schools. The scientific work being done on the course of study; in geography, history, science, and related fields; improvement of instruction in social sciences in the elementary schools. Prerequisite: Ed.T. 15 or equiv. Two credits. S III, IV; 100Pt. Mr. Brueckner.
- Ed.Ad.155f. Supervision of Arithmetic in the Elementary Schools. The improvement of instruction in arithmetic; the evaluation of the course of study; standardized drill exercises; diagnosis of specific pupil difficulty and remedial work; tests as aids of teaching. Prerequisite: Ed.T. 15 or equiv. Two credits. S III, IV; 100Pt. Mr. Brueckner.
- Ed.Ad.156w.* Practice Supervision—Observation and field work. Classroom visitation in the University Elementary Demonstration School, the University High School, and other schools in or near the Twin Cities, followed by conferences. The application of supervisory techniques and follow up; social projects in supervision. Prerequisite: 15 hrs. in education, and permission of instructor. Three credits. TTh 9:30-11:30; ar. Mr. Peik, Mr. Cooper.
- Ed.Ad.157f,w,s. Practice in Supervision. Problems and practice in the supervision of instruction in the elementary schools of Minneapolis and St. Paul. Prerequisite: consent of instructor. Three credits a quarter. Mr. Brueckner, Mr. Cooper.

* A laboratory fee of \$1 per credit is charged for this course.

- Ed.Ad.158w. Organization for Supervision. The organization and the administration of a public school system for supervision, treating specifically the delegation and co-ordination of the supervisory responsibilities of all staff members associated in these activities. Two credits. S I, II; 224Bu. Mr. Engelhardt.
- Ed.Ad.159s. Supervision of Reading. The improvement of supervision and instruction in oral and silent reading; the testing program; remedial work; evaluation of courses of study and textbooks; results of scientific investigations; special problems for study. Prerequisite: 15 hrs. in education. (Not offered in 1931-32.)
- Ed.Ad.160w. Supervision of Elementary Subjects. A course considering the application of principles of supervision to improving instruction in the subjects of the elementary school. Prerequisite: Ed.Ad. 150. Two credits. T IX, X; 206Ed. Mr. Brueckner.
- Ed.Ad.161f,w,s. Special Problems in School Supervision. This course is designed primarily for principals, superintendents, and supervisors qualified to make intensive studies of specific problems related to the supervision of schools. Prerequisite: 10 hrs. in education including Ed.Psy.55. Two credits; ar. Mr. Brueckner.
- Ed.Ad.164s. High School Administration. Principles and techniques of the organization and administration of secondary school units; housing; selection and assigning of the staff; schedule making; public relations and publicity; organization of guidance and of extra-curricular activities; pupil, equipment, and internal fund accounting and related problems of administration; government; problems of administration and organization related to instruction. Prerequisite: 10 hrs. in education including Ed.Psy. 55. Three credits. TThS II; 210Bu. Mr. Douglass.
- Ed.Ad.167f-168w. The Junior High School. An introduction to the theory and practice of junior high school education; sources of the movement for reorganization; purposes, functions, and limitations; types of reorganization; fundamental problems of reorganization, and administration and teaching; reorganization of subject-matter in grades 7, 8, and 9. Prerequisite: 10 hrs. in education, including Ed.Psy. 55. Four credits. W IX, X. Mr. Douglass.
- Ed.Ad.169f. Extra-Curricular Activities. Types of activities in junior and senior high schools; aims and values; practices in organizing, administering, and supervising; methods of evaluation. Prerequisite: 10 hrs. in education, including Ed.Psy. 55. Two credits. T IX, X; 210Bu. Mr. Benjamin.
- Ed.Ad.170f,w,s. Special Problems in Secondary Education. Planned primarily for those at work in high schools who are qualified to make intensive studies relating to administration and supervision of secondary education. Consult instructor before registering. Prerequisite: 10 hrs. in education, including Ed.Psy. 55. Two credits. Mr. Benjamin, Mr. Douglass.
- Ed.Ad.172w. Curriculum and Course of Study Construction. A study of the techniques employed at the public school and college levels. Class

- and individual projects according to needs and interests. Prerequisite: 15 hrs. in education. Two credits. S I, II; 324Lib. Mr. Peik.
- Ed.Ad.175s. Financial Aspects of Public School Business Administration. Financial program planning, budgeting accounting, cost finding, income and expenditure control; and the preparation and analysis of financial reports. Prerequisites: Ed.Ad. 124, 125. Three credits. FS I, II; 111Ed. Mr. Engelhardt.
- Ed.Ad.178f. School Surveys. A study of the literature and methods of school surveys, as a basis for the investigation of practical problems in school administration and supervision. Three credits. MWF X; 224Bu. Mr. Engelhardt.
- Ed.Ad.180f,w,s.* Practice in High School Administration. Practical experience in problems of administration, pupil personnel, curriculum administration, extra-curricular activities, staff problems, program and schedule making, etc. Consult instructor before registering. Prerequisite: 10 hrs. in education including Ed.Ad.65. Two credits a quarter. Ar. Mr. Boardman.
- Ed.Ad.184f. Supervision of Practice Teaching. A course primarily for teachers engaged in the direction of practice teachers in secondary education. Two credits. S III, IV; 111Ed. Mr. Boardman.
- Ed.Ad.185f. The Professional Education of Teachers. A study of the present status and of the problems that relate to the institutional training of teachers. Emphasis upon: historical evolution of current practices; institutional organization and relationship; curricula; teachers' wages; the building of professional curricula; recent investigations and findings. Intended for critic teachers, practice teaching supervisors, directors and administrators in departments, schools and colleges of education, and high school teacher training directors. Prerequisite: 10 hrs. in education. Two credits; S I, II; 100Pt. Mr. Peik.
- Ed.Ad.186f,w. Special Problems in Teacher Training. Planned for those who have a special interest in this field. An intensive study of specific problems. Consult instructor before enrolling. Prerequisite: Ed.Ad. 185 or consent of instructor. Two credits; ar. Mr. Peik.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- Ed.Ad.205-206-207. Seminar in Educational Administration. No credit. Mr. Engelhardt.
- Ed.Ad.218-219-220. Seminar in Secondary School Problems. No credit. Mr. Benjamin, Mr. Douglass, Mr. Boardman.
- Ed.Ad.225-226-227. Seminar in Elementary School Problems. No credit. Mr. Brueckner, Mr. Peik.

AGRICULTURAL EDUCATION

Prerequisites.—For major or minor work, 18 credits in agricultural education and preparation in agricultural subjects satisfactory to the Department of Agricultural Education.

* A laboratory fee of \$1 per credit is charged for this course.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 135s. The Curriculum in Vocational Agriculture. A study of curriculum organization, determination of subject-matter, organization of subject-matter, job analysis, course construction, texts, and references. Prerequisite: Ag.Ed. 11. Three credits. Mr. Field.
- 141f. Supervised Practice in Vocational Agriculture. A special methods course dealing with the selection, planning, supervising, and summarizing of the practical work in agriculture. Special emphasis on the problem method of teaching and the use of the farm and community for teaching purposes. Prerequisite: Ag.Ed. 11. Three credits. Ar. Mr. Field.
- 144w. Course Organization and Instruction for the Individual in Vocational Agriculture. Subject-matter content for the individual should be based on farm activities. Individuals should progress according to abilities and needs. Accepting these principles, this course includes selection and organization of content, administration, and teaching technique. Prerequisites: Ag.Ed. 11, 181, 182, 183. Two credits. Ar.
- 154f,w. Rural Education and Community Leadership. The rural school as a community center, and ways and means of organizing educational and recreational activities, such as clubs, festivals, fairs, and other desirable features of rural community life. Prerequisite: Ag.Ed. 11. Three credits. TThS IV. Mr. Field.
161. Vocational Education in Agriculture. Vocational education as interpreted by current philosophical conceptions and theories. A study of the principles developed and established in agricultural education. Special emphasis on pre-vocational agriculture and vocational guidance. Lectures, discussions, and selected readings from the literature of each of the problems presented for discussion. Three credits. Ar.
162. The Basis of Vocational Teaching Technique. A course which includes an analysis of the philosophical, psychological, and other bases of teaching technique from the viewpoint of the teacher of vocational agriculture. Three credits. Ar.
164. Fundamentals of Agriculture. Emphasis on current problems in meats, milk, poultry, plant pathology, mechanical training, and other essentials for teachers of agriculture. Three credits. Ar.
- 171w,s. Problems in Procedure. For agriculture teachers. Emphasizes working out problems in detail in order that the processes as formulated can be used in teaching the following year by those enrolled. Discussions, readings, papers, laboratory. Prerequisites: Ag.Ed. 11, 181, 182, 183, or equiv. Three credits. Ar. Mr. Field.
- 176s. Problems in Visual Presentation. Special attention to use of visual aids in teaching agriculture. The development of proper visual methods by means of research. Prerequisite: Ag.Ed. 75. Three credits. Ar. Mr. Field.
- 181f-182w-183s. Teaching Agriculture. A study of all activities of the teacher in conducting a high school agriculture department in Minne-

sota including all day, part time, evening, and elementary classes, and community activities: Observation, participation, reading, preparing plans, criticisms, discussions, reports. Prerequisite: Ag.Ed. II. Fifteen credits. MTWThF III. Mr. Field.

191-192-193. Seminar in Agricultural Education. Critical studies of important problems in agricultural education; opportunity for individual investigation and research; review and interpretation of current educational literature. Two to six credits. Mr. Storm, Mr. Field.

COURSES PRIMARILY FOR GRADUATE STUDENTS

201f-202w-203s. Advanced Seminar. Study of the broader administrative problems and policies in the field of agricultural education. Opportunity for independent investigation and research. One to two credits per quarter. 202Ad(F). Mr. Storm, Mr. Field.

221f-222w-223s-224su. Graduate Problems. Making investigations, gathering data, and formulating plans regarding agricultural education. Three credits per quarter. 207Ad(F). Mr. Storm, Mr. Field.

241f. Operation of Vocational Agriculture. Problems involved in the state and local activities in conducting vocational agriculture. It includes a study of federal and state laws and regulations, courses of study, duties of the state supervisor, reports, records, and conferences. Two credits. Ar.; 202Ad(F). Mr. Storm, Mr. Field.

242w,s. Organization and Administration of Teacher Training for Vocational Agriculture. Development of teacher training institutions, agricultural college curricula, professional needs of high school teachers, professional courses and their content, equipment, itinerant teacher training, practice teaching, teacher evaluation. Two credits. Ar.; 202Ad(F). Mr. Storm, Mr. Field.

243su. Same as Course 242 with the addition of concrete studies of specific institutions. Not open to students having credit for 242. Three credits. Ar.; 202Ad(F). Mr. Storm, Mr. Field.

SPECIAL SUMMER QUARTER COURSES FOR TEACHERS OF AGRICULTURE

By special arrangement, two courses of three credits each have been divided into halves, A and B, each of three weeks' duration during the summer quarter and each carrying $1\frac{1}{2}$ credits. The maximum student load of these half courses during the three weeks' period, is three $1\frac{1}{2}$ -credit courses. Credit in each of these "A" courses will be suspended until the student finishes the "B" portions of the same course.

161Asu. Vocational Education in Agriculture. Vocational education as interpreted by current philosophical conceptions and theories. A study of the principles developed and established in agricultural education. Special emphasis on prevocational agriculture and vocational guidance. Lectures, discussions, and selected readings from the literature of each of the problems presented for discussion. One and one-half credits on completion of Ag.Ed. 161B. Mr. Storm, Mr. Field.

161Bsu. Continuation of 161Asu.

231Asu. Theory and Practice of Teaching Agriculture. A special course designed for teachers in service in agriculture. A functional analysis of current problems in developing the course of study in agriculture, farm practice work, and evening school instruction. Modern trends in educational theory and practice treated to meet the peculiar needs of individual teachers. One and one-half credits on completion of Ag.Ed. 231B. Mr. Storm, Mr. Field.

231Bsu. Continuation of 231Asu.

EDUCATIONAL PSYCHOLOGY

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

Ed.Psy.111Tf-112Tw. Educational Measurements in the Elementary School. The typical educational problems involving educational scales and standard tests. Nature of tests, methods of use, analysis of results obtained, and programs of remedial educational procedure based on the results of the tests. For teachers. Prerequisite: Ed.Psy. 55 or equiv. Four credits. S III, IV; 205bEd. Mr. Van Wagenen.

Ed.Psy.111s. Same as above. Three credits. MWF II; 109Psy. Mr. Van Wagenen.

Ed.Psy.113f-114w-115s. Psychology of Elementary School Subjects. A discussion of the research studies in the field of the psychology of elementary school subjects. Prerequisite: 10 cred. in education and psychology. Two credits. W IX, X. 109Psy. Mr. Van Wagenen.

Ed.Psy.116w-117s. Advanced Statistical Methods in Education. A survey of statistical studies in education with special reference to the methods employed and the reliability of the results obtained. Prerequisite: Ed.Psy. 60 or equiv. Four credits. T IX, X; 115Psy. Mr. Van Wagenen.

Ed.Psy.133. Systematic Educational Psychology. Advanced course covering the field of psychology as related to education. Prerequisite: 15 cred. in education and psychology. Four credits. (Not offered 1931-32.)

Ed.Psy.134f. Mental Tests. A laboratory study of group mental tests used in the kindergarten, elementary school, high school, and college with special emphasis upon their reliability and validity as instruments for educational guidance. Prerequisites: Ed.Psy. 55 and 60 or equiv. Two credits. MW VII, VIII; 211Psy. Mr. Eurich.

Ed.Psy.135w-136s. Problems in Mental Testing. A study of the practical problems of mental testing in the public schools with special reference to the administration of group mental tests. Projects involving testing and classification of pupils. Prerequisites: Ed.Psy. 55 and 60 or equiv. and 134. Four credits. MW VII, VIII; 211Psv. Mr. Eurich.

Ed.Psy.138f-139w.† Experimental Educational Psychology. A laboratory course designed to train students in the use of experimental methods in the study of educational problems, particularly in the field of the

- psychology of learning. It is suggested that this course supplement either 133 or 190, 191, 192, 193-194. Prerequisite: Ed.Psy. 55 or equiv. Four credits. WF IX, X; 116Psy. Mr. Rockwell.
- Ed.Psy.141. Psychology of Speech Disorders.
- Ed.Psy.143f-144w.† Individual Mental Examination. For teachers of sub-normal children. Demonstration and practice in mental diagnosis. Careful study will be made of different groups and systems of mental tests, and other clinical methods with discussion of general theory involved. Prerequisites: Ed.Psy. 55 and 134, permission of instructor. Four credits. TTh IX, X; 109Psy. Mr. Rockwell.
- Ed.Psy.145s. Special Problems in the Field of Individual Mental Testing. Prerequisite: Ed. Psy. 143-144. Two credits. Ar. Mr. Rockwell.
- Ed.Psy.146w-147s†. Child Guidance. Specific problems in school adjustment dependent upon physical and emotional factors of the child, the home, and the environment. Case records giving family and personal histories, physical condition, psychometric rating, and personality presented. Class discussion of the recommendations. Prerequisite: 15 credits in psychology and education. Four credits. S III, IV; Pt Aud. Mr. Chamberlain.
- Ed.Psy.149f-150w†-151s. Psycho-Educational Clinic. Conducted in co-operation with existing clinics and agencies in the Twin Cities. Students will receive practice in giving psychological examinations, in case study, and in scientific interpretation of data. Two to six credits. Prerequisites: 134-135-136, 144-145 or 184, III, permission of instructor. Ar. Mr. Eurich.
- Ed.Psy.153f-154w-155s. Research Problems. Intended for properly prepared students who desire to pursue special investigation in the field of educational psychology. Ar. Mr. Haggerty, Mr. Miller, Mr. Eurich, Mr. Rockwell, Mr. Van Wagenen.
- Ed.Psy.157s. Psychology of Child Development. The physical, mental, social, and emotional development of children from birth to adolescence. Prerequisite: 6 credits in psychology. Four credits. S I, II. 112Ed. Mr. Carroll.
- Ed.Psy.158f. Psychology of Adolescence. A study of the physical and mental changes that characterize the transition from childhood to adult life. Implications for educational guidance during the period of secondary education. Prerequisite: Ed.Psy. 55 or equiv. Three credits. MWF VII. 210Bu. Miss Merrill.
- Ed.Psy.159s. Psychology of Personality. Theoretical basis. Survey of methods for the measurement and study of character and the emotions. Relation to school success and other factors in the school situation. Genetic development of personality traits in childhood and adolescence. Prerequisites: Ed.Psy. 55 or equiv. Three credits. (Not offered 1931-32.)
- Ed.Psy.181f,w,s. Practice in Personnel Work. Course designed to give properly qualified students practical experience in the use of psycho-

- logical and related methods in dealing with school children. Prerequisite: satisfactory preparation in psychology and education and approval of adviser. Ar. Mr. Haggerty, Miss Merrill.
- Ed.Psy.183s. Psychology of Gifted Children. A study of the physical and mental traits of gifted children and the methods of their education. Prerequisite: Ed.Psy. 55 or equiv. Two credits. TTh III; 210Bu. Mr. Carroll.
- Ed.Psy.184s. Mental Deficiency. Survey of mental deficiency in children and adults. Physical traits, including study of brain defects, causes and heredity; psychology of mental deficiency; social problems of feeble-mindedness. Subjects treated with reference to the training of defectives. Prerequisite: Ed.Psy. 55 or equiv. Two credits. S III, IV; 210Ed. Mr. Rockwell.
- Ed.Psy.189f. The Human Organism. The development of the human organism in relation to educational practice. Prerequisite: permission of instructor. Three credits. MWF IV. Ar. Mr. Rockwell.
- Ed.Psy.190f. Original Nature of Man. Advanced work in genetic psychology, man's unlearned behavior, and inherited capacities. Prerequisites: Ed.Psy. 55 and 60 or equiv. and permission of instructor. Three credits. MWF III; 301Psy. Mr. Miller.
- Ed.Psy.191w. Individual Differences. A study of group and individual differences and their relations to educational practice. Prerequisites: Ed.Psy. 55 and 60 and permission of instructor. Three credits. MWF III; 301Psy. Mr. Miller.
- Ed.Psy.192s. Recent Literature in Educational Psychology. Readings and reports on problems in educational psychology. Prerequisites: Ed.Psy. 55 and 60 and permission of instructor. Three credits. MWF III; 301Psy. Mr. Miller.
- Ed.Psy.193w-194s. Psychology of Learning. A study of the experiments in learning in the laboratory and in the classroom. Prerequisite: 12 credits in psychology and educational psychology. Four credits. TTh II; 301Psy. Mr. Rockwell.
- Ed.Psy.197-198-199. Problems of Subnormality. Phases of subnormality studied intensively. Review of important literature and original investigation. Students required to make reports on assigned topics and submit a paper on some problem at the close of the quarter. Six credits. (Not offered in 1931-32.)

COURSES PRIMARILY FOR GRADUATE STUDENTS

- Ed.Psy.201f-202w-203s. Seminar in Educational Psychology. A research course for graduate students. Required of all students writing theses in educational psychology. Does not carry credit as course work. Ar. Mr. Haggerty, Mr. Miller, Mr. Carroll, Mr. Eurich, Mr. Rockwell, Mr. Van Wagenen.

HISTORY AND PHILOSOPHY OF EDUCATION

- H.Ed.101f. Foundations of Modern Education. Historical analysis and interpretation of the more important elements in modern education derived from the Hebrews, Greeks, Romans, the Middle Ages, and the Renaissance. Prerequisite: 6 credits in psychology. Three credits. MWF VI; 210Bu. Miss Alexander.
- H.Ed.102w. History of Modern Secondary and Higher Education. A survey of existing types of American and European secondary and higher schools, followed by a historical study of their origin, aims, growth. Prerequisite: 6 credits in psychology. Three credits. MWF VI; 210Bu. Miss Alexander.
- H.Ed.103s. History of Modern Elementary Education. The institutions, theories, and problems of modern elementary education in the light of their history. Emphasis upon the rise of state systems and upon the history of modern educational reform. Not open to students who have had H.Ed.1. Prerequisite: 6 credits in psychology. Three credits. MWF VI; 210Bu. Miss Alexander.
- H.Ed.140w-141s. Topics in the History of Education. Historical investigation of educational problems. Prerequisite: permission of instructor. Ar. Mr. Krey, Mr. Wesley.
- H.Ed.287f-288w-289s. Problems in Educational Sociology. The sociological foundations of educational theory will be discussed with the investigation of specific problems. Lectures, readings, and problems. Prerequisite: permission of instructor. Two credits. T IX, X Mr. Finney.

HOME ECONOMICS EDUCATION

See Home Economics.

INDUSTRIAL EDUCATION

- Ind.101w. Tests in Industrial Subjects. Acquaintance with such available tests of aptitude and achievement as are useful in industrial education; giving and scoring of tests, with interpretation of results; application of known techniques in remedial teaching to the work of shop and drawing teachers, both general and vocational. Prerequisite: Ed.Psy. 55. Two credits. F IX, X; 112Bu. Mr. Smith.
- Ind.105w. Industrial Education. For superintendents, principals, and teachers not specializing in the field named; general and vocational phases considered; objectives, administration and supervision; programs and practices; laws, rulings, and standards for aid; significant literature; how to judge teachers, courses, and methods in the special field. Three credits. MWF IV; Ar. Mr. Smith.
- Ind.110f. Guidance in the Schools. The history of the educational and vocational guidance movement; typical public school means and methods; collection and use of occupational information; duties of the counsellor; organization and relationships. Prerequisite: Ed.Psy. 55. Two credits. S III, IV; 112Bu. Mr. Smith.

- Ind.150f-151w-152s. Problems in Vocational Education. Survey of printed reports and theses; critical analysis; selection of thesis problems; formulation of work plans; reports of progress; organization and presentation. Full year assumed. Graduates only. Six credits. W IX, X; 112Bu. Mr. Smith.
- Ind.170f. Day Industrial Schools. National, state, and local organization and types; buildings and equipment; promotion and advertising; cooperative relationships; teaching staff; pupil guidance, training, and placement. Two credits. M IX, X; 112Bu. Mr. Craigo.
- Ind.171w. Evening Industrial Schools. Development of the after training of adults; agencies and scope of the movement; national and state legislation; qualifications of instructors; problems and difficulties; records and certification, fees and charges; buildings, equipment, and instruction facilities; general versus unit-course organization. Two credits. M IX, X; 112Bu. Mr. Bass.
- Ind.172s. Administration of Part Time Schools. A study of the new movement for part time education; social and economic background; organization of classes, study of special student groups, courses of study; typical schools; comparative state legislation and plans; Minnesota's problems. Two credits. M IX, X; 112Bu. Mr. Smith.

THEORY AND PRACTICE OF TEACHING

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- Ed.T.110s. Educational Diagnosis in Secondary Education. The application of educational measurements to the solution of the problems of high school instruction. Analysis of the specific learning processes involved in the various high school subjects; a critical survey of the means of diagnosing and alleviating high school pupils' learning difficulties; the use of educational measurements in improving high school teaching. Prerequisite: Ed.Psy. 55. Two credits. F IX, X; 205bEd. Mr. Carroll.
- Ed.T.122s. Literature for Adolescents. A background for pupil guidance in extensive reading in junior and senior high schools; analysis of studies of adolescent choices in literature; principles of selection; critical reading in broad field of literary, biographical, historical, scientific, and vocational interests of boys and girls. Prerequisites: Ed.T. 15 or jr.-sr. h.s. teaching experience. Two credits. W IX, X; UHS Lib. Miss Smith.
- Ed.T.143Tf-144Tw.† The Teaching of Reading. A study of the objectives, the materials, and teaching procedures in lower, intermediate, and upper grades in the light of the contributions of research; survey of current practices and curricula; class and individual projects; observation of reading techniques and materials in the demonstration school. Prerequisites: 9 hrs. in education including Ed.Psy. 55 or 56. Four credits. S I, II; 112Ed. Mr. Carroll.

- Ed.T.181f.‡ Technique of Elementary School Instruction. A critical study of the various types and methods of elementary classroom activity with emphasis upon the techniques and the function of the so-called newer methods. Observation in the demonstration school; class projects; survey of investigations and of the philosophic theories which are affecting progressive practice. Prerequisites: 10 hrs. in education including Ed.Psy. 55 or 56. Three credits. TTh II, III; ar. Mr. Peik, Mr. Cooper.
- Ed.T.181T-182T.†* Technique of Elementary School Instruction. (Same as Ed.T.181 above for teachers.) Four credits. (Not offered in 1931-32.)
- Ed.T.188s.* Advanced Course in Methods of Teaching Modern Languages. An advanced course of the seminar type in methods of teaching modern foreign languages. Designed primarily for experienced teachers and graduate students. Lectures, readings, discussion. Prerequisite: Ed.T. 76-77-78 or equiv. Two credits. Ar. Mrs. Sundeen.
- Ed.T.191s. Advanced Course in the Teaching and Supervising of Secondary School Mathematics. Evaluation, on the available scientific evidence, of present procedures in methods and content of junior and senior high school mathematics. Prerequisite: Ed.T. 115 or equiv. in teaching. Two credits. Ar.
- Ed.T.193f. Foundations of Secondary School Methods. A study of the investigations which form the bases of the technique of high school instruction and the application of their results to subject-matter and to classroom procedure. Each member will work primarily in the field of his teaching choice, with a final synthesis by the class as a whole. Prerequisite: Ed.T. 15. Three credits. T IX, X; 1 hr. ar; 202Ed. Mr. Johnson.
- Ed.T.194f.* Advanced Course in Methods of Teaching English. Evaluation of present practices in methods and content of junior and senior high school English courses in the light of the known results of scientific investigations in that field. Prerequisite: Ed.T. 15 and Ed.T. 49-50-51 or Ed.T. 52-53-54 or equiv. Two credits. S III, IV; 216Bu. Miss Smith.
- Ed.T.196w-197s.† Special Problems in Techniques of Secondary School Instruction. Opportunity is given in this course to work upon special research problems in the field of the student's individual choice under personal guidance of instructors in the given field. Individual conferences will replace class meetings throughout the course. Prerequisite: Ed.T. 15, Special Methods in the Given Field, Ed.Psy. 60 or equiv. Two credits a quarter. S III, IV; 216Bu. Miss Smith, Mr. Stokes, Mr. Wesley.

* A laboratory fee of \$1 per credit is charged for course.

† A fee of \$1 per credit is charged for this course.

COURSES PRIMARILY FOR GRADUATE STUDENTS

Ed.T.201f-202w-203s. Teaching of History and the Other Social Studies. Open only to graduate students who have had teaching experience. Consent of the instructor is necessary. Two credits per quarter. Ar.; ar. Mr. Krey, Mr. Wesley.

Ed.T.222f-223w-224s. Seminar in Problems of High School Instruction. Th IX, X; 216Bu. Mr. Douglass, Mr. Johnson, Mr. Benjamin, Miss Smith, Mr. Stokes, Mr. Wesley.

See also Ed.T.228-229-230 under General Courses, page 58.

For graduate courses in the theory and practice of teaching in special subjects see the respective departmental course descriptions.

ELECTRICAL ENGINEERING

Professors John M. Bryant, William T. Ryan, Franklin W. Springer; Associate Professors Henry H. Hartig, John H. Kuhlman, James S. Webb; Assistant Professors Elmer W. Johnson, Milo E. Todd.

Prerequisites.—For major work, E.E. 121 to 126 or their equivalent; for minor work, 6 credits in physics, integral calculus, and one of the following: E.E. 38, 45, 48, or 125.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 111f-113w-115s. Electrical Engineering. Prerequisite: one year in college physics, four credits per quarter. Mr. Johnson.
- 112f-114w-116s. Electrical Engineering Laboratory. To be taken with Course 111-113-115. Two credits per quarter.
- 121f-123w-125s. Alternating Currents. Prerequisite: Course 115. Three credits per quarter. MWF 10:30 or 11:30. (Two sections.) Mr. Bryant, Mr. Johnson.
- 122f-124w-126s. Alternating Current Laboratory. To be taken with Course 121-123-125. Two credits per quarter.
- 127f. Transient Electrical Phenomena. Mathematical study of the electric circuit containing resistance, inductance, and capacity. Abnormal currents and voltage upon switching circuits containing iron core inductances. Prerequisite: Course 121. Three credits. Mr. Bryant.
- 128w. Transient Electrical Phenomena. Current and voltage distribution in circuits containing distributed resistance, inductance, and capacity. Distortion in telephone lines and its correction. Prerequisite: Course 127. Three credits. Mr. Bryant.
- 129s. Transient and High Frequency Phenomena. Transient phenomena in coupled circuits. Distribution of current and flux in conductors at high and low frequencies. Change of resistance with frequency. Theoretical study of special problems. Prerequisite: Course 128. Three credits. Mr. Bryant.

- 132f-134w-136s. Electrical Design. Prerequisite: Course 115. To be taken with Course 121-123-125. Two credits per quarter. Mr. Kuhlman.
- 138w-139s. Slow Transients. Short-circuit currents in power networks, unbalanced loads in polyphase circuits, transformers and motors, harmonics, stability of power systems under steady state conditions. Prerequisite: Registration in Course 123. Three credits per quarter. Mr. Bryant.
- 156s. Vacuum Tube Study. Two, three, four, and five electrode vacuum tubes. Thyration, keno-tron, grid glow, photo electric tubes, etc. Theoretical study of apparatus and circuits with demonstrations. Two credits. Mr. Hartig, Mr. Webb.
- 183f-184w-185s. Electrical Laboratory. Efficiency tests and special problems. Prerequisite: Course 126. Credits as arranged.
- 186w or s. High Tension Testing. Low frequency pressure up to 320,000 volts and high frequency to several million volts applied to the study of dielectric phenomena, testing of high tension equipment, etc. Prerequisite: Course 124. Two credits. Mr. Springer.
- 191f-192w-193s. Seminar. Weekly discussion of current electrical periodicals. Prerequisite: Course 111. One credit per quarter.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 211f-212w-213s. Advanced Circuit Analysis. Circuit analysis using Heaviside's *Operational Calculus*. Prerequisite: M.&M. 151. Two credits per quarter. Mr. Hartig.
- 232f-234w-236s. Electrical Design. Special problems. Prerequisites: Courses 125, 136. Credits as arranged. Mr. Kuhlman.
- 275f-276w-277s. Electrical Engineering Research. Investigation of special research problems in laboratory or library. Prerequisite: Course 126. Two to four credits per quarter. Mr. Bryant, Mr. Ryan, Mr. Springer, Mr. Hartig, Mr. Kuhlman, Mr. Webb, Mr. Johnson, Mr. Todd.
- 284f-285w-286s. Precise Electrical Engineering Measurements. Lectures and laboratory work. Open to a limited number subject to approval. Prerequisites: Courses 123, 124. One or two credits. Mr. Todd.

ELECTRIC POWER

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 141f. Central Stations. Operation, design, and construction of electric power generating stations. Prerequisite: Course 115. Two credits. ThS 10:30. Mr. Ryan.
- 142w. Electrical Transmission. Prerequisite: Course 141. Two credits. ThS 10:30. Mr. Ryan.
- 144w. Railway Electrical Engineering. Prerequisite: Course 115 or 45. Two credits. MW 11:30. Mr. Johnson.
- 145s. Steam Railroad Electrification. Prerequisite: Course 144. Two credits. MW 11:30. Mr. Johnson.

- 149s. Protection Engineering. The application of relays, circuit breakers, lightning arrestors and other protective equipment to power circuits for apparatus protection and isolation of faults. Calculation of fault currents. Effect of fault condition on system stability. Prerequisite: registration in Course 125. Three credits. Mr. Johnson.
- 151f. Electric Lighting. Lectures, problems, and laboratory practice. Prerequisite: one year in college physics. One credit. Mr. Johnson.
- 152f. Photometric Laboratory. Photometric studies of incandescent and arc electric lamps, gas and oil lamps. Bench and radial photometers and illuminometers. To be taken with Course 151. One credit. Mr. Johnson.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 237s. Electric Power Transmission Design. Preparation of detailed plans and specifications for the construction of high voltage transmission lines and distributing systems. Economic, electrical, and mechanical principles and calculations. Mr. Bryant, Mr. Ryan.
- 251w-253s. Illuminating Engineering. Lectures and laboratory work. Methods of determining location, kind, and quality of lights for obtaining desired illumination. Prerequisite: Course 151. Two credits per quarter. Mr. Johnson.

ELECTRIC COMMUNICATION

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 161f-162w-163s. Radio Communication. Theoretical and laboratory study of radio transmitting and receiving circuits and apparatus. Amplifiers, detectors, oscillators. Electromagnetic waves in free space and on antenna systems. Prerequisite: registration in Courses 121, 123, 125. Three credits per quarter. Mr. Webb.
- 164f-165w-166s. Electric Communication. Telephone circuits at audio and carrier frequencies. Theoretical and laboratory study of circuits having distributed constants. Use of hyperbolic functions. Wave filters, balancing net-works, equalizers, repeaters. Prerequisites: registration in Courses 121, 123, 125. Two or three credits per quarter. Mr. Hartig.
- 181s. Communication Frequency Measurements. Vector treatment of networks. Bridge circuits for measuring of resistance, inductance, and capacity at audio and carrier frequencies. Prerequisite: Course 126. Two credits. Mr. Hartig.
- 187f, 188w, 189s. Special Communication Laboratory. Special problems in electrical communication. Open by permission to qualified students. Includes weekly seminar meeting. One to twelve credits total. Mr. Hartig.

COURSES PRIMARILY FOR GRADUATE 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 Course 262-264-266. Two credits per quarter; registration by permission. Mr. Webb.
- 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. One or more credits per quarter; registration by permission. Mr. Webb.
- 267f-268w-269s. Telephone Transmission. Advanced transmission theory at communication frequencies. Class and laboratory. Two or three credits; registration by permission. Mr. Hartig.
- 281w-282s. Advanced High Frequency Measurements. Vector treatment of circuit networks. Bridge circuits for the measurement of resistance, inductance, and capacity at audio and radio frequencies. Prerequisite: Course 126. Two credits per quarter. Mr. Webb.
- 287f-288w-289s. Advanced Communication Laboratory and Seminar. Special problems in communication. Study and discussion of current articles on communication. Two or three credits; registration by permission. Mr. Hartig.

GENERAL

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- G.E.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. Two credits. Mr. Ryan and non-resident lecturers.
- G.E.112f-113w-114s. Rates for Public Utility Properties. Determination of the rate base and depreciation amount for transportation, gas, water, electric power and telephone utilities operating expenses, the rate structure for particular utilities, service and discrimination. Open only to senior and graduate students in engineering. Three credits per quarter. Mr. Bryant.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 291f-292w-293s. Graduate Seminar. Discussions of problems and results of research work. One credit per quarter.
- 294f-295w-296s. Electrical Ignition and Automobile Electrical Accessories. The study of ignition apparatus; characteristics of automobile accessories, such as generators, starters, controllers, etc. Laboratory and lectures. Prerequisite: Course 121 or equiv. Two credits per quarter. Mr. Springer.

ENGINEERING

See Aeronautical, Civil, Electrical, Mechanical, Structural Engineering. For Chemical Engineering, see Chemistry.

ENGLISH

Professors Cecil A. Moore, Joseph W. Beach, Martin B. Ruud, Elmer E. Stoll, Joseph M. Thomas, J. Douglas Bush; Associate Professors G. Tremaine McDowell; Assistant Professors Muriel B. Carr, William P. Dunn, James T. Hillhouse, Elizabeth Jackson, Charles W. Nichols, Anna H. Phelan.

Before registering for graduate courses, students should consult with the director of graduate work for the department, Mr. Bush.

Before the acceptance of his subject for a thesis, a candidate for the degree of M.A. or Ph.D. must have given evidence to the department that he speaks and writes English with propriety.

REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS

1. *Prerequisite.*—(1) For major work, not less than 27 credit hours in English literature, 12 of which must be of senior college grade, including a satisfactory course in either Chaucer or Shakespeare; for minor work, not less than 27 credit hours in English literature. (2) Unless special exception is made upon petition to the department, the candidate is required to have a reading knowledge of two of the following languages: French, German, Latin.

2. The minimum requirement of 18 credits in the major is interpreted to mean 18 credits in subjects listed below as "Courses in English." If the candidate has not previously had an elementary course in Old English, this subject must be included in his program of graduate study.

3. Before taking the oral examination, the candidate is given a written examination on the history of English literature.

REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

1. *Delimitation of the field.*—The general field of English is divided into two periods (1) Early English and (2) Modern English. The boundary line between these periods may be drawn anywhere between 1500 and 1550 according to the requirements of the candidate's program. A candidate may select as his major subject either the Early English or the Modern English period.

2. The candidate will be examined as to his knowledge of the whole field of English literature, but much more thoroly in that portion of the field covered by his major. Special emphasis will be laid, in the examination, on one particular period or one particular type (such as drama, lyric, or essay) with which he is presumed to be especially familiar. This particular period or type would naturally be that connected with his thesis.

3. The candidate must have completed, before examination, advanced courses in Chaucer and Shakespeare.

4. A good reading knowledge of Latin is in all cases desirable, and in some cases may be indicated by the candidate's adviser as indispensable.

COURSES IN ENGLISH

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 100f. Old English. Old English prose and poetry. The relation to modern English is particularly emphasized. Prerequisite: 8 credits above 50. Four credits. MTWF II; 205F. Mr. Ruud.
- 101f. Middle English. An outline of Middle English grammar, including the interpretation of selected texts. Prerequisites: Courses 75 and 100. Two credits. Mr. Ruud.
- 102w. Old English Poetry. Critical reading of poems. Three credits. Prerequisite: Course 100. MWF II; 302F. Mr. Ruud.
- 103s. Beowulf. An introduction to the Old English poem, with reading of considerable portions of the text. Prerequisite: Course 100. Three credits. MWF II; 302F. Mr. Ruud.
- 105w-106s. Eighteenth-Century Poetry. From Pope to Burns, with special reference to the rise and growth of romanticism. Prerequisite: 8 credits above 50. Six credits. MWF VII; 204F. Mr. Moore.
- 107w-108s. Eighteenth-Century Prose. Special study of fiction and the essay. Prerequisite: 8 credits above 50. Six credits. Mr. Moore.
- 109f-110w. The Romantic Poets of the Nineteenth Century. From Wordsworth to Keats. Prerequisite: 8 credits above 50. Six credits. TThS III; 204F. Mr. Beach.
- 111f-112w. Seventeenth-Century Prose. General survey of the prose of the century to 1660. Prerequisite: 8 credits above 50. Six credits. MWF III; 306F. Mr. Bush.
- 123f-124w-125s. The Technique of the Novel. Special studies in novels of the late nineteenth and twentieth centuries, with particular regard to structure. Prerequisite: 8 credits above 50 and the permission of the instructor. Nine credits. T 4:00 to 6:00 p.m.; 205F. Mr. Beach.
- 126w-127s. Drama, 1660-1880. Prerequisite: 8 credits above 50. Six credits. TThS III; 205F. Mr. Hillhouse, Mr. Nichols.
- 129s. Modern Drama. Contemporary drama from 1870 to the present. Prerequisite: English 55-56. Four credits. MTWF II; 204F. Mr. Stoll.
- 133f. The English and Scottish Popular Ballads. A study of a large number of traditional ballads, English and foreign, and of ballad style and origins. Prerequisite: 8 credits above 50. Three credits. MWF III; 203F. Mr. Ruud.
- 136s. Advanced Shakespeare. Shakespeare's development traced to the end. A careful analysis of four plays. Problems in the interpretation of Shakespeare's dramatic methods. Prerequisite: English 55-56. Four credits. MTWF I; 204F. Mr. Stoll.
- 140s. Advanced Chaucer. The more important poems (except those read in Course 75). The treatment will be primarily literary and historical, linguistic proficiency being presumed. Prerequisite: 8 credits above 50, including 75. Four credits. MTWF III; 209½F. Mr. Ruud.

- 141-142-143. Historical Grammar of the English Language. This course is identical with Comparative Philology 141-142-143. Prerequisite: 8 credits above 50, including 75 or 81-82. Six credits. Mr. Klaeber.
- 146f-147w. The Metrical Romances. The more important Middle English romances of the non-Arthurian cycles. Prerequisites: 8 credits above 50, including 75 or 81, 82. Six credits. MWF VI; 306F. Miss Carr.
- 148-149. Arthurian Romances. An introduction to the great stories of love and chivalry connected with King Arthur and the Round Table. Prerequisite: 8 credits above 50, including 75 or 81-82. Six credits. Miss Carr.
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. Prerequisite: 8 credits above 50. Four credits. Mr. Stoll.
- 151s. Recent Poetry. Poetry in England and America since the death of Queen Victoria. The main tradition and tendencies now prevailing. Prerequisite: 8 credits above 50. Four credits. TWThF III; 204F. Mr. Beach.
- 152f. Pre-Elizabethan Drama. The late medieval and the Renaissance drama, moralities, interludes, and farces up through the earlier years of the Elizabethan period. Prerequisite: Course 55-56. Three credits. MWF IV; 205F. Mr. Bush.
- 154w-155s. The American Novel. The history of the American novel from the beginning to the present. Prerequisite: English 73-74. Six credits. MWF VI; 205F. Mr. McDowell.
156. The American Drama. Survey of American drama in the eighteenth and nineteenth centuries. Prerequisite: 8 credits above 50, including 73-74. Three credits. Mr. Nichols.
- 157-158. Elizabeth Non-Dramatic Literature. A survey of prose and poetry, 1558-1603. Prerequisite: 8 credits above 50, including 51 or 70 or 55-56 or 170. Six credits. Mr. Bush.
- 159f. Colonial Literature in America. Covers the period from 1608 to 1783. Prerequisite: 8 credits above 50, including 73-74. Three credits. MWF VI; 205F. Mr. Nichols.
160. History of the English Language. Prerequisite: Course 100. Two credits.
- 162f. Restoration Literature. Prerequisite: 8 credits above 50. Four credits. MTWF IV; 204F. Mr. Moore.
- 164s. Dante in English. See Italian 164s. Three credits.
- 165w. The Historical Study of Modern English. Prerequisite: 8 credits above 50. Three credits. MWF III; 205F. Mr. Ruud.
- 168s. English Literary Criticism. A historical sketch, with special reference to Aristotle, Sir Philip Sidney, Dryden, Dr. Johnson, Coleridge, Arnold, T. S. Eliot. Prerequisite: 8 credits above 50. Three credits. MWF IV; 204F. Mr. Bush.
- 170w. 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. Prerequisite: 8 credits above 50 including 55-56. Four credits. MTWF IV; 204F. Mr. Stoll.
- 217f-218w-219s. Restoration Drama. Nine credits. M 4:00 to 6:00; 312 Lib. Mr. Stoll.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 220f-221w-222s. Medieval Drama. Nine credits. W 4:00 to 6:00; 312Lib. Mr. Ruud.
- 225-226-227. Elizabethan Drama. Elizabethan and Jacobean dramatists, from Lyly to Shirley. Problems assigned may involve Shakespeare, and in general his contemporaries will be studied less for their own sakes than for the light they shed upon him. Nine credits. M 4:00 to 6:00; 312Lib. Mr. Stoll. (Not offered in 1931-32.)
- 228f-229w-230s. Eighteenth-Century Novel. The rise and development of the novel as a form of literature; the use made of the novel as a medium of religious, social, and political theory. Nine credits. Th 4:00 to 6:00; 312Lib. Mr. Moore.
- 231f-232w-233s. Shakespeare's Tragic and Comic Art. Nine credits. M 4:00 to 6:00; 312Lib. Mr. Stoll. (Not offered in 1931-32.)
- 234f-235w-236s. Middle English Alliterative Poetry. A literary and linguistic study of selected Middle English alliterative poems. Nine credits. W 4:00 to 6:00; 312Lib. Mr. Ruud. (Not offered in 1931-32.)
- 237f-238w-239s. Chaucer. A study of some of the important problems in the Chaucer canon and in the works of Chaucer. Nine credits. W 4:00 to 6:00; 312Lib. Mr. Ruud. (Not offered in 1931-32.)
- 240f-241w-242s. The *Canterbury Tales*. Nine credits. W 4:00 to 6:00; 312Lib. Mr. Ruud.
- 243f-244w-245s. Non-Dramatic Literature of the Sixteenth Century. The Renaissance in England; prose and poetry, with special attention to Spenser and his contemporaries. Nine credits. F 4:00 to 6:00; 312 Lib. Mr. Bush. (Not offered in 1931-32.)
- 246f-247w-248s. American Literature from 1783 to 1832. Nine credits. F 4:00 to 6:00; 314Lib. Mr. McDowell. (Not offered in 1931-32.)
- 250f-251w-252s. Classical Backgrounds of Nineteenth-Century Literature. Classical influences upon poetry from Wordsworth to the present; the prose of Landor, Arnold, and others. Nine credits. F 4:00 to 6:00; 312Lib. Mr. Bush. (Not offered in 1931-32.)
- 253f-254w-255s. Studies in Hawthorne, Poe, and Emerson. Nine credits. F 4:00 to 6:00; 314Lib. Mr. McDowell.
- 256f-257w-258s. Spenser and Milton. Reading of the poetry in full and a good deal of Milton's prose. The two poets will be studied as the great English exponents of Renaissance ideas and ideals. Nine credits. F 4:00 to 6:00; 312Lib. Mr. Bush.
- 259f-260w-261s. The Victorian Period of the English Novel. The Gothic Romance and the Revolutionary Novel, the realistic novel of national

manners and Jane Austen. Sir Walter Scott and the more important later romancers. T 4:00 to 6:00; 312Lib. Mr. Hillhouse.

For courses in Comparative Literature and in Composition see page 48.

ENTOMOLOGY AND ECONOMIC ZOOLOGY

Professors William A. Riley,* Arthur G. Ruggles, Maurice C. Tanquary; Associate Professors Alexander A. Granovsky, Julian G. Leach; Assistant Professors Samuel Eddy, Clarence E. Mickel.

Prerequisites.—Eighteen credits in zoology and entomology.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 117f-118w-119s. General Ecology. General ecology with special reference to the insects of Minnesota. Frequent field trips. Lectures, laboratory, and field work. TTh V-VII; 208-210Z. Mr. Eddy.
- 124su. Advanced Ecology. Similar to Course 117-118-119 with special field work.
- 125f-126w-127s. Advanced General Entomology. Morphology and classification of insects with lectures on the history of entomology. Lectures and laboratory. TThS III, IV; 208-210Z. Mr. Mickel.
- 139f-140w. Histology and Development of Insects. Lectures and laboratory work on the histology, embryonic and postembryonic development of insects. Individual work along these lines is available to properly qualified students under Course 197. TTh I, II, and ar.; 302Ad(F). Mr. Riley.
- 141f-142w. Insects in Relation to Plant Diseases. A study of the principal insect vectors and their habits; types of insect injuries affecting health of plants; modes of insect transmission and dissemination of plant diseases; the methods of rearing and handling the carriers. Of interest to students in entomology, plant pathology, horticulture, forestry, and agronomy. Prerequisites: Entomology, 8 credits and Plant Pathology, 8 credits or consent of instructors. Six credits. TThS III-IV; 302Ad(F). Mr. Granovsky, Mr. Leach.
- 144f-145w-146s. Animal Parasites and Parasitism. Lectures and laboratory work. Second term devoted primarily to the relation of insects to diseases of man and animals. WF V-VII; 208-210Z. Mr. Riley.
160. General Forest Entomology. Lectures, laboratory, and library work treating of the life history, habits, and ecological relationships of insects that affect trees and forest products.
- 175f. Insecticides and Their Action. Special studies of insecticides. Lectures and laboratory. Three credits. MWF I; Lab. ar.; 302Ad(F). Mr. Shepard.
- 176w-177s. Advanced Economic Entomology. A study of the principles of insect control and the history of economic entomology. Lectures. Three credits per quarter. MWF I; 302Ad(F). Mr. Ruggles.

* Absent on leave, 1931-32.

197f,w,s,su. Introduction to Research. Preparation for investigational work in lines of entomology, parasitology, ecology, or economic zoology. Summer work should be planned when possible. Mr. Eddy, ecology; Mr. Riley, parasitology, insect morphology; Mr. Ruggles, general economic entomology; Mr. Tanquary, apiculture; Mr. ———, economic vertebrate zoology; Mr. Mickel, systematic entomology; Mr. Shepard, insecticides.

COURSES PRIMARILY FOR GRADUATE STUDENTS

201-204. Research in Entomology. Mr. Riley, Mr. Granovsky, Mr. Mickel.
 205-208. Research in Economic Entomology. Mr. Ruggles.
 209-212. Research in Economic Vertebrate Zoology.
 261-264. Research in Parasitology and Medical Entomology. Mr. Riley.
 265-268. Research in Insecticides. Mr. Shepard.
 269-272. Research in Apiculture. Mr. Tanquary.

FARM MANAGEMENT AND AGRICULTURAL ECONOMICS

For courses and staff see Economics.

FINE ARTS

Assistant Professor Upjohn.

201f-202w-203s. A limited number of graduate students will be accepted for advanced study and reading under personal guidance. This work will be concerned with the history of art during historical periods, in various countries including the United States and with the genesis and development of art types, tendencies, and schools in architecture and the fine arts. Prerequisites: 18 quarter credits in Senior College in history of art or permission of the instructor. Three credits per quarter. Mr. Upjohn.

FORESTRY

Professors Henry Schmitz, John H. Allison, Edward G. Cheyney, Raphael Zon; Assistant Professors Randolph M. Brown, Louis W. Rees.

Prerequisites.—For major work, 27 credits in forestry, three quarters of botany or equivalent. For minor work, 9 credits in the department.

Exemptions from the language requirement for the Master's degree may be made in individual cases.

The choice in subject must be made by the candidate and approved by the chief of the division and instructor. The facilities of the forest experiment stations at Cloquet and Itasca are available to students taking this work.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

101w. Advanced Dendrology. A continuation of Course 3-4 with special studies in classification and distribution of the timber species of the world. Prerequisites: 10 credits in botany and 8 credits in dendrology. Three credits. TThS I; 301Hr(F). Mr. Rees.

- 112w. Advanced Forest Mensuration. Continuation of Course 10 with special emphasis on the application of alignment charts and correlation in forest mensuration. Ar. Mr. Brown.
- 113f. Wood Pulps and Papers. A detailed study of production of wood pulp and paper products. Lectures, reading, reports. Prerequisites: Course 33-34, Chem. 3 or 10 and Chem. 36. Three credits. Ar. 302Hr(F). Mr. Allison.
- 114f-115w. Mechanical and Physical Properties of Wood. Derivation and application of the formulas used in determining stresses in wood. Laboratory methods in timber physics. Lectures, laboratory, reading, and reports. Prerequisite: Course 33-34. Six credits. TThS I, II; 7Da(F). Mr. Rees.
- 116s. Mechanical and Physical Properties of Wood. Study of the physical properties of wood. Shrinkage, relation of strength to moisture content, etc., and their bearing on wood utilization. Laboratory reading and reports. Prerequisite: Course 114-115. Three credits. MWF I, II; 7Da(F). Mr. Rees.
- 119w. Advanced Wood Structure I. The microtechnique of woody tissues. Lectures, reading, and laboratory work. Prerequisite: Course 33-34. Three credits. Ar. Mr. Rees.
- 120s. Advanced Wood Structure II. Advanced study of the anatomy of woody plants. Reading, laboratory, and reports. Prerequisite: Course 119. Three credits. Ar. Mr. Rees.
- 125s. Wood Preservation. Lectures and collateral reading upon the history, development, and methods of wood preservation. Different systems now in use and preservatives used. MWF IV; 301Hr(F). Mr. Schmitz.
- 126f. Silvics. The fundamentals forming the basis of silviculture with special attention to the silvics of the important tree species. Lectures, readings, and required papers. TThS IV; 301Hr(F). Mr. Cheyney.
- 127w. Silviculture. A study of the general principles underlying the art of silviculture, and a brief study of the European methods as applied to American conditions. TThS III; 301Hr(F). Mr. Cheyney.
- 128s. Silvicultural Laboratory. Nursery practice and field planting. Field investigations and planting plans. Seed collecting, extracting, and storing. Dairy nursery and field work. Cloquet Forest Experiment Station. Mr. Cheyney.
- 129f. American Silvicultural Practice. A study of the silvicultural methods now being employed in the United States and the probable results of the application of other European methods. Lectures, references, and discussion. Three credits. TThS III; 301Hr(F). Mr. Cheyney.
- 130f. Forest Valuation. The business of forest management. A study of the different factors entering into the valuation of forest property. MTWThF I; 301Hr(F). Mr. Allison.
- 131w. Forest Policy and Administration. The policy of the United States and the states toward the utilization of the public forest resources. Policy of other owners toward forest resources controlled by them.

- Administration of the national and state forests. MTWFS IV; 301Hr(F). Mr. Allison.
- 132s. Forest Regulation Laboratory. Field work. The collection of the data necessary to work up a forest working plan. Includes the making of the timber estimates, growth studies, and maps necessary to a forest working plan. Cloquet Forest Experiment Station. Mr. Allison.
- 136f. Forest Economics. The place of the forest in the productive utilization of land; past and present markets and source of supply of timber and timber products, particularly with reference to the present situation in North America. MWF II; 301Hr(F). Mr. Allison.
- 140f. Forest Working Plans. A study of methods of regulating and allotting the cut from a forest under management. Preparation of a working plan. Lectures and reports. Ar.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201-202. Research Problems in Science and Practice of Silviculture. Mr. Cheyney.
- 203-204. Research Problems in Forest Management and Working Plans. Mr. Allison.
- 205-206. Research Problems in Forest Economics. Mr. Allison.
- 207f-208w-209s. Research in Wood Technology. Mr. Rees.
- 210f-211w-212s. Special Problems in Forest Research and Research Methods. Mr. Zon.
- 213f-214w-215s. Special Problems in Forest Utilization. Mr. Schmitz, Mr. Rees.
- 216f-217w. Forest Seminar. Mr. Zon.
- 218f-219w. Research Problems in Forest Mensuration. Mr. Brown.

GEOGRAPHY

Professor Darrell H. Davis; Assistant Professors Ralph H. Brown, Richard Hartshorne.*

Prerequisites.—For major work, Courses 1-2 or 11, 41, and 5 additional credits in geography, Economics 6-7, and Geology 1 or 8. For minor work, 10 credits in the department.

Exemptions from the language requirement for the Master's degree may be made in individual cases.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 101s. Geography of Europe. A study of the various European countries and their economic development. Prerequisite: 20 credits in social science, to include 10 credits in geography. Three credits. MWF VII; 103Bu. Mr. Dicken.
- 102w. Trade Routes and Trade Centers. A study of the major land and ocean routes, ports and interior trade centers, and the nature and sig-

* Absent on leave, 1931-32.

- nificance of the traffic. Prerequisite: Course 41. Three credits. TThS I; 103Bu. Mr. Hartshorne.
- 110s. Geography of South America. A study of the major geographic regions of South America, with emphasis upon the economic activities and their geographic basis. Prerequisite: 20 credits in social science, to include 11 or 41. Three credits. MWF VI; 103Bu. Mr. Brown.
- 111s. Cartography. The construction and use of maps and graphs. Prerequisite: 10 credits in senior college work in geography, geology, history, or other subject in which the use of maps is necessary. Three credits. MWF III; 105Bu. Mr. Hartshorne. (Not offered in 1931-32.)
- 120w. Geography of Asia. Areal differentiation in the major geographic regions of Asia. Special consideration of China, Japan, and India. Prerequisite: 20 credits in social science, to include 11 or 41. Three credits. MWF III; 105Bu. Mr. Davis.
- 133w. Climatology. Weather and climate in their relation to man and his activities. Prerequisite: Course 11. Three credits. MWF I; 103Bu. Mr. Brown.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 235s. Geography of Minnesota. A regional economic study of the state. The basis for existing industry and city development will receive special consideration. Prerequisite: 12 credits in geography, or 20 credits in social science to include at least 9 credits in geography. Permission of instructor necessary. Three credits. MWF I; 105Bu. Mr. Davis.
- 241f,s. Field Course in Geography. A consideration of the problems of field work, illustrated by field trips. Prerequisite: 18 credits in geography. Three credits. Hrs. ar. Mr. Davis.
- 251f-252w-253s. Seminar in Geography. A survey of current literature with reports and discussion on assigned topics. Prerequisite: 20 credits in geography or permission of instructor. Three credits. Th VII; 105Bu. Mr. Davis and staff.
- 301f,w,s. Research Problems in Geography. Credits and hours arranged. Mr. Davis, Mr. Hartshorne, Mr. Brown.

GEOLOGY AND MINERALOGY

Professors William H. Emmons, Frank F. Grout, Clinton R. Stauffer; Associate Professors John W. Gruner, George M. Schwartz, George A. Thiel.

Prerequisites.—For major work in geology: Elementary courses in geology, such as Courses 1 and 2, or their equivalent; Mineralogy 23 and 24; General Chemistry, such as Courses 1, 2 and 3, or equivalent. In addition, for those specializing in mineralogy, petrography, and economic geology, elementary physics, such as Courses 3 and 4, or equivalent, is required; and for those specializing in paleontology or stratigraphy, Index Fossils (Course 91-92-93) and Elementary Zoology, such as Courses 1 and 2, or their equivalent, are required. Students who have not had the

necessary prerequisites may take them without credit along with other work for which they are prepared.

Whatever field of special interest is pursued, it is expected that the student registering for the doctorate in this department will take some courses in each of the major divisions of geology, if he has not already had them, and those conducting the preliminary examination will assume that this has been done.

A student selecting some branch of geology as a major will not be allowed to select general geology as a minor. It is always preferable that the minor be taken outside of the major department.

Exemptions from the language requirements for the Master's degree may be made in individual cases. Students who are deficient in modern languages are advised to take a language along with their graduate work. Examinations in French or German are required of candidates for service on the United States Geological Survey.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

101. Sedimentation. The origin of sedimentary rocks and their primary structures; interpretation of sediments in relation to paleogeography. Lectures and assigned readings. Three credits. MWF IV. Mr. Thiel.
- 102w-103s. Micropaleontology. The study and classification of Foraminifera, diatoms, and other small fossil organisms and their use for purposes of correlation in oil fields. Three credit hours of laboratory work. Hours arranged. Winter and spring quarters. Open to students who have had Geology 11 or 91, and 105. Mr. Stauffer.
- 105f. Elements of Rock Study. Prerequisite: Course 25. Three credits. TTh VI, VII; 110P. Mr. Grout.
- 106w. Petrography. The identification and study of minerals and rocks by optical methods; the study of igneous rocks, crystalline schists, and metamorphic rocks. The origin and classification of rocks. Prerequisite: Course 105. Three credits. MF VII, VIII; 110P. Mr. Grout.
- 107f-108w-109s. 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. Prerequisite: Course 91-92-93. Nine credits. MWF V, VII; 105P. Mr. Stauffer.
- 111f. Ore Deposits. The nature, distribution, and genesis of ore deposits of the United States; relations of ore deposits to geologic structure; the deformation and superficial alteration of ore deposits. Prerequisites: Courses 10, 105. Three credits. TThS I; 110P. Mr. Emmons.
- 112w. Geology of Petroleum. The first part treats of deposits of metals, giving special attention to those outside of the United States. The second half deals with the nature, origin, and distribution of petroleum and with the various oil fields of the world. Prerequisite: Course 111. Three credits. TThS I; 110P. Mr. Emmons.
- 113s. Problems in Ore Deposits. Field excursions, map work, lectures on field and laboratory methods. Prerequisite: Course 112. Three credits. Th VI-IX; 110P. Mr. Emmons.

- 121f. Crystallography. The symmetry relations in the thirty-two crystal classes. Crystal drawings and measurements. Projections and mathematical calculations. Prerequisites: Mathematics 7 and elementary inorganic chemistry. Three credits. Hrs. ar.; 100P. Mr. Gruner.
- 124w-125s. Structural and Metamorphic Geology. The conditions, processes, and results of metamorphism; structural features resulting from deformation under varying conditions of load. Prerequisites: Courses 9 or 10, 105. Six credits. MWF VI; 208P. Mr. Schwartz.
- 127f. Geology of the Lake Superior Region. Structure and correlation of districts. Interpretation of field notes and survey reports. Practical problems. The use of geologic bibliographies and literature. Prerequisite: Course 124-125. Three credits. Hrs. ar. Mr. Thiel.
- 131f-132w-133s. Advanced Petrology. Advanced optical methods. Regional and genetic studies. Petrographic reports. Prerequisite: Course 106. Nine credits. TThS II-III; 200P. Mr. Grout.
- 137f. Testing Economic Minerals. Laboratory tests of coal, clay, oil, building stone, and metallic ores. Prerequisites: Courses 1, 105. Three credits. MT VI-VIII; 200P. Mr. Gruner.
- 140w-141s. Applied Petrography. Determination of ore and gangue minerals, microscopic studies of paragenesis of ores and other mineral associations. Practical problems in mining and geology, settled by microscopic and optical examination. Prerequisite: Course 131. Six credits. MW I, MWF II; 200P. Mr. Grout, Mr. Gruner.
- 144w-145s. Construction and Interpretation of Geologic Maps. Methods of geological examination; study and problems in construction and interpretation of geologic maps. Prerequisite: Course 9 or 10. Six credits. TTh VII-IX.
- 149s. Methods of Field Geology. General methods of field work necessary for Course 150. Mr. Schwartz.
- 150s. Field Geology. Detailed, systematic work, conforming to official surveys. Reports to be written week before college opens. For prerequisites see members of the department. Credits arranged. Mr. Emmons, Mr. Schwartz.
- 151f-152w-153s. Advanced General Geology. Geologic processes and their results; development of the North American continent. Prerequisite: Course 9. Nine credits. MWF III; 210P. Mr. Stauffer.
- 161w. Crystal Structure. Study of point groups and space groups. Diffraction of X-rays by crystals. Interpretation of powder and Laue diagrams. Prerequisites: Course 121, elementary physics, and analytical geometry. Three credits. Hrs. ar.; 100P. Mr. Gruner.
- 166f-167w. Mineralography. Methods of studying opaque minerals and application of the methods to problems in ore genesis and history. Prerequisite: Course III. Six credits. Hrs. ar.; 207P. Mr. Schwartz.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 211f-212w-213s. Advanced Paleontology. Selected groups of fossils. Class work supplemented by reference reading and thesis. Nine credits. Mr. Stauffer.

214. Seminar in Ore Deposits. Three credits. Mr. Emmons.
- 215s. Geology and Ore Deposits of the Western Hemisphere. Open to graduate students and to those undergraduates who have had Course 111. Three credits. Mr. Emmons.
- 216s. Geology and Ore Deposits of the Eastern Hemisphere. Prerequisites same as for Course 215. Three credits. Mr. Emmons.
220. Glacial Geology. The drift sheets, glacial lakes, the gorge of St. Anthony Falls, the dalles of the St. Croix, and other problems. Lectures, reference reading, and field work. Hrs. ar.
241. Field Course in Geology. To be arranged with individual students upon application to the department. Credit will be given for field work done satisfactorily as prescribed in the joint announcement of various universities.
- 243-244. Research Course in Geology. Advanced work in general geology; chiefly individual work on selected subjects. Data and collections of material gathered in the course of field work studied under instructor. Methods follow standards of federal and state surveys. Mr. Emmons, Mr. Grout, Mr. Stauffer.
246. Pre-Cambrian Geology. The problems of pre-Cambrian correlation and structure; the pre-Cambrian stratigraphy of North America. Given in alternate years. Three credits.
- 251-252. Original Problems. Morphology and physical measurements of minerals. Three credits each. Mr. Gruner.
- 253-254. Research Course in Ore Deposits. Methods of Course 243-244 applied to ore deposits. Three credits each. Mr. Emmons, Mr. Grout, Mr. Gruner, Mr. Schwartz.
- 263-264. Research Course in Petrology. Methods of Course 243-244 applied to petrology. Three credits each. Mr. Emmons, Mr. Grout.

GERMAN

Professors Samuel Kroesch, Oscar C. Burkhard; Associate Professor George Lussky; Assistant Professors James Davies, Frederick L. Pfeiffer.

Prerequisites.—For major work, 27 senior college quarter credits or equivalent. For minor work, 18 senior college credits or equivalent.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 107su. Historical German Grammar. Phonology, inflection, word formation, syntax. Intended primarily for prospective teachers of German. Three credits. Mr. Kroesch.
- 108s. Comparative Phonetics. A study of speech sounds and the nature of their production, with special reference to English, French, and German. Open to students in the modern languages. Three credits. MWF III; 207F. Mr. Kroesch.
- 115-116-117. Middle High German Literature. Heldenepos, Höfisches Epos, Minnesang. Nine credits. Th VI, VII, VIII. Mr. Kroesch.

- 120-121-122. Proseminar: History of German Literature. This course provides the necessary background for graduate work in German literature, and serves as an introduction to bibliography, methodology, and literary criticism. Required of all graduate majors in German. (Offered in 1932-33.)
- 120f. German Literature through the Reformation Period. Mr. Kroesch.
- 121w. The Seventeenth and Eighteenth Centuries. Mr. Burkhard.
- 122s. The Nineteenth Century. Mr. Pfeiffer.
- 143f-144w-145s. The Classical Period. From Gottsched through Goethe. Nine credits. W VI, VII, VIII. Mr. Lussky.
- 150f-151w-152s. Die Novelle. A study of the technique and development. Assigned readings and reports. Nine credits. Mr. Burkhard.
- 160f-161w-162s. Lyric Poetry of the Eighteenth and Nineteenth Centuries. Nine credits. M VI, VII, VIII; 209F. Mr. Davies.
- 163f-164w-165s. German and English Literary Relations in the Sixteenth, Seventeenth, and Eighteenth Centuries. Nine credits. M VI, VII, VIII; 211F. Mr. Davies. (Offered in 1932-33.)
- 173f-174w-175s. Modern Novel 1890-1930: Thomas Mann, Heinrich Mann, Ricarda Huch. F VI, VII, VIII. Mr. Pfeiffer.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 202f-203w. Gothic. The course is designed as an introduction to Germanic linguistics and to a comparative study of the Indo-European languages. Six credits. Mr. Kroesch.
- 204s. Old Saxon. The Heliand. Three credits. Mr. Kroesch.
- 209f-210w-211s. Old High German. Alternates with Course 215-216-217. The older High German dialects serve as a basis for a study of historical German grammar. Nine credits. Mr. Kroesch. (Offered in 1932-33.)
- 215f-216w-217s. Middle High German. Phonology, morphology, and syntax. Nine credits. MWF VIII; 207F. Mr. Kroesch.
- 218f-219w-220s. Seminar. Prerequisite: A good knowledge of at least two Germanic dialects. Comparative grammar of the Indo-European languages with special reference to the principal German dialects. Investigations in the comparative phonology, syntax, and semantics of these dialects. Six or nine credits. Mr. Kroesch.
- 253f-254w-255s. Nineteenth Century Drama: Kleist, Grillparzer, Hebbel. Nine credits. T VI, VII, VIII; Ar. Mr. Burkhard. (Offered in 1932-33.)

GREEK

Professor Charles Albert Savage.

Prerequisites.—For major work, Courses 105, 106 or 107, 108, or their equivalent. For minor work, Courses 51 (Philosophy), 52 (Oratory), 53 (Dramatic Poetry), or their equivalent.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 105f. Lyric Poetry. Selections from the elegiac, iambic, lyric, and bucolic poets. Three times a week. Prerequisites: Courses 51 and 53 or 52 and 53. Three credits. Ar.; 112F. Mr. Savage.
- 106w. 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. Three times a week. Prerequisite: Course 53 or 105 or equivalent. Three credits Ar.; 112F. Mr. Savage.
- 107w. Advanced Prose. Selections from Plutarch or Lucian. Alternates with Course 106. Equivalent prerequisites. Ar.; 112F. Mr. Savage.
- 108s. Advanced Epic Poetry. A course of rapid reading in the *Iliad* or the *Odyssey*. Three times a week. Prerequisite: Course 105 or 106. Three credits. Ar.; 112F. Mr. Savage.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201-202-203. Oratory (advanced). A study of the development of oratorical style among the Greeks; selected readings. Twice weekly, one, two, or three quarters. Mr. Savage.
- 204-205-206. Dramatic Poetry (advanced). The reading and critical study of representative Greek plays. Twice weekly, one, two, or three quarters. Alternates with 201-202-203. Mr. Savage.
- 207-208-209. Seminar in Philosophy or Oratory. Once a week, one, two, or three quarters. Mr. Savage.
- 210-211-212. History (advanced). Selected readings from Greek historians. Once a week, one, two, or three quarters. Alternates with 207-208-209. Mr. Savage.

HISTORY

Professors Guy Stanton Ford, Alfred L. Burt, Herbert Heaton,* August Charles Krey, Lester Burrell Shippee, Albert Beebe White; Associate Professors Theodore C. Blegen, George M. Stephenson; Assistant Professors Harold Deutsch, Ernest Osgood, Lawrence D. Steefel, Faith Thompson, Alice F. Tyler, David H. Willson.

Prerequisites.—Of the four fields in which general survey courses in history are usually given, namely, ancient, American, English, and European, students entering upon graduate work in history will usually be expected to have covered two or three courses, with credit not exceeding 18 hours. For the other 9 hours, they should have a more advanced course in one of these fields and a second course in some field of history in which intensive work is done with the beginnings of investigation. In meeting these requirements consideration will be given to work done from the historical point of view in others of the social sciences, especially political science. The department attaches considerable importance to adequate preparation in the foreign languages, which may be used by the

* Absent on leave, 1931-32.

student in the course of advanced and research work. An especially good equipment here will be taken into consideration in weighing the student's preparation for graduate work.

REQUIREMENTS FOR THE PH.D. IN HISTORY

Candidates will be expected to fulfill the general requirements as given in this bulletin, pp. 16-20.

Preliminary Examination

For a major in history, the candidate shall choose five fields from those listed below. At least one period or field shall be chosen from groups A or B and at least one from groups C or D. Three of these fields, including that containing the subject of the proposed thesis must be related. The selection of these fields must be made in consultation with and subject to the approval of the chairman of the candidate's examination committee. These selections shall be reported by the adviser to the chairman of the History Department. In exceptional cases, the department may approve fields not included in the list.

The preliminary examination will cover the minor and four of the periods or fields chosen for the major. That field in which the candidate intends to do special work shall be reserved for the final examination. The scope of this reserved field shall be indicated to the department and approved by it at the time when the candidate is certified for the preliminary examination. Only in exceptional cases shall it cover less than one of the five fields selected from the following list:

Group A

1. The Old Orient
2. Greece
3. Rome

Group B

1. Europe, 395-1300
2. England to 1485
3. Renaissance and Reformation
4. Economic History, 1300-1600

Group C

1. England since 1485
2. Europe, 1559-1789
3. Europe, 1789 to Present
4. Economic History, 1600 to Present

Group D

1. The United States to 1789
2. The United States, 1789-1865
3. The United States since 1865
4. Economic History of the U. S., 1790-1860
5. Economic History of the U. S. since 1860

Group E

1. Asia since 476
2. European Colonies and Dependencies
3. Latin America

Final Examination

In this examination, taken after the successful completion of the preliminary examination and the acceptance of the candidate's thesis, the emphasis shall be placed upon testing the highly detailed knowledge of the student in his special subject. It shall cover that subject reserved in the

preliminary examination, and under the rules of the Graduate School, is given by the same committee that sat in the preliminary examination. This examination includes the usual defense of the thesis, its methods, results and contribution to the field investigated.

GENERAL REQUIREMENT

201f-202w-203s. *Historical Bibliography and Criticism*. Required of candidates for advanced degrees in history who do not present evidence of similar training elsewhere. S I; 339Lib. Mr. Ford, Mr. White, and others.

Courses numbered 150 to 200 are open to seniors and graduates; prerequisites are the appropriate survey courses (see courses numbered 50 to 100 in bulletin of the College of Science, Literature, and the Arts). Graduate students who do not present the appropriate survey courses or their equivalent are required to carry such courses without credit; in cases where such procedure is feasible the student may register for the course numbered above 149 and also attend the meetings of the appropriate survey course, being therein held responsible for class exercises and examinations if the instructor and major adviser consider it advisable.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 150f-151w-152s.† *Topics in Ancient European History*. Mr. Deutsch.
- 153f-154w-155s.† *Topics in Medieval European History*. One or more of the following topics will be studied in small groups: Break-up of Roman Empire; the Crusades; Empire and Papacy; Rise of Feudalism; Fendal Institutions; European Migrations; Rise of National States; Intellectual Development; the Renaissance; the Reformation; Rise of Towns, etc. Nine credits. Ar. Mr. Krey.
- 156f-157w-158s.† *Topics in Modern European History*. One or more of such topics as the following will be studied in small groups: Age of Louis XIV; the Eighteenth Century; French Revolution and Empire; Restoration and Revolution; Second French Empire; Making of Italy and Germany; International Relations, 1871-1914; Europe since 1914; the Eastern Question; Modern Russia, etc. Nine credits. Ar. Mr. Deutsch, Mr. Steefel.
- 170f-171w-172s.† *Topics in English History*. One or more of such topics as the following will be studied in small groups: Beginnings of Parliament; Legal History (Anglo-Saxon Law, the Age of Glanvill, of Bracton, of Edward II, etc.); Local Self-Government in Medieval England; Parliament and Administration in the Fourteenth Century; Antiquarianism and Political Theorists; the Tudors and Stuarts; England in the Nineteenth Century; British India; etc. Nine credits. Ar. Mr. White, Miss Thompson, Mr. Willson.
- 176f-177w-178f.† *Topics in Canadian History*. Mr. Burt.
- 180f-181w-182s.† *Topics in Economic History*. Mr. Heaton.
- 190f-191w-192s.† *Topics in American History*. Such topics as the Colonies, the Revolution and Making of the Constitution, Political Parties, Civil

War and Reconstruction; Immigration; the West; History of Minnesota; American Agriculture and Rural Life, American Diplomacy, Recent American Development; etc. Nine credits. Ar. Mr. Buck, Mr. Shippee, Mr. Blegen, Mr. Stephenson, Mr. Osgood, Mrs. Tyler.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 204f-205w-206s. Seminar in Medieval History. Nine credits. Ar. Mr. Heaton, Mr. Krey, Mr. White.
- 208f-209w-210s.† Seminar in American History. Required of graduate students whose major field is American history. The first term will be principally occupied with bibliography and technical topics. Selected fields in American history will be studied in other terms. Nine credits. S III, IV; 301Lib. Mr. Shippee, Mr. Blegen, Mr. Stephenson.
- 221f-222w-223s.† Seminar in Economic History. Nine credits. Mr. Heaton.
- 224f-225w-226s.† Seminar in Modern European History. Nine credits. Th VIII, IX; 315Lib. Mr. Deutsch, Mr. Steefel.

HOME ECONOMICS

Professor Wylle B. McNeal; Associate Professors Alice Biester, Clara M. Brown, Alice M. Child, Harriet Goldstein, Jane Leichsenring, Marion Weller; Assistant Professor Ethel Phelps.

Prerequisites.—Students desiring to major in Home Economics must present undergraduate subject-matter credits in certain of the following: social sciences, physical sciences, biological sciences, art and education— which shall be satisfactory to the adviser under whose direction the major work is to be done. In addition the student must have adequate undergraduate training in that field of Home Economics in which she wishes to specialize.

Students majoring in Home Economics for a Master's or a Doctor's degree and those minoring in this division for the Doctor's degree must include either Course 209, 279, 289, or 299 in the study program.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 102f,s. Advanced Textiles. An intensive study of textile materials with special reference to the following: nature of the raw materials; economic, chemical, and physical applications involved in their manufacture and use; methods and significance of physical testing. Prerequisites: Textiles 5 cred., Org. Chem. 5 or 6 cred., Principles of Economics 5 cred., or parallel. Three credits. TTh VI, VII, VIII; 307-311HE. Miss Phelps.
- 107w. Textile Analysis. Problems and application of quantitative methods in textile analysis with special reference to establishing standards for fabrics. Prerequisites: Course 102, Agr. Biochem. 2. Three credits. MWF VI, VII, VIII; 311HE. Miss Phelps.

- 115f,w. Clothing Economics. A study of the economic aspects of clothing which directly or indirectly affect the consumer. Prerequisites: Course 13, Agr. Econ. 1. Two credits. TTh III; 203HE. Miss Weller.
- 131f,w,s. Home Management: House Planning and Equipment. Study of the small house which aims at more intelligent planning in building and furnishing. House plans, kitchen arrangements, and equipment of house studied from homemaker's point of view of economy, convenience, and beauty. Prerequisite: Course 53. Five credits. Fall, MTWFS III, IV; winter, MTWThF VI, VII; spring, Sec. 1, MTWFS III, IV; Sec. 2, MTWThF VI, VII; 401HE. Miss H. Goldstein, Miss V. Goldstein.
- 136s. Problems of Income Management. An intensive study of problems relating to individual and family budgets. Readings, discussions, and field work. Prerequisites: Courses 34, 35, 170, Agr. Econ. 126 or parallel. Three credits. MWF II. Miss Studley.
- 150f,w,s. Art History and Appreciation. The historical development of painting, sculpture, architecture, decoration, furniture, and costumes, studied with special emphasis on design and influence upon modern styles. Prerequisite: Course 51 or equivalent. Three credits. MWF VIII; 313HE. Miss H. Goldstein, Miss V. Goldstein.
- 152w. Advanced Interior Design. Special problems of small house decoration, involving execution of elevation drawings. Studies and reports on topics of historical and practical interest. Actual materials used as far as possible. Prerequisites: Courses 53, 131, or parallel, 150. Three credits. MWF I, II; 401HE. Miss V. Goldstein.
- 154s. Advanced Costume Design. Study of figure construction. Relation of color and texture to dress design. Studies and reports on assigned topics. Laboratory work with fabrics. Designs in pencil and water colors. Prerequisites: Courses 13, 53, 55 recommended. Three credits. TThS I, II; 401HE. Miss H. Goldstein.
- 163s. Institution Management Problems. Problems affecting the efficient administration of the institution; departmental organization, operation, maintenance; employment problems; business policies. Field trips to various types of institutions. Prerequisites: Courses 61, 63. Three credits. Lect., TTh III; 106HE.; lab., S III, IV; DiH. Miss Dunning.
- 170f,w,s. Nutrition of the Family. The fundamental principles of human nutrition as applied to the feeding of individuals and groups under conditions of health. Prerequisites: Courses 80 or 81, Agr. Biochem. 4, Physiol. 4. Three credits. Fall and spring, Sec. 1, MWF I; Sec. 2, MWF IV; winter, MWF I; 203HE. Miss Biester, Miss Hunt.
- 171f,w,s. Child Nutrition. Lectures, discussions, and field work dealing with the principles of child nutrition and with the formation of desired food habits. Prerequisites: Course 170, H.E.Ed. 40. Three credits. Lect., MW III, F III, IV; lab., IV, day to be arranged before completing registration; 213HE. Miss Leichenring.
- 173s. Nutrition in Disease. A study of the fundamental principles involved in using diet in the treatment of certain diseases. Prerequisites: Courses 170, 175. Three credits. Lect., MWF VII; 213HE. Miss Hunt.

- 175f,w. Nutrition II. Metabolism, including work on tissues, blood, milk, and urine. Prerequisite: Course 73. Four credits. Fall, MTWTh I, II; winter, MWF VI, VII, VIII; 211,213HE. Miss Biester, Miss Hunt.
- 176w. Advanced Nutrition. Selected quantitative methods applicable to investigations relating to digestion and metabolism. Prerequisites: Course 73, Agr. Biochem 2. Four credits. Lect., T I; lab., Th I, II, III; TS II, III, IV; 311,313HE. Miss Biester.
- 177w,s. Digestion and Metabolism. An intensive study of problems relating to digestion and metabolism involving lectures, reading, demonstrations, and laboratory work. Prerequisites: Course 175, Agr. Biochem. 2. Three credits. TTh VI, VII, VIII; 213HE. Miss Leichsenring.
- 178f,w,s. Clinical Problems in Nutrition. The application of nutrition information to problems in health and disease involving assigned readings, discussions and experience in a clinic or with case work. Two credits. Prerequisite: 71 or parallel, 170 or parallel, 175. Limited to 8. Lect. T VI; lab. Th VI, VII, VIII. Miss Hunt.
- 179w,s. Readings in Nutrition. A course designed to give intensive experience in the use of nutrition books and periodicals, involving assigned readings, oral and written reports. Prerequisite: Course 170. Two credits. Winter, MW IV; spring, TTh I; 213HE. Miss Biester, Miss Leichsenring.
- 182f,w,s. Experimental Cookery. An intensive study of problems in foods and food preparation with individual laboratory problems. Prerequisite: Course 80. Three credits. Fall, winter, TTh I, II, III, MW VI, VII, VIII; spring, TTh I, II, III; 107HE. Miss Child.
- 183f,w,s. Experimental Cookery. An intensive study of problems in foods and food preparation with individual laboratory problems. Prerequisite: Course 80. Five credits. Fall, winter, TTh I, II, III, MW VI, VII, VIII; spring, TTh I, II, III and 4 hrs. ar.
- 186w,s. Special Food Problems. Individual problems in foods and food preparation. Prerequisite: Course 182. Three credits. Spring, TTh VI, VII, VIII; 107HE. Miss Child.
- 187w,s. Special Food Problems. The same as Course 186 with additional problems. Prerequisites: Course 182, Agr. Biochem. 2. Five credits. TTh VI, VII, VIII, and 4 hrs. ar.; 107HE. Miss Child.
- 195s. Home Economics Survey. A discussion of the historical development of home economics with special emphasis upon current problems. Two credits. TS IV; 203HE. Miss McNeal.

COURSES PRIMARILY FOR GRADUATE STUDENTS

202. Animal Fibers. An advanced course dealing with the structure, composition, chemical and physical properties, and special problems of manufacture of wool and silk in relation to their use. Prerequisites: Quant. Chem. 5 cred., Org. Chem. 5 or 6 cred., Adv. Textiles 3 cred. Two credits. Hrs. and days. ar. Miss Phelps.

204. Plant and Manufactured Fibers. Study of the structure, composition, physical and chemical properties, and special problems of manufacture of cotton, flax, artificial silk and certain minor fibers in relation to their use. Prerequisites: Bot. 5 cred., Quant. Chem. 5 cred., Org. Chem. 5 or 6 cred., Adv. Textiles 3 cred. Two credits. Hrs. and days ar. Miss Phelps.
- 209f,w.s. Seminar in Textiles and Clothing. Reviews and interpretations of the literature of this field, emphasizing recent advances and involving individual assignments and oral or written reports. Registration with permission of the instructor. One credit. Hrs. and days ar. Miss Phelps.
210. Microanalysis of Textile Fibers. Laboratory applications of histological and microchemical methods in the study of textile materials. Prerequisites: Bot. 5 cred., Biol. Sci. 10 cred., Org. Chem. 5 or 6 cred., Textile Analysis 3 cred. Two or three credits. Hrs. and days ar. Miss Phelps.
- 270f-271w. Principles of Human Nutrition. An advanced course dealing with certain aspects of digestion, metabolism, excretion, and food requirements under various conditions. Prerequisites: Courses 170, 175. Three credits each quarter. Hrs. and days. ar. Miss Biester, Miss Leichsenring.
- 279f,w.s. Seminar in Nutrition. Reviews and interpretations of the literature of this field, emphasizing recent advances and involving individual assignments and oral or written reports. Registration with permission of the instructor. One credit. Hrs. and days ar. Miss Biester, Miss Leichsenring.
- 289f,s. Seminar in Foods. Reviews and interpretations of the literature in the field of foods and experimental food preparation involving individual assignments and oral or written reports. Registration with permission of the instructor. One credit. Hrs. and days ar. Miss Child.
- 295f,w, 296s. Home Economics Problems. Opportunity is offered for the investigation of selected problems in home economics in fields such as foods, nutrition, textiles, home management and related art. One to five credits. Hrs. and days ar. Miss Biester, Miss Brown, Miss Child, Miss H. Goldstein, Miss Leichenring, Miss Phelps, Miss Studley.
- 299f,w.s. Home Economics Seminar. A critical study of recent advances in home economics, involving outside reading and oral or written reports. One credit. Hrs. and days ar. Miss McNeal, Miss H. Goldstein, Miss Studley.

HOME ECONOMICS EDUCATION

Professor Wylle B. McNeal, Associate Professor Clara M. Brown.

Prerequisites.—For a minor adequate preparation in psychology, educational psychology, education, and home economics must be presented.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 141f. Vocational Education in Home Economics. The place and development of home economics in the vocational education program. Study of the problems of the all day, evening, and part time schools. Prerequisite: Course 42. Two credits. Hrs. and days ar. Miss McNeal, Miss Brown, Miss Rose.
- 142af,w. Educational Measurement in Home Economics. Problems of measurement in home economics; home economics tests and scales; construction and evaluation of objective tests. Prerequisite: Course 42. Two credits. Hrs. and days ar. Miss Brown.
- 142bw. Educational Measurement in Home Economics. A continuation of Course 142a, dealing with methods of interpretation and utilization of test data. Prerequisites: Course 142a, Ed.Psy. 60. Two credits. Hrs. and days ar. Miss Brown.
- 143s. Home Economics Curricula. The objectives of home economics in junior and senior high schools; recent surveys and other investigations used in determining curriculum content; home economics courses of study. Prerequisite: Course 42 or parallel. Two credits. TTh VIII; 213HE. Miss Brown, Miss Rose.
- 147w. Organization and Methods for Related Art Teaching. Organization of a related art course and methods of teaching art principles as applied to familiar objects and processes. Prerequisites: Courses 53, 131 or parallel. Three credits. TThS III; 402HE. Miss H. Goldstein.
- 149f,w,s. Research Problems. A study of the methods used in collection, treatment, and interpretation of data in the field of home economics. Credits arranged. Hrs. and days ar. Permission of instructor. Miss Brown.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 242f,w,s. Problems in Home Economics Education. Current problems in home economics education will be studied. Required of all candidates minoring in home economics education. One credit. Graduates only. Hrs. and days ar. Miss McNeal, Miss Brown, Miss Rose.
- 243f,w,s. Administration and Supervision of Home Economics. A study of the duties and problems of teacher trainers, city and state supervisors of home economics. Prerequisites: Courses 42, 49, 143 or equivalent. Three credits. Graduates only. Hrs. and days ar. Miss McNeal, Miss Rose.
- 245f,w,s. Seminar in Home Economics Education. A research course for graduate students. Required of all students writing theses in Home Economics Education. Does not carry credit as course work.

HORTICULTURE

Professor William H. Alderman; Associate Professors Wilfrid G. Brierley, Rodney B. Harvey; Assistant Professors Troy M. Currence, Fred A. Krantz, Lewis E. Longley, Arthur N. Wilcox.

Prerequisites.—For major work, 15 credits; for minor work, 9 quarter credits in department in addition to 2 years in botany and 1 in entomology.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 107f. Orchard Management. A detailed study of the various operations in orchards and berry fields. Operating costs and profits. Lectures, laboratory, and individual problems. Prerequisites: Course 6 and Bot. 9 credits. Three credits. TS IV, W VI, VII; 210Hr. Mr. Brierley.
- 110w. Horticultural Crop Breeding. Applied genetics is emphasized. Methods of breeding each of the important horticultural crops with special attention to experiment station investigations and to the methods used by plant breeders. Prerequisite: Agron. 131. Three credits. TThS III; 215Hr. Mr. Wilcox.
- 111f. Systematic Pomology. A study of fruit varieties. Lectures, laboratory, and a survey of the literature. Prerequisites: Course 6 and Bot. 9 credits. TTh VI, VII, VIII; 8Hr. Mr. Brierley.
- 121w. Small Fruit Culture. Cultural practices for each of the small fruits; botanic relationship; history of commercial development. Lectures, problems, and survey of literature. Prerequisites: Course 6 or 32. Three credits. MWF I; 102Hr. Mr. Brierley.
- 135f. Truck Crops and Potatoes I. Truck crop production as an applied science. The crop or the plant is used as the unit of consideration and the sciences used to explain cultural practices and plant behavior. Prerequisites: Course 32 and Bot. 9 credits. Three credits. Mr. Currence.
- 137w. Truck Crops and Potatoes II. Continuation of Course 135f. Prerequisites: Course 32 and Bot. 9 credits. Three credits. Mr. Krantz.
- 190f-191w-192s. Special Problems. A study of problems based upon the work given in the preceding courses. Two to four credits per quarter. Horticultural staff.
- 193f-194w-195s. Horticultural Seminar. Reports and discussions of problems and investigational work. Required of graduate students. One credit per quarter. Horticultural staff.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 242w. Horticultural Crop Breeding Topics. A survey of the recent researches in the breeding of horticultural crops. Two credits. Mr. Krantz, Mr. Wilcox.
- 243f-244w. Advanced Topics in Horticulture. A critical analysis of recent research on horticultural crops. Three credits per quarter. Mr. Alderman, Mr. Brierley, Mr. Harvey, Mr. Currence, Mr. Longley.
- 245f-246w. Growth Factors in Crop Production. An analysis of growth and environmental factors as applied to crop plants. Two credits per quarter. Mr. Harvey.

JOURNALISM

Professor Ralph D. Casey.

Prerequisites.—A total of 27 quarter credits in Journalism and English, distributed as follows:

In Journalism, a minimum of 15 credits including reporting, copy reading, and newspaper make-up, and special feature articles. In English, additional credits to make up the 27 credits, including a sophomore English composition course. Freshman composition will not satisfy the requirement. A reading knowledge of at least one foreign language.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

Fees.—A typewriter fee of \$1 is charged each quarter to all students registered for one or more Journalism courses other than Journalism 5.

- 101w. Reporting of Public Affairs. A review of city, county, state, and national government as a background for reporting. Advanced practice in the writing of news stories. Prerequisites: Course 52 and 10 credits in political science. Three credits. TThS II; 14P. Mr. Ford.
- 103s. Literary Aspects of Journalism. A study of the best journalistic work of such writers as Kipling, Sir Philip Gibbs, Richard Harding Davis, Ambrose Bierce, William Allen White, Will Irwin, Ben Hecht, Don Marquis, etc. Lectures, outside reading, and some practice in writing. Prerequisite: English 21-22. Three credits. MWF III; 10P. Mr. Ford.
- 110s. History of Journalism. A study of the evolution of the newspaper in England and the United States with special reference to the problems of present day journalism. Prerequisite: Course 15. Three credits. MWF II; 14P. Mr. Casey.
- 111f. Foreign News Sources. An examination of foreign news and the methods by which it is obtained and prepared for American readers. The importance of foreign news, the methods of correspondents in various countries, the newspapers in those countries, and some of the factors affecting the news from those countries considered. This is not a course for training foreign correspondents but is intended to help the reader understand the background of foreign news. Prerequisite: Course 41 or 51 or at least one history or political science course in international relations, or permission of instructor. MWF III; 14P. Mr. Desmond.
- 112w. Current Newspaper Problems. A study of contemporary matters of importance in journalistic fields, such as the growth of the chain newspapers, the radio in its relation to the newspaper, the professionalization of journalism, changing news values, and ethics of journalism. Prerequisite: Course 110 or 111. Three credits. MWF III; 10P. Mr. Desmond.
- 130f-131w-132s. The Press and Public Opinion. Research dealing with the various ways in which newspapers and magazines attempt to influence public opinion. A study of the technique and effectiveness of these methods. Prerequisite: 20 credits in sociology, psychology, or political science. Nine credits. MWF IV; 10P. Mr. Casey.

- 140f-141w-142s. Contemporary Affairs. A study of important state, national, and world problems about which the newspaper man must be informed and concerning which he must serve as interpreter. The course will aim to unify the separate social studies which students have had in other departments of the university, with a view to the focusing of these studies on contemporary questions. Prerequisites: Course 110 and 20 credits in social science. Nine credits. TTh 1:30 to 3:00; 14P. Mr. Casey, Mr. Olson, Mr. Desmond.
210. Research in Newspaper Problems. Individual research in either historical or contemporary phases of newspaper, magazine, or advertising fields. Prerequisite: Consent of department. Credits, hours, and room arranged. Mr. Casey, Mr. Olson.

LATIN

Professor Joseph B. Pike; Assistant Professor Robert V. Cram.

Prerequisites.—Any four of Courses 21-73, and 6 credits in addition selected from standard courses. A reading knowledge of French, German, or Greek is required of candidates for the Master's degree.

The degree of master of arts: For a major in Latin, any nine-credit sequence in the two hundred series, and in addition one course each quarter selected from Courses 121-133 or 241-242-243; ordinarily this latter will be required in addition to the other two hundred sequence. The student will be expected to choose for his thesis some problem connected with one of these courses. Besides, a minor is to be carried throughout the year in one of the following departments: Comparative Philology, English, German, Greek, History, Romance Languages, or Scandinavian. For a minor in Latin, any nine-credit sequence in the two hundred series or one course each quarter selected from Courses 121-133.

Candidates for the degree of doctor of philosophy in Latin will be expected to spend at least three years in preparation and will carry each quarter in addition to one seminar course and one of the courses listed below, one course in advanced Greek (i.e., in advance of three years of preparatory Greek). A knowledge of Greek and Roman history, Greek and Roman literature, and a special knowledge of a particular Latin author, or group of authors, will be required. In addition to the particular author or authors assigned the candidate will be expected to have read in the original the following list of Latin authors:

Caesar: A considerable portion of the Gallic War and the Civil War.

Catullus: All except LXIII-LXVIII.

Cicero: Fourteen orations (e.g., Roscius Amerinus, Verres Actio Prima, Imperium, Pompeii, Catilinarians I-IV, Murena, Archias, Milo, Marcellus, Ligarius, Deiotarus, Philippics II; Cato Maior, Laelius, Tusculan Disputations, Book I).

Horace: All.

Juvenal: Satires I, III, IV, VII, VIII, X, XI.

Livy: Books, I, II, XXI, XXII.

Lucretius: Books I-III, V.

Martial: At least one half.

Ovid: About four thousand verses of the *Metamorphoses*.

Plautus: *Amphitruo*, *Aulularia*, *Captivi*, *Menacchmi*, *Miles Gloriosus*, *Mossellaria*, *Rudens*, *Trinummus*.

Pliny the Younger: At least one half.

Quintilian: Book X, Ch. I.

Suetonius: Iulius, Augustus, Tiberius, Nero, Domitian.

Tacitus: *Annals* I-VI or XI-XVI.

Terence: *Adelphoe*, *Andria*, *Hautontimorumenus*, *Phormio*.

Virgil: All except the minor poems.

A preliminary written examination upon these authors and upon the history of Roman literature will be given in addition to the general written preliminary upon the graduate courses in the major completed at that time.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 121f. Advanced Virgil. Selection from the *Eclogues*, *Georgics* and from Books 7-12 of the *Aeneid*. Prerequisites: any two of Courses 51-73 or an equivalent. Three credits. MWF II; 109F. Mr. Pike.
- 122w. Cicero's Letters. Prerequisites: any two of Courses 51-73 or an equivalent. Three credits. Alternates with Course 132. MWF II; 109F. Mr. Pike.
- 123s. Medieval Latin. The course aims to accustom students to handle medieval Latin easily for historical or literary purposes. Prerequisites: any two of Courses 51-73 or an equivalent. Three credits. MWF II; 109F. Mr. Pike.
- 131f. Juvenal. Selection from Juvenal's work. Prerequisites: any two of Courses 51-73 or an equivalent. Three credits. Alternates with Course 121. MWF II; 109F. Mr. Pike.
- 132w. Seneca's Epistles. Prerequisites: any two of Courses 51-73 or an equivalent. Three credits. Alternates with Course 122. MWF II; 109F. Mr. Pike.
- 133s. Vulgar Latin. Lectures on vulgar Latin; selections from Petronius and Grandgent's *Introduction to Vulgar Latin*. Prerequisites: any two of Courses 51-73 or an equivalent. Alternates with Course 123. Three credits. MWF II; 109F. Mr. Pike.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201f-202w-203s. Tacitus. (Graduate seminar.) Prerequisites: seven years of Latin or any two of Courses 121-133. Nine credits. Mr. Pike.
- 211f-212w-213s. Graduate Seminar. Lucretius. Prerequisites: seven years of Latin or any two of Courses 121-133. Nine credits. T VIII, IX; 314Lib. Mr. Pike.
- 221f-222w-223s. Graduate Seminar. Cicero's Philosophical Works. Prerequisites: seven years of Latin or any two of Courses 121-133. Nine credits. Mr. Pike.

231f-232w-233s. Graduate Seminar. Cicero's Rhetorical Works. Prerequisites: seven years of Latin or any two of Courses 121-133. Nine credits. T VIII, IX; 314Lib. Mr. Pike.

241f-242w-243s. Graduate Seminar. Introduction to Classical Philology. Nine credits. Th VIII, IX. Offered yearly. 314Lib. Mr. Cram.

Note on summer school courses.—For the convenience of students who wish to secure the M.A. degree by work taken exclusively in the summer quarter the following courses are offered in successive summers:

145. Roman Tragedy. Three credits.

146. Roman Comedy. Three credits.

147. Annals of Tacitus. Three credits.

154. Elegiac Poets. Three credits.

211su-212su-213su. Lucretius. Six credits for the three summers.

LIBRARY METHODS

The course in Bibliographic Seminar (101-102)* offered by the librarian, Frank K. Walter, is recognized for general graduate credit. With the approval of the adviser, it may be counted toward any major or minor.

MATHEMATICS AND MECHANICS

Professors Raymond W. Brink, William E. Brooke, William H. Bussey, Hans H. Dalaker, William L. Hart, Dunham Jackson, William H. Kirchner, George C. Priester; Associate Professors Royal R. Shumway, Lorenz G. Straub, Anthony L. Underhill, Hugh B. Wilcox; Assistant Professors Elizabeth Carlson, Gladys E. C. Gibbens, Edward L. Hill, Willem J. Luyten.

Professor Dalaker is chairman and Professor Underhill is secretary of the group. Students majoring in Mathematics and Mechanics should consult one or the other.

Prerequisites.—For major work 10 credits in Calculus and 14 other credits in non-junior college courses.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

102s. Advanced Analytic Geometry. TThS III; 101F. Mr. Bussey.

106f. Differential Equations. Three credits. MWF III; 101F. Miss Gibbens.

107w-108s. Advanced Calculus. Three credits per quarter. MWF III; 101F. Miss Carlson.

116w. Differential Geometry. Three credits. TThS III; 101F. Mr. Underhill.

118f. Vector Analysis. Three credits. MWF VI; 101F. Mr. Hart.

* A fee of \$3 per credit is charged for this course, the payment of which relieves the student of the corresponding graduate tuition that would ordinarily be charged.

- 127f,w,s. Technical Mechanics. Five credits. Mr. Wilcox.
- 128f,w,s. Strength of Materials. Five credits. Mr. Priester.
- 130f. Open Channel Flow. Theory of uniform and varied flow in open channels, with practical applications to the design of hydraulic structures; hydraulic similitude; computations for drawdown curves, back-water curves, hydraulic jump, measuring flumes, submerged weirs, etc. Prerequisites: Courses 129 and 143. Three credits. Hrs. ar. Mr. Straub.
- 131s. Advanced Algebraic Theory. MWF VII; 101F. Mr. Hart.
- 132w,133s,134f. Advanced Hydraulic Problems. Special problems in hydraulic design. Prerequisite: 130 or registration in 130 or by special permission. Two credits per quarter. Mr. Straub.
- 144f,145w,146s. Topics in Mathematical Analysis. Three credits per quarter. Mr. Jackson.
- 151f,152w,153s. Differential Equations and Advanced Calculus Applied to Engineering Problems. Three credits per quarter. Mr. Dalaker.
- 161f,162w,163s. Advanced Technical Mechanics. Three credits per quarter. Mr. Wilcox.
- 180f,181w,182s. Advanced Strength of Materials. Three credits per quarter. Mr. Priester.
- 184f,185w,186s. Advanced Testing Materials Laboratory. Two to six credits. Mr. Priester.
- 191w. Hydraulic Motors and Pumps. Study of the hydraulic theory of the ram, impulse wheel, reaction turbine, and centrifugal pump. Prerequisite: Course 129. Three credits. Mr. Straub.
- 192w. Natural and Artificial Waterways. Wave motion, tides, ship resistance, transportation of sediment. Control and regulation of rivers, design of ship canals, locks, dry docks, movable dam, harbors. Prerequisite: Course 129 and preferably 130. Three credits. Mr. Straub.
- 193w. Hydraulic Measurements. Detailed study of the current meter, Venturi meter, weir, orifice, Parshall flume, traveling screen, chemical method of gaging, etc. Prerequisite: 129. Three credits. Mr. Straub.
- 194f,195w,196s. Advanced Hydraulics Laboratory. Special experimental studies concerning the characteristics of turbine, pumps, etc. Hydraulic models. Prerequisite: Courses 129 and 143. Two credits per quarter. Mr. Straub.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 222w,223s. Calculus of Variations. Three credits per quarter. Mr. Underhill.
- 248f,249w,250s. Reading and Research. Competent students will be assisted in independent reading and reports, by members of the department. One to three credits per quarter.
- 251f. Theory of Functions of Infinitely Many Variables. Three credits. Mr. Hart.
- 261f,262w,263s. Theory of Function of a Complex Variable. Three credits per quarter. Mr. Dalaker.

- 271f,272w,273s. Theory of Linear Differential and Integral Equations.
Three credits per quarter. Mr. Brink.
284f,285w,286s. Advanced Hydrodynamics. Prerequisite: Course 293.
Three credits per quarter. Mr. Brooke.

The following courses have been offered from time to time in the past, and similar courses or other courses of corresponding grade, will be provided at any time when there is sufficient demand for them.

- 102f,103w,104s. Advanced Analytic and Synthetic Geometry.
114. The Mathematics of Small Vibrations.
115,116,117. Differential Geometry.
118,119,120. Vector Analysis.
121,122,123. Mathematical Theory of Statistics.
141. Projective Geometry.
142. Theory of Invariants.
206,207,208. Theory of Functions of Real and Complex Variables.
221,222,223. Calculus of Variations.
254,255,256. Modern Analysis (Based on Whittaker and Watson's Text).
267,268,269. Advanced Dynamics. Vol. II Routh's *Dynamics*.
274,275,276. Dynamics of a Particle.
277,278,279. Advanced Statics.
281,282,283. Hydrodynamics.
294,295,296. Theory of Elasticity.
297-298. Vibration Problems.
The Theory of Numbers.
The Galois Theory of Equations.
Higher Plane Curves.
The Calculus of Finite Difference.
Modern Theories of Integration.
Advanced Descriptive Geometry.
Perspective.
Fourier's Series and Spherical Harmonics.
Advanced Analytic Geometry of Space.
Elliptic Functions and Integrals with Application.
Limits and Series.

The following courses given in the Department of Physics and the Department of Astronomy may count for credit in this department.

- Physics 201f,203w,205s
207f,209w,211s
221f,223w,225s
Astronomy 111f,112w,113s.

MECHANICAL ENGINEERING

Professors John R. DuPriest, Frank B. Rowley, Charles F. Shoop; Associate Professors Charles A. Koepke, John V. Martenis, Burton J. Robertson.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 121f-122w-123s. Advanced Engineering Design. Problems selected to suit the student's special interest. Automatic machines; machines for quantity production; materials handling and heavy plant equipment. Drafting and problems. Prerequisite: Course 24. Two credits per quarter. Ar.

STEAM ENGINEERING

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 136w. Design of Steam Machinery. Piping systems, furnace and gas passage dimensions, stokers, oil, gas and pulverized fuel burners, superheaters, feedwater heaters and pumps, air pre-heaters, automatic controls, chimneys, etc. Prerequisite: Course 144. Two credits. T VII-IX, S I-III; 151ME. Mr. Shoop.
- 142w. 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. Prerequisite: Course 32. Three credits. MWF IV; 209Ex. Mr. Shoop.
- 144f. Power Plant Machinery. Power plant engineering. Theory, practice, and economics relating to prime movers and steam generating equipment of the modern power plant including auxiliary units, such as condensers, heaters, purifiers, pumps, fans, piping, etc. Prerequisite: Course 32. Three credits. MWF IV; 254ME. Mr. Shoop.
- 145w. 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. Prerequisite: Course 32. Three credits. MThF III; 209Ex. Mr. Shoop.
- 146s. 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. Prerequisite: Course 30. Three credits. MWF IV; 209Ex. Mr. Shoop.
- 149f,w,s. 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. Prerequisites: Courses 32 and 35. Two credits. Mr. Shoop.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 241f. 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. Prerequisite: Course 32. Two credits. Mr. Shoop.
- 242f-243w. 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. Prerequisite: Course 137. Two credits per quarter. Mr. Shoop.
- 244s. 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. Prerequisite: Course 144. Three credits. Mr. Shoop.

INTERNAL COMBUSTION ENGINES

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 150f. Internal Combustion Engines. Laws of gases; gas cycles, Otto, semi-Diesel, and Diesel engines. Mechanism of various types. Carburetion, governing, cooling, lubrication. Combustion. Gas producers. Prerequisites: Courses 30, 31. Three credits. Sec. 1, MThF I, 254ME; Sec. 2, MWF II, 254ME. Mr. Robertson.
- 151w. Advanced Internal Combustion Engines. Special reference to automobile, truck, and airplane engines. Theoretical consideration of fuels, combustion, detonation, lubrication, etc. Prerequisite: Course 150. Three credits. MWF I; 209Ex. Mr. Robertson.
- 152s. Aero 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. Prerequisite: Course 151. Two credits. TF VII-IX; Ex. Mr. Robertson.
- 153s. 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. Prerequisite: Course 150. Three credits. Mr. Robertson.
- 155s. Internal Combustion Engines. Laws of gases; gas cycles, Otto, semi-Diesel, and Diesel engines. Carburetion, cooling, lubrication, and governing. Gas producers and power plants. Prerequisite: Course 139. Three credits. Mr. Robertson.
- 156w-157s. Design of Internal Combustion Engines. Calculations of inertia forces and size of cylinders for automobile, aircraft, and stationary service. Theoretical diagrams and details of parts. Prerequisite: Course 150. Two credits. Mr. Robertson.
- 159f,w,s. Internal Combustion Engine Laboratory. Tests of gasoline, semi-Diesel, and Diesel engines. Power plant units and automotive engines. Prerequisite: Course 150 or reg. in 150. Two credits. Mr. Robertson.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 251f-252w-253s. Automobile and Motor Truck Design. Theory and design of the automobile, motor truck engine, and chassis, complete design of engine, transmission, and chassis. Lecture and drawing room. Two credits per quarter. Mr. Robertson.
- 254s. Gas Tractor Design. Selection of wheel sizes; horse power weight and drawbar pull. Bearing pressures; ratios and strength of gearing. Details of principal parts. Prerequisite: Course 156. Two credits. Mr. Robertson.
- 255f-256w-257s. 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. Prerequisite: Course 155 or 159. Two credits. Mr. Robertson.
- 258s. 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. Prerequisite: Course 152. Three credits. Mr. Robertson.

HEATING, VENTILATION, AND REFRIGERATION

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 163f. Heating and Ventilation. Principles of heating and ventilation including the design and layout of warm air, steam, hot water, vapor, vacuum, and fan systems of heating. Requirements and design of ventilating systems. General principles of central station heating. Recitations, lectures, and designs. Prerequisites: M.&M. 127, 128, 129. Four credits. MWF II, 252ME; W VI-IX, 255ME. Mr. Rowley.
- 164s. Heating and Ventilation. 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. Prerequisite: M.&M. *92. Two credits. TTh I; 215Ex. Mr. Rowley.
- 165f,w. Advanced Heating and Ventilation. Special selected problems. Prerequisite: Course 63. Three credits. MWF I; 252ME. Mr. Rowley.
- 166s. 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. Prerequisite: Course 141. Three credits. MWF I; 202ME.
- 167w. Advanced Heating and Ventilation. Prerequisite: Course 165. Three credits. MWF IV; 154ME. Mr. Rowley.
- 169f,w,s. Heating and Ventilation Laboratory. Tests of heating, ventilating, and air conditioning equipment. The determination of air quali-

ties as required for comfort and for specific industries. Tests and studies of complete installation. Prerequisite: Course 32. Two credits. Mr. Algren.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 265f,w,s. Advanced Heating and Ventilation. Taken in connection with research work in the laboratory. Prerequisite: Course 63. Credits arranged. Open to graduates only. Mr. Rowley.
- 267w. Mechanical Equipment of Buildings. Selection of heating, ventilating, and plumbing systems for various types of buildings. Piping layouts, for fire protection, air, gas, and vacuum cleaning systems, elevators. Designs and layout of equipment. Lectures and drafting. Prerequisites: Course 63, Phys. 43. Three credits. Mr. Martenis.

INDUSTRIAL ENGINEERING

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 171f. Production Factors. 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. Prerequisite: open to seniors who have had Course 15. Three credits. Sec. 1, MWF III, 254ME; Sec. 2, MWF IV, 202ME. Mr. Koepke.
- 172w. 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. Prerequisite: Course 171. Three credits. MWF IV; 202ME. Mr. Koepke.
- 173s. Industrial Management. General principles. Taylor system; wage, bonus, and profit sharing systems. Maintenance and depreciation. Purchasing. Allocation of cost, overhead, and machine burden. Graphical representation. Prerequisite: Course 172. Three credits. MWF I; 154ME. Mr. Koepke.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 274f. 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. Prerequisite: Course 173. Three credits. MWF I; 154ME. Mr. Koepke.
- 275w. 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. Prerequisite: Course 274. Three credits. MWF I; 202ME. Mr. Koepke.

- 276s. Safety Engineering. Safety of the worker; fire and other hazards; prevention of industrial accidents. Compensation laws. Fire prevention; construction; automatic sprinkler systems. Effect of safety on production. Factory sanitation. Safety organization. Lectures, assigned reading, factory inspections, and reports. Prerequisite: Course 171. Three credits. Mr. Koepke.
- 277f-278w-279s. Industrial Engineering Problems. Special investigations of practical problems and suggested methods of procedure. Lectures, assigned reading, shop visits, and reports. Prerequisites: Course 274, 275, or reg. in 274, 275. Three credits per quarter. Mr. Koepke.

NAVAL ARCHITECTURE

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 185f,w,s. Theoretical Naval Architecture. Ship measurement; stability and trim; resistance, coefficients, speed, and powering. Two credits. Preferably preceded by Course 85.
- 186f,w,s. Theoretical Naval Architecture. Strength of ship as a whole, and of various parts of the ship under local stresses; effect of rolling, pitching, and vibration. Two credits.
- 187f,w,s. Ship Drawing. Preliminary design of commercial ships, including consideration of mechanical equipment, with special emphasis on river and lake transportation. Prerequisites: Courses 185, 186. Two credits.

HYDRAULIC MACHINERY

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 189s. Hydraulic Machinery. Theory of operation, design, construction, and regulation of water turbines. Turbine testing; characteristics, selection of type. Cost of turbines and water power. Prerequisite: M.&M. 129. Three credits. MWF IV; 154ME.

RAILWAY MECHANICAL ENGINEERING

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 281f. 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. Prerequisites: M.&M. 127, 128, 129. One credit. Mr. Martenis.
- 282f-283w-284s. 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. Prerequisite: Course 271. Three credits per quarter. Mr. Martenis.

SEMINAR AND RESEARCH

COURSES PRIMARILY FOR GRADUATE STUDENTS

190f-191w-192s. Seminar. Reading of assigned articles in current technical press. Classroom presentation of principal features of assigned articles. One credit per quarter. Mr. DuPriest, Mr. Robertson.

290f-291w-292s. 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. Credit arranged. Mr. DuPriest, Mr. Rowley, Mr. Shoop, Mr. Koepke, Mr. Martenis, Mr. Robertson.

MEDICAL SOCIAL WORK

For statement of prerequisites and of graduate courses and staff, see Sociology.

MEDICINE

(Including General Medicine, Dermatology, and Nervous and Mental Diseases)

The graduate work in the Department of Medicine is designed to prepare students for practice of the specialty of internal medicine, research in the problems of general medicine, and for the specialty of nervous and mental diseases, as the case may be, and to train men as teachers in their respective fields. Prospective students who have had no special work in addition to that of the undergraduate course in physiology, physiologic chemistry, therapeutics, experimental medicine, or pathology are advised to devote a year or more to these subjects before entering the regular three-year graduate course. Throughout the course it is recommended that a minor be carried in one or more of the following departments: Physiology, Pharmacology, Pathology, Immunology, and Pediatrics. For students specializing in nervous and mental diseases, minors in anatomy and psychology are especially valuable, and for those desiring it, work would be arranged in the Department of Ophthalmology and Oto-laryngology, giving a special opportunity to study lesions of the eye occurring in systemic disorders. In the Medical School, during at least the third year of the three-year fellowship, the fellow acts as an officer of the clinic with definite responsibility in the care of patients in the University Hospital.

For courses of study see special bulletin of graduate courses in medicine.

METALLOGRAPHY

Professor Ralph L. Dowdell.

Prerequisites.—For major work, adequate preparation in the sciences fundamental to metallography (chemistry, physics, geology, technical subjects), the general requirements being fulfilled. For minor work, the prerequisites to the courses to be pursued.

Exemption from the language requirements for the Master's degree may be made in individual cases.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 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. Two lectures, three laboratory hours per week. Three credits. MW I; 315M. W VI, VII, VIII; 307M. Mr. Forsyth.
- 151w. Advanced Metallography for Electrical Engineers. Continuation of 150. Two lectures, three laboratory hours per week. Prerequisite: Course 150. Three credits. MW I; 315M. W VI-VIII; 307M. Mr. Forsyth.
- 152f. Metallography for Aeronautical Engineers. Principles; metallography of iron and steel with special reference to alloy steels, and light alloys used in airplane construction. Laboratory work and demonstrations. Open to senior aeronautical engineers. Three credits. Lect. TS I; 315M; lab. M VII-IX; 307M. Mr. Jerabek.
- 153f-154w-155s. Metallography. (Long course for metallurgical engineers.) Theory of metallic alloys. Metallographic technique. Properties of metals and alloys. Metallography of iron and steel and commercial alloys. Technical metallography. Three lectures, four laboratory hours per week each quarter. Prerequisites: Chem. 9w, Phys. 43 or Mechanics 53. Five credits per quarter. MWF VI or VII; 305M. T VI-IX; 307M. Mr. Forsyth.
- 156w. Metallography for Mechanical Engineers. Similar to 150 but specially arranged for students in mechanical engineering. Two lectures, three laboratory hours per week. Three credits. ThS III; 112M. W VII-IX; 307M. Mr. Dowdell.
- 157s. Advanced Metallography for Mechanical Engineers. Continuation of 156. Two lectures, three laboratory hours per week. Prerequisite: Course 156. Three credits. MW I, F VII-IX; 307M. Mr. Dowdell.
- 160f. Metallography for Chemical Students. Principles of metallography, including constitution diagrams, preparation and standardization of thermocouples, preparation and thermal analysis of alloys, microscopic examination and making of photomicrographs; typical alloy systems as iron carbon (steel and cast iron), some non-ferrous alloys. Prerequisite: Anal. Chem. 1 and 2. Two lectures and 3 laboratory hours per week. Three credits. MF III; 112M. Th or F VI-VIII; 307M. Mr. Jerabek.
- 161w. Advanced Metallography for Chemical Students. Metallography and heat treatment of iron and steel, including alloy steels, commercial uses of various steels, and engineering specifications. Prerequisite: Course 160. Two lectures and three laboratory hours per week. Three credits. MF I; 112M. Th VI-VIII; 307M. Mr. Jerabek.

- 162s. Advanced Metallography for Chemical Students. Metallography of the non-ferrous metals with a study of the constitution diagrams, properties, and uses of important commercial alloys. Prerequisite: Course 160. Two lectures and three laboratory hours per week. Three credits. MF III; 112M. Th VI-VIII; 307M. Mr. Jerabek.
- 163f. Advanced Metallography. Seminar work on recent advances in metallography. Lectures and recitations, with outside reading and special reports. May be accompanied by laboratory work. Prerequisites: Courses 151, 155, 157, or equiv. Credits and hours arranged. 305M. Mr. Dowdell.
- 164w. Advanced Metallography. Advanced consideration of the structures, properties, and uses of metals and alloys. May be accompanied by laboratory work. Prerequisites: Courses 151, 155, 157, or equiv. Credits and hours arranged. 305M. Mr. Dowdell.
- 165s. Advanced Metallography. Technical metallography as applied to the automotive industry. Lectures and special reports. May be accompanied by laboratory work. Prerequisites: Courses 151, 155, 157, or equiv. Credits and hours arranged. 305M. Mr. Dowdell.
- 163f-164w-165s. Laboratory. Laboratory work on special problems in ferrous, non-ferrous, and X-ray metallography. Credits and hours arranged. Mr. Dowdell.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201f-202w-203s. Advanced Metallography for Graduate Students. Intended primarily for research work. Credits and hours arranged. 305M. Mr. Dowdell.

METALLURGY

Professors Peter Christianson, Levi B. Pease.

Prerequisites.—Elements in physics and chemistry.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 104w. Metallurgy of Pig Iron and Wrought Iron. General underlying principle of iron ore reduction, including construction, operation, and regulation of the iron blast furnace together with direct reduction of iron ore and refining products in the hearth and puddling furnaces. Prerequisite: General Metallurgy 3f. Three lectures and one consultation hour per week. Three credits. TThS I; 108M. Mr. Christianson.
- 105s. Metallurgy of Steel. General principles involved in the refining and purification of pig iron and scrap into various grades of steel. Three lectures and one consultation hour per week. Three credits. TThS I; 108M. Mr. Christianson.
- 106f. Metallurgy of Base Metals. Lead, copper, zinc. Consideration of methods and principles involved in roasting, smelting, and refining base metals. Hydrometallurgy and electrolytic refining. Four lectures per week. Three credits for graduates. TThS III; F I; 108M. Mr. Pease.

- 107w. Metallurgy of Base Metals. Continuation of Course 106f. Four lectures per week. Three credits. Mr. Pease.
- 108s. Metallurgy of Precious Metals. Principles involved and methods used in the extraction of gold, silver, and other precious metals. Cyanidation, amalgamation and refining. Four lectures per week. Three credits. TThS III; F IV; 108M. Mr. Pease.
- 110f-111w. Ore Dressing. General principles involved in the crushing, sizing, gravity separation, flotation and magnetic concentration of ores. Three credits. Lectures, MWF III; conferences; 202M. Mr. Pease.
- 112f-113w-114s. Ore Dressing Laboratory. Practical examination of ores. Operation of laboratory ore dressing equipment. Laboratory concentration of common ores. Two credits. Laboratory and conference. Th VI-IX. Mr. Pease.
- 117w. Advanced Metallurgy. Metallurgical calculations to determine heat balance and heat distribution in furnaces. Four lectures and six laboratory hours per week. Four credits. TWThFS II, Th VI, VII, VIII, IX; 108M. Mr. Christianson.
- 118s. Advanced Metallurgy. Designs of furnaces together with laboratory work. Consultations. Hours same as 117s. 108M. Mr. Christianson.
- 123f. Electrometallurgy. Application of electricity to the production of heat for the smelting of ores and refining of metals. Relative cost of fuel and electric heating; also relative efficiencies of fuel and electric furnaces. Construction of high temperature furnaces and operation of commercial plants. Three lectures and one consultation hour per week. Three credits. MW I, S IV; 108M. Mr. Christianson.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 204f-205w-206s. Thesis Courses for Graduate Students. Intended primarily for research work. Credits and hours arranged. Mr. Christianson, Mr. Pease.
- 207-208-209. Special Problems in Metallurgy. Seminar work on metallurgical problems. Credits and hours arranged. Mr. Christianson, Mr. Pease.
- 210-211-212. Special Problems in Advanced Metallurgy. Intended primarily for research work. Credits and hours arranged. Mr. Christianson, Mr. Pease.

OBSTETRICS AND GYNECOLOGY

For staff and courses of study offered, see special bulletin of graduate work in medicine.

OPHTHALMOLOGY AND OTO-LARYNGOLOGY

For staff and courses of study offered, see special bulletin of graduate work in medicine.

PATHOLOGY

Prerequisites.—Graduate students who desire to take their major or minor work in pathology must present credits in the following subjects: physics, 8 credits; general and organic chemistry, 12 credits; zoology, 6 credits; and a reading knowledge of German.

In addition, students who elect their major work in pathology must present credits for the equivalent of the first two years' work of the Medical School of this University.

For staff and courses of study offered, see special bulletin of graduate work in medicine.

PEDIATRICS

For staff and courses of study offered, see special bulletin of graduate work in medicine.

PHARMACOLOGY AND THERAPEUTICS

For staff and courses of study offered, see special bulletin of graduate work in medicine.

PHILOSOPHY

Professors Norman Wilde, David F. Swenson; Associate Professor George P. Conger.

Prerequisites.—For a major, 18 credits; for a minor, 9 credits.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 100f. History of Religions. Prerequisite: 10 credits. Three credits. TThS II; 322F. Mr. Conger.
- 101w. Psychology of Religion. Prerequisite: 10 credits. Three credits. TThS II; 322F. Mr. Conger.
- 102s. Philosophy of Religion. Prerequisite: 10 credits. Three credits. TThS II; 322F. Mr. Swenson.
- 103s. Esthetics. Prerequisite: 10 credits. Three credits. MWF II; 322F. Mr. Swenson.
- 104s. History of Esthetic Theory. Prerequisite: 10 credits. Three credits. MWF II; 322F. (Alternates with 103.) Mr. Swenson.
- 108f-109w-110s. History of Ethics. Prerequisite: 20 credits in any social science or 10 credits in philosophy. Six credits. TS IV; 322F. Mr. Wilde.
- 115w. Contemporary Philosophy. Prerequisite: Philosophy 50, 51, or 52. Three credits. MWF III; 322F. Mr. Conger.
- 120w. Scandinavian Philosophy. Prerequisite: 10 credits. Three credits. MWF VI; 322F. Mr. Swenson.
- 124f. Political and Social Ethics. Prerequisite: 20 credits in any social science, or 10 in philosophy. Five credits. MWThFS I; 322F. Mr. Wilde.

- 129w. Modern Political Thought. Prerequisite: 10 credits in philosophy, or 20 credits in any social science. Five credits. MWThFS I; 322F. Mr. Wilde.
- 135w-136s. The Philosophy of Plato. Prerequisite: 10 credits. Six credits. MWF VIII; 339Lib. Mr. Swenson.
- 141s. Metaphysics. Prerequisite: 10 credits, including Philosophy 2. Five credits. MTWFS III; 322F. Mr. Conger.
- 147f-148w. Advanced Logic. Prerequisite: 10 credits, including Philosophy 2. Six credits. MWF II; 322F. Mr. Swenson.
- 151f-152w. Modern Idealism. Prerequisite: 15 credits. Six credits. MWF VIII; 338Lib. Mr. Swenson.
- 161f-162w-163s. Seminar in Philosophy. Individual investigation, topics to be determined after consultation with the department. Prerequisite: 20 credits. Nine credits. Mr. Wilde, Mr. Swenson, Mr. Conger.

PHYSICS

Professors Henry A. Erikson, Louallen F. Miller, John T. Tate, Anthony Zeleny; Associate Professors J. William Buchta, Joseph Valasek; Assistant Professor Edward L. Hill.

Prerequisites.—For major work, differential and integral calculus and two years of physics of college grade. For minor work, one year of college physics.

A student majoring in physics is required to take Courses 101-103-105 and 52 unless excused by the department upon satisfactory evidence at entrance. A course of general reading as outlined by the department in each case is also advised.

For the Master's degree a reading knowledge of French or German is required. It is desirable that this requirement be fulfilled before graduate work is begun. For the Ph.D. degree a reading knowledge of both French and German is required.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 101f-103w-105s. Theoretical Physics. An analytical survey of fundamental principles of mechanics, sound, heat, light, electricity, and magnetism designed to supplement the general courses and to prepare students for more specialized courses. Five lectures a week. Prerequisites: 12 credits in physics, Math. 51. Five credits per quarter. MTWFS IV; 145Ph. Mr. Tate.
- 104w. Precision Mechanics. Standard methods of precise measurements of length, mass, and time. Two three-hour sessions a week. Prerequisites: 12 credits in physics, Math. 51. Three credits. Hrs. ar. Mr. Buchta.
- 114f-116w-118s. Elementary Physical Investigation. The experimental or theoretical study of physical phenomena the nature or laws of which are not as yet understood. Prerequisites: Physics 105 or equivalent, Math. 51. The work in this course requires the submission of a writ-

- ten report on the work accomplished. Three credits per quarter. Hrs. ar. Staff.
- 115f-117w-119s. Problem Course. The work of this course consists entirely in solving problems and exercises designed to give practice in the mathematical analysis of physical problems. Prerequisites: Phys. 105. Math. 51. Three credits per quarter. Mr. Buchta.
- 124f,s.* Pyrometry. A theoretical and experimental study of different principles involved in temperature measurement, covering standardization and calibration with some practical considerations. Prerequisite: 12 credits in physics. Three credits. MWF VI-IX; 244Ph. Mr. Miller.
- 126s. Advanced Heat. A theoretical and experimental study of heat phenomena such as comparative calorimetric methods, temperature regulators, ratio of specific heats of gases, conductivities and radiation. Prerequisite: 12 credits in physics. Three credits. Mr. Miller.
- 134f,w.* Experimental Optics. Special experimental work in spectrometry, optical instruments, photometry, absorption, polarized light. Two three-hour laboratory periods a week. Prerequisite: Course 34. Three credits. Hrs. ar. Mr. Valasek.
- 136w,s.* 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 a week. Prerequisite: Course 34. Three credits. Hrs. ar. Mr. Valasek.
- 144f.* Electrical Measurements. Devoted mainly to the study of potentiometer methods, capacity, inductance, magnetic flux. Three two-hour laboratory periods a week. Three credits. See engineering program. Mr. Zeleny.
- 146w.* Electrical Measurements of Precision. Precision measurements of electromotive force, current, resistance, capacity, inductance, and magnetic flux. Use of apparatus of highest precision. Three two-hour laboratory periods a week. Prerequisite: Course 144. Three credits. Hrs. ar. Mr. Zeleny.
- 148s.* 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. Prerequisites: Courses 43 and 44. Three credits. TTh VII, VIII, IX. Mr. Erikson.
- 150w.* Conduction through Gases. An analytical study of the theories and methods of investigation, supplemented by laboratory technique. Prerequisites: Courses 43 and 44. Three credits. TTh VII, VIII, IX. Mr. Erikson.
- 152f. X-Rays. A study of the nature and production of X-rays. Prerequisites: Courses 43 and 44. Three credits. TThS I; 133Ph. Mr. Erikson.
- 154s. X-Ray Spectroscopy. Theory of diffraction of X-rays by crystals. Emission and absorption spectra. Theory and systemization of X-ray

* A laboratory fee of \$2 is charged for this course.

spectra. Satellites of diagram lines. Effects of chemical combination. Lectures combined with laboratory work. Prerequisites: Physics 152 and permission of instructor. Three credits. Hrs. ar. Mr. Valasek.

COURSES PRIMARILY FOR GRADUATE STUDENTS

Physics 101-103-105 and Mathematics 51 and prerequisites for all the courses listed below. All the courses have as many lectures per week as credits.

201f. Kinetic Theory of Matter. Distribution of velocities, equation of state and transfer phenomena in gases. Crystal physics from the molecular standpoint. Three credits. MWF IV; 166Ph. Mr. Hill.

203w. Statistical Mechanics. Theory of probability and its application to mechanics. Brownian movement and other fluctuation phenomena. Three credits. MWF IV; 166Ph. Mr. Hill.

205s. Thermodynamics. The three laws and their application to physical and chemical problems. Three credits. MWF IV; 166Ph. Mr. Hill.

Courses 201-211 form a cycle which will be covered in two years. Those to be given in 1931-32 are 201f, 203w, 205s.

207f. Advanced Dynamics. The general methods of Lagrange, Hamilton and Jacobi. Variation principles. Perturbation theory. Three credits. MWF IV; 166Ph. Mr. Hill.

209w-211s. Electrodynamics. Electrostatics, magnetostatics, and electro-dynamics based on the restricted principle of relativity. Applications to theories of the electric and magnetic properties of matter. Three credits per quarter. MWF IV; 166Ph. Mr. Hill.

221f-223w-225s. Modern Theoretical Physics. Quantum mechanics and its applications to atomic and molecular spectra, Compton effect, dispersion, etc. Three credits per quarter. MWF III. Mr. Hill.

231f. Electromagnetic Theory Applied to Optical Phenomena. Reflection and refraction by transparent substances, metals, and crystals. Optical properties of matter. Three credits. Hrs. ar. Mr. Valasek.

233w. Wave Optics. Interference, diffraction, and polarization, with applications to experimental spectroscopy. Diffraction of X-rays by crystals. Three credits. Hrs. ar. Mr. Valasek.

235s. Radiation Theory. Thermal radiation and luminescence. Optical phenomena due to motion. Introduction to the theory of relativity. Geometrical optics. Compound lenses and optical instruments. Three credits. Hrs. ar. Mr. Valasek.

241f-243w-245s. Contemporary Experimental Physics. Discussion of fields of investigation which are of present interest and importance. Three credits per quarter. Mr. Tate, Mr. Buchta, Mr. Valasek.

252f-254w-256s. Research. Under the special direction of individual members of the staff.

261f-263w-265s. Seminar. Study of present day problems in physics. Three credits. One hour a week. Open to those who are doing graduate work in physics. Mr. Tate.

The following courses will be offered provided at any time there is sufficient demand for them:

Hydrodynamics and Theory of Elasticity.
 Advanced Topics in Electron Theory and the Special Theory of Relativity.
 The General Theory of Relativity.
 Advanced Quantum Theory.
 The Partial Differential Equations of Mathematical Physics.
 Applied Electricity—Theory of Electrical Circuits.

PHYSIOLOGY AND PHYSIOLOGIC CHEMISTRY

Prerequisites.—The Department of Physiology is well equipped for the various types of physiologic investigation. The library facilities are good.

For a minor in physiology, general zoology, general and organic chemistry, and college physics are prerequisites. (In exceptional cases high school physics may be accepted.) For a major, physical chemistry is desirable.

In addition, each student majoring in physiology or physiologic chemistry must have had the general courses, Physiology 100, 101, 103, 104, or the equivalent.

For staff and courses of study offered, see special bulletin of graduate work in medicine.

PLANT BREEDING

Plant breeding may be elected as a field for either major or minor work. For prerequisites for specialization and statement of courses of study see announcement under Agronomy and Plant Genetics.

PLANT PATHOLOGY AND BOTANY

Professors Edward M. Freeman, Elvin C. Stakman; Associate Professor Julian G. Leach; Assistant Professor Jonas J. Christensen; Instructor Louise T. Dossall.

Note.—For courses in botany including plant physiology see also Department of Botany.

Prerequisites.—The minimum requirement is (a) three years (27 credits) in the plant sciences; (b) general bacteriology one quarter (4 credits) or some equivalent; (c) one year (9 credits) in plant pathology—preferably two years (18 credits), including mycology.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

105f-106w-107s. Mycology. Morphology, taxonomy, and biology of fungi. Lecture, laboratory, greenhouse, and field work. Prerequisites: Botany 1 and 2 or equivalent. Three or five credits per quarter. TTh VI, VII, VIII; 302PP. Mr. Freeman, Miss Dossall.

- 111w. Diseases of Cereal Crops. Symptomatology, etiology, and practical methods of control. Laboratory, lecture, and field work. Prerequisite: Course I or 10. MWF VI, VII; 106,107PP. Mr. J. J. Christensen.
- 112s. Diseases of Fruit Crops. Especially those important in Minnesota. Laboratory, lecture, and greenhouse work. Three credits. MWF VI, VII; 106,107PP. Mr. Leach.
- 113s. Diseases of Vegetable Crops. Diseases of potatoes and other vegetable crops. Lecture, reference, laboratory, and greenhouse work. Three credits. MWF VI, VII; 106,107PP. Mr. Leach.
- 114w. Advanced Forest Pathology. Wood rots, including a study of the deterioration of wood products caused by fungi. Lectures, laboratory, and greenhouse work. Three credits. MWF VIII, IX; 106,107PP. Mr. Stakman, Mr. Clyde Christensen.
- 116f. Pathologic Histology. A study of the histological changes in diseased plants. Lectures, laboratory, and reference work. Prerequisite: Course I or 10. Three credits. MWF III, IV; 106,107PP. Mr. Leach.
- 117s. Diseases of Forage and Fiber Crops. Symptomatology, etiology, and methods of control. Lectures, laboratory, and field work. Prerequisite: Course I or 10. Three credits. MWF III, IV; 106, 107PP. Mr. J. J. Christensen, Mr. Allison.
- 118f. Bacterial Diseases of Plants. Bacteria as plant pathogenes; representative types with particular reference to the technique used in studying bacterial diseases of plants. Lectures, laboratory, and greenhouse work. Three credits. Prerequisites: Course I or 10 or Bact. 51. Ar. Mr. Leach.
- 119s. Principles of Plant Disease Control. Methods of plant disease control by means of exclusion, eradication, protection, and immunization. Lectures, laboratory, and reference work. Prerequisite: Course I or 10. Three credits. Ar. Mr. J. J. Christensen, Mr. Allison.
- 141f-142w. Insects in Relation to Plant Diseases. A study of the principal insect vectors and their habits; types of insect injuries affecting health of plants; modes of insect transmission and dissemination of plant disease; methods of rearing and handling insect vectors. Of interest to students in Entomology, Plant Pathology, Horticulture, Forestry, and Agronomy. Prerequisite: Entomology, 8 credits, and Plant Pathology, 8 credits, or consent of instructors. Six credits. TThS III, IV; 302Ad. Mr. Leach, Mr. Granovsky.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 203f-204w-205s. Research in Plant Pathology. Special assignment of work in laboratory and field problems in pathological research. Mr. Freeman, Mr. Stakman, Mr. Leach, Mr. J. J. Christensen, Miss Dosdall.
- 207f-208w-209s. Research in Mycology. Research work along following suggested lines: taxonomy of natural groups; fungous flora of particular regions, localities, or habitats; investigation of fungi involved in special industrial or natural processes; morphology or physiology of

- special forms. Prerequisite: Course 105-106-107. For minor or major. Three credits per quarter. Mr. Freeman, Mr. Stakman, Miss Dossdall.
- 211w. History of Plant Pathology. Development of important mycological, pathological, and physiological researches; historical basis of modern science of plant pathology. Two credits per quarter. Mr. Stakman.
213. Seminar. Assigned topics with special reference to current pathological problems. Historical review of literature on special problems and critical study of current literature. Two credits per quarter. Ar.; 400PP. Mr. Stakman.
- 214w. Principles of Pathology. Physiology of plant pathogenes; pathological plant anatomy, parasitism, biologic specialization, resistance, and immunity. Prerequisites: Course 1 or 10 and Bact. 51. Three credits. MWF III, IV; 400PP. Mr. Stakman, Mr. Allison.

PLANT PHYSIOLOGY AND AGRICULTURAL BOTANY

Associate Professor Rodney B. Harvey.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 160w. Plant Microchemistry. The localization, identification, and function of plant constituents. Lecture, demonstration, and laboratory. Prerequisite: organic chemistry or phytochemistry. Lecture, three credits; laboratory, two credits. Ar.; 206PP. Mr. Harvey and assistants.
- 161w. Transport, Storage, and Ripening of Fruits and Vegetables. The effects of temperature, respiration, packing, etc., on storage life. Prerequisite: Plant Physiology, 5 credits. Three credits. Ar.; 206PP. Mr. Harvey.
- 162w. Physiological Relations of Crop Plants to Temperature. A graduate course covering in detail hardiness and general temperature effects. Readings and translations. Prerequisite: Physics 23. Three credits. Ar.; 206PP. Mr. Harvey.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 250s. Research Methods in Applied Plant Physiology. Advanced research methods of analysis and physical measurements applied in Physiology. Laboratory and lecture. Three to five credits. Ar.; 206PP. Mr. Harvey.
- 251f-252w-253s. Seminar in Applied Plant Physiology. One credit. Th IX; 206PP. Mr. Harvey.
- 254f-255w-256s-257su. Research Problems in Applied Plant Physiology. Special assignment of work in applied plant physiology. Mr. Harvey.
- 258f-259w. Growth Factors in Crop Plants. A lecture and reading course covering genetic physiology, the initiation of growth, growth rate, and effect of the environment on growth. Prerequisite: cytology and genetics. Two credits per quarter. Ar.; 212H. Mr. Harvey.

POLITICAL SCIENCE

Professors William Anderson, Oliver P. Field, Morris B. Lambie, Harold S. Quigley, Jeremiah S. Young; Assistant Professor Lennox A. Mills.

Prerequisites.—For major work, 18 credits; for minor work, 13 credits.

NOTE.—All candidates for postgraduate degrees are required to take Course 176-177, Scope and Methods of Political Science.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 101f-102w.† Constitutional Law. I. Constitutional amendment; national-state relations; national judiciary; powers of Congress; taxation; interstate commerce. II. The executive; foreign relations; military affairs; territories; interstate relations. MWF VI; 221Bu. Mr. Field.
- 103s. Constitutional Law. III. Government and the individual; freedom of speech; ex post facto laws; obligation of contracts; due process of law; equal protection of laws. MWF VI; 221Bu. Mr. Field.
- 104f. American Constitutional Development. I. To 1800. Colonial origins; first state constitutions; formation of the federal constitution; organization of the new government. MWF II; 221Bu. Mr. Young.
- 105w. American Constitutional Development. II. 1800 to 1865. Political revolution of 1800; national sovereignty and state rights; slavery and the constitution; Civil War problems. MWF II; 221Bu. Mr. Young.
- 106s. American Constitutional Development. III. 1865 to the present. Reconstruction of the Union; extension of national authority over commerce, transportation, and labor; national subsidies to the states; structural and functional changes in government; government of dependencies; extension of democracy; recent amendments, including prohibition of the liquor traffic. MWF II; 221Bu. Mr. Young.
- 107f. Recent Social Legislation. Governmental powers and methods used for social legislation, state and national; peace and security; safety and health; public morals; semi-social economic relations; social insurance; minimum wage; city planning; police power restrictions on the use of private property. TThS II; 221Bu. Mr. Young.
- 108w. Legislative Power and Methods. Source and scope of the legislative power; methods used by legislative bodies; current legislative problems; formation and defense of legislative bills. TThS II; 221Bu. Mr. Young.
- 109s. 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 resources; vested rights; confiscatory legislation. TThS II; 221Bu. Mr. Young.
- III. Law of Public Utilities. See announcement of Law School.
- 113f-114w.† Administrative Law. I. Election, appointment, status, compensation, and discharge of civil officers and employees of government. II. Official powers; construction of powers; discretion; en-

- forcement of administrative orders; judicial remedies against abuse of official authority. TThS I; 221Bu. Mr. Field.
- 115s. Topics in Constitutional and Administrative Law. Study of a few related topics in these fields each year. TThS I; 221Bu. Mr. Field.
- 116s. Municipal Powers and Functions. Constitutional status, common law attributes, creation, alteration, and dissolution of cities, villages, and other municipal corporations; municipal officers, organization, and procedure; changing scope of the powers and functions of municipalities. MWF I; 111Bu. Mr. Anderson.
- 117f. Municipal Administration. Administrative organization, personnel, and financial problems of cities; city planning, public works, parks, police and fire departments, etc.; administration and regulation of local public utilities. TThS III; 111Bu. Mr. Anderson.
119. Jurisprudence. See announcement of Law School.
- 131f-132w.† Principles of Public Administration. Sources of administrative power; administrative areas and organization; the budget; purchasing; public service as a career. MWF II; 111Bu. Mr. Lambie.
- 133s. Problems of Public Administration. Special problems relating to finance, education, safety, health, welfare, commerce, labor, and conservation of natural resources. MWF II; 111Bu. Mr. Lambie.
- 145f-146w.† Comparative Government and Politics. Intensive study of parties, politics, and governmental processes in Great Britain, France, and other leading states. TThS III; 209Bu. Mr. Starr.
- 149-150.† Government and Politics of the British Empire. The imperial relationship; status and government of the self-governing dominions, the crown colonies, and India.
151. Topics in British Empire. Intensive study of some phase of British imperial affairs.
- 153-154. Far Eastern Government and Politics. The constitutional development of Japan and China; government, parties, and political problems. The first quarter is devoted to Japan, the second to China.
- 161w-162s.† Current Political Thought. Present day schools of political thought compared; ideas concerning sovereignty and liberty, state functions, representative government, and democracy; analysis of socialism, communism, syndicalism, and fascism. MWF III; 111Bu. Mr. Anderson.
163. Topics in Current Political Thought. Stress to be laid on current American political ideas.
- 165w. Development of Political Thought. See Philosophy 129. MWThFS I; 322F. Mr. Wilde.
169. Problems of Democracy. Problems of individual and class differences; public opinion; dictatorship; expert knowledge; and leadership.
171. Political Psychology. See Psychology 141.
- 175s. Political Parties. The nature, functions, organization, and methods of political parties, and other groups active in politics; legal control of parties and elections; public opinion as a factor in popular government. TThS; III; 111Bu. Mr. Starr.

- 176f-177w.† Scope and Methods of Political Science. The field of political science; relation to other studies; types of approach; research methods and technique; bibliography. Problems of teaching at the college level. Required of all candidates for postgraduate degrees in political science. Th 3:30-5:00; 221Bu. Mr. Anderson.
- 181f-182w. International Law. Nature, sources, and sanctions of international law. The laws of peace, war, and neutrality. MWF IV; 209Bu. Mr. Quigley.
- 183s. International Organization. The structure of the older international community and of the League of Nations; procedure in the formation of international policy; international legislation and administration; the settlement of international disputes; sanctions. MWF IV; 209Bu. Mr. Quigley.
- 184s. Problems in International Law. Intensive study of selected international controversies, varying from year to year, in the reports of national and international tribunals, and other source materials. WF 3:30-5:00; 312Lib. Mr. Quigley.
- 191f-192w.† 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 Great War and the revision of treaties; the present situation. MWF VII; 209Bu. Mr. Quigley.
193. Problems of the Pacific. Intensive study of selected problems in the political and constitutional developments, or in the foreign relations, of Far Eastern countries.
- 195f-196w.† Colonial Government and Administration. The economic and political factors in colonization; forms of government; administrative organization, personnel, and problems; commercial policies; mandates under the League of Nations. MWF VI; 111Bu. Mr. Mills.
- 197s. Problems in Colonial Administration. MWF VI; 111Bu. Mr. Mills.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201f-202w-203s.† Seminar in Public Law. Mr. Anderson, Mr. Young, Mr. Field.
- 211f-212w-213s.† Seminar in Modern Government and Political Theory. Mr. Anderson, Mr. Mills, Mr. Starr.
- 221f-222w-223s.† Seminar in Local Government and Public Administration. Mr. Anderson, Mr. Lambie.
- 231f-232w-233s.† Seminar in International Law and Relations. Mr. Quigley, Mr. Mills.

POULTRY HUSBANDRY

Associate Professor Frederick B. Hutt.

Animal genetics may be elected as a field for major or minor study in this division. With the approval of the adviser certain courses in plant

genetics, biometry, zoology, biochemistry, and in other fields of biology may be taken as part of the work in animal genetics.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

101w. Advanced Poultry Breeding. Genetics of the fowl and principles of genetics applied to poultry breeding, fecundity, sex and secondary sex characters, physiology of reproduction. Prerequisite: Plant Genetics 131 or equiv. Three credits. Ar. Mr. Hutt.

COURSES PRIMARILY FOR GRADUATE STUDENTS

201f,w,s,su. Research in Animal Genetics. Special problems (other than the student's thesis) in animal genetics and in the physiology of reproduction. Two to five credits. Mr. Hutt.

202f. Animal Genetics. Assigned readings and lectures dealing with the genetics of domestic animals, laboratory animals, and man, also with special phases of animal genetics. Prerequisite: Plant Genetics 245. Three credits. Ar. Mr. Hutt.

203f,s. Seminar in Animal Genetics. Review of current literature and discussion of special topics. One credit per quarter. Ar. Mr. Hutt.

204w. Seminar in Poultry Husbandry. Review of important investigations in the biology of the fowl. One credit per quarter. Ar. Mr. Hutt.

PSYCHOLOGY

Professors Richard M. Elliott, John E. Anderson, Donald G. Paterson; Associate Professors Charles Bird, Edna F. Heidbreder; Assistant Professors William T. Heron, Kate Hevner, Miles A. Tinker.

Prerequisites.—For either major or minor work, 12 credits.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

101f-102w†-103s. Experimental Psychology. The theory and technique of the leading methods of experimental investigation in human psychology. Individual research problems in the second and third quarters. One lecture, four laboratory hours per week. Six or 9 credits. MWF VII, WF VIII; 116Psy. Mr. Tinker.

108f. Systems of Psychology. A comparative study of the problems, methods, and viewpoints of modern psychology. Three credits. TThS III; 115Psy. Miss Heidbreder.

114w-115s.† 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. Six credits. TThS II; 115Psy. Mr. Elliott.

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

- lems in third quarter. Six or 9 credits. MWF II; 115Psy. Mr. Paterson.
- 130s. Vocational Psychology. Psychology of individual differences in intelligence, aptitudes, interests, and training, with special reference to vocational guidance. Two credits. F IX-X; 301F. Mr. Paterson.
- 140w. Social Psychology. A critical study of the experimental investigations of group behavior including the social significance of instinct, habit, imitation, suggestibility, and personality traits. Three credits. TThS III; 115Psy. Mr. Bird.
- 141s. 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. Three credits. TThS III; 115Psy. Mr. Bird.
- 144f-145w.† 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. Six credits. MWF IV; ar. Miss Heidbreder.
- 151f-152w†-153s. Animal Psychology. Vertebrate behavior is emphasized. A critical study of the literature, and of the relationship between animal and human psychology. Individual investigation of special problems in the second and third quarters. Six or 9 credits. MWF VI; ar. Mr. Heron.
- 160f. Personnel Psychology. 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. MWF VI; 115Psy. Mr. Longstaff.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 200f-201w-202s.† History of Psychology I. Origin and development of scientific psychology. Men, schools, and methods. Emphasis on the experimental period, 1860 to the present. Open to advanced students with permission of instructor. One credit per quarter. S I; 116Psy. Mr. Tinker.
- 203f-204w-205s.† History of Psychology II. Psychology in America. Development of laboratories, departments, apparatus, texts, and journals. Present status. Open to advanced students with permission of instructor. One credit per quarter. S I; 116Psy. Mr. Tinker.
- 206-207-208. Research in Animal Behavior. Mr. Heron.
- 210f-211w-212s. Research Problems. Laboratory investigations. Open to graduate students only. Mr. Elliott, Mr. Anderson, Mr. Paterson, Mr. Bird, Miss Heidbreder, Mr. Heron, Mr. Tinker.
- 215f-216w-217s.† Seminar in Psychology. Fortnightly meetings attended by teaching staff and advanced students for discussion of some of the fundamental problems of behavior and for reports of research in

progress. Attendance of graduate students who are candidates for degrees is required. One credit per quarter. Alternate Thursdays 7:15-9:15 p.m.; 301Psy. Mr. Elliott.

220f-221w-222s.† Journal Club. Advanced students meet every other week for reports on current publications and discussion of contemporary trends in psychology and related sciences. Attendance of graduate students who are candidates for degrees is required. One credit per quarter. Alternate Thursdays 7:15-9:15 p.m.; 301Psy. Mr. Paterson.

230. Advanced Differential Psychology. Three credits. Ar. Mr. Paterson.
250f-251w-252s. Topics in Psychology. Independent reading and reports in any field of psychology, such as the psychology of sensation, reaction time, perception of space, Gestalt psychology, differential psychology, social and political behavior, personnel psychology, aesthetics, human and animal learning, etc., which meets the approval of one of the listed instructors. The chairman of the department will, if requested, assist the student in selecting the most appropriate instructor to guide reading in a particular field. Credits arranged. Mr. Elliott, Mr. Paterson, Mr. Bird, Miss Heidbreder, Mr. Heron, Miss Hevner, Mr. Tinker.

ROMANCE LANGUAGES

Professors Everett W. Olmsted, Francis B. Barton, Irville C. LeCompte, Colbert Searles, Edward H. Sirich; Associate Professor Carlos V. Arjona; Assistant Professors Elizabeth Nissen, Raymond L. Grismer.

Prerequisites.—For major work, 27 senior college credits or equivalent; for minor work, 18 senior college credits or equivalent. Candidates for Master's degree must also have a reading knowledge of at least one other modern language. Candidates for the Doctor's degree must have had at least two years' work in Latin, and are required to take also the course in medieval Latin in the Latin Department. A reading knowledge of a second Romance language and of German is also required.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

FRENCH

100s. French Oral Diction. Practical and theoretical study of spoken French. MTWF VIII; 203F. Miss Guinotte.

103f-104w-105s.† French Syntax and Composition. Special studies in characteristic problems of French syntax. F VI; 217F. Mr. Barton.

115f. French Literature: Seventeenth Century: Formation of the Classic Ideal. MTWF IV; 205F. Mr. Searles.

116w. French Literature: Seventeenth Century: Molière, Racine, LaFontaine. MTWF IV; 205F. Mr. Searles.

117s. French Literature: Seventeenth Century: Moral and Didactic Literature. MTWF IV; 205F. Mr. Searles.

118f-119w-120s. French Literature: Eighteenth Century. First quarter, beginnings of the philosophic movement, Bayle, Montesquieu, Diderot;

- second quarter, Voltaire; third quarter, Rousseau, the theater, the novel. TThS III; 217F. Mr. Sirich.
- 121f-122w-123s. French Literature: Sixteenth Century. First quarter, the Rhétoriqueurs, Marot, Rabelais; second quarter, the Pléiade; third quarter, Montaigne, Amyot. M VIII-IX, Th VII; 203F. Mr. Searles, Mr. Sirich. (Not offered in 1931-32.)
- 145w-146s. Explication de Textes. TTh VII; 203F. Mr. Boyer.
- 150f-151w-152s. French Dramatic Literature. A study of the development of dramatic literature in France from the classical period to the present time. TTh III; 203F. Mr. Olmsted.
- 153s. French Lyric Poetry. Contemporary French poets. MTWF VI; 217F. Mr. LeCompte.
- 157w. Modern French Novel: Bourget, Loti, France, etc. MTWTh VI; 217F. Mr. Boyer.
- 171f-172w-173s.† 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 prospective teachers. Th VIII; 203F. Mr. LeCompte.
- 174f-175w-176s. Contemporary French Novel and Drama. Lectures in French. TTh IX; 201F. Mr. Boyer.

SPANISH

- 110f-111w-112s. Spanish Literature: Nineteenth Century. MWF IV; 108F. Mr. Grismer.
- 115-116-117. Spanish Literature: Seventeenth Century. First quarter, the drama; second quarter, the novel; third quarter, lyric and epic poetry. Alternates with 156-157-158. Mr. Arjona. (Not offered in 1931-32.)
- 141s. Modern Spanish Novel. (Alternates with 150.) MTThF VII; 102F. (Not offered in 1931-32.)
150. Modern Spanish Drama. (Alternates with 141.) (Not offered in 1931-32.)
- 156f-157w-158s. Spanish Literature: Sixteenth Century. First quarter, the drama; second quarter, Cervantes and the novel; third quarter, poetry, the mystics. Alternates with 115-116-117. TThS II; 305F. Mr. Grismer.
- 174f-175w-176s. Lectures in Spanish: Twentieth Century Literature. First quarter, the drama; second quarter, the novel; third quarter, poetry. TTh IX; 202F. Mr. Arjona. (Not offered in 1931-32.)

ITALIAN

- 159f-160w. Dante. The *Divina Commedia*. (Alternates with 161-162.) MWF II; 217F. Miss Nissen.
- 161-162. The Sixteenth Century. Reading of texts and study of literary influences. Miss Nissen. (Not offered in 1931-32.)
- 164s. Dante (in English). Lectures, reading, and discussion of the *New Life*, and parts of the *Divine Comedy*. TThS II; 212F. Miss Nissen.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201f-202w-203s. Old French Phonology and Morphology. Lectures on the origin and development of the French language, with practical exercises and reports on assigned topics. Six credits. F VIII, IX. Mr. LeCompte.
- 204f-205w-206s. Reading in Old French Literature. An introductory course in the reading of Old French. Different types of literature will be read and their origin and development discussed. A certain amount of collateral reading required. Three credits. F VII. Mr. LeCompte.
- 207f-208w-209s. Old Provençal. Reading in early Provençal literature with special attention to the poetry of the troubadours. Six credits. S III, IV. Mr. LeCompte.
- 222f-223w-224s. French Seminar. Six credits. W VIII, IX. Mr. Searles, Mr. Sirich.
- 230-231-232. Research Methods and Material. Three credits.
- 241f-242w-243s. Old Spanish Philology. Six credits. Mr. Olmsted.
- 244f-245w-246s. Old Spanish Literature. Every year a different genre is studied, such as the epic. Subject to be decided by agreement of students. Two credits.
- 250f-251w-252s. Spanish Seminar. Six credits.
- 259f-260w-261s. Research in Romance Languages. Credit depends upon amount of work accomplished.

SCANDINAVIAN

Professors Andrew A. Stomberg, Didrik A. Seip.

Prerequisites.—For major work, 18 credits; for minor work, 6 credits in the department. All required foreign language credits for the Master's degree in this department may be in either Danish, Norwegian, or Swedish.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 101f-102w-103s. Modern Norwegian Literature. From 1814 to the present day. Prerequisites: Scandinavian 1-2 and 3-4. Nine credits. TThS II; 110F.
- 104f. Modern Scandinavian History. Prerequisites: Scandinavian 4-5, 10-11-12, or 15 credits in history. Three credits. Knowledge of Scandinavian not required. MWF IV; 206F. Mr. Stomberg.
- 107f-108w-109s. Modern Swedish Literature. The Swedish novel. Prerequisites: Scandinavian 10-11. Nine credits. MWF V; 206F. Mr. Stomberg.
110. Ibsen. Prerequisites: Scandinavian 101-102-103. Three credits. Ar.; 110F.
- 111f-112w-113s. Old Norse (Icelandic). Grammar and reading. Six credits.
- 114f. Strindberg. Prerequisites: Scandinavian 107-108-109. Three credits. Ar. Mr. Stomberg.
- 117s. Earlier Norwegian Literature. Prerequisites: Scandinavian 4-5. Five credits. MTWFS III; 206F.

- 130f-131w-132s. Danish Literature of the Nineteenth Century. Nine credits.
- 134f-135w. The Landsmaal Movement.
- 136s. Björnson. Three credits. MWF II; 110F.
- 140f. History of the Norwegian Language and Literature. Prerequisites: Scandinavian 4-5 or 10-11 or equiv. Three credits. TThS II; 206F. Mr. Seip.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201f-202w-203s. Seminar in the History of the Scandinavian Languages.
- 209f-210w-211s. Seminar in Modern Swedish Literature. Nine credits. Ar. Mr. Stomberg.
- 215f-216w-217s. Seminar in Norwegian Literature.
- 220f. Seminar in Ibsen. Prerequisite: consent of instructor. Three credits. Ar. Mr. Seip.

SOCIOLOGY AND SOCIAL WORK

Professors F. Stuart Chapin, Wilson D. Wallis (Anthropology), Malcolm M. Willey; Associate Professors Ross L. Finney, Clifford Kirkpatrick, Gertrude Vaile.

Prerequisites.—In sociology: for major work, 18 quarter credits; for minor work, 12 credits. In social work: elementary courses in general zoology, economics, political science, psychology, and sociology. In addition the following courses in sociology: Statistics, Elementary Case Work, Field Courses, and Social Protection of the Child.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 100f. Social Psychology. Primarily for sociology students. The social attitudes; their development and modification under social pressure; the interactions of individuals and groups. TThS II; 109J. Mr. Kirkpatrick.
- 101s. Social Organization. The organization and structure of social groups; the basic social processes of differentiation, stratification, and mobility. Integration and disintegration of social groups and institutions. Essential of social dynamics. MWF II; 110F. Mr. Chapin.
- 102s. Social Control and Criminal Behavior. A consideration of criminal behavior in relation to the breakdown of social control. MWF II; 109J. Mr. Vold.
- 103w. Sociology of Conflict. Types of social conflict and their rôle in social life. TThS II; 109J.
- 110f. 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. MWF V; 104J.
- 112w. 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. MW V; 104J.
- 114s. 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. MWF I; 105AgE.
- 115w. Religion As a Social Institution. The origin and function of religion viewed as a culture pattern in relation to social processes and social organization. MWF III. Mr. Kirkpatrick.
- 116w. 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. MWF IV; 104J. Mr. Willey.
- 119f. The Family. The evolution of the family; development of family unity or disunity; the rôles of the several members of the family; methods of investigation of the family. TThS III; 104J.
- 120f. Social Progress. A history of the theories of progress and a critique of the idea of progress. MWF II; 109J.
- 121f-122w. 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. MWF VII; 109J.
- 123s. Methods of Social Investigation. The nature of scientific method; the problems of sociology; specific methods of investigation of social phenomena. MWF VIII; 109J.
- 126s. The Technique of Leadership in Group Work. An advanced course for prospective executives in settlements and program agencies. TThS I; 104J. Miss Mead.
- 128s. 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. Th VIII, IX; 109J. Mr. Bradley.
- 129w. Selected Problems in Social Case Work. A study of social case work, practices as applied to selected problems. IV MWF; 20J. Mrs. Fenlason.
- 130s. Advanced Case Work. A study of some of the wider aspects of social case work. A consideration of the adaptation of other scientific knowledge to social case work and an analysis of processes and techniques of interviewing. MWF IV; 20J. Mrs. Fenlason.
- 131w. Rural Social Case Work. Primarily a course for students wishing to specialize in social work in the rural field. III MWF; 20J. Miss Vaile.
- 132s. 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.

- 133f. Social Case Work in Health Problems. A course open only to students who are properly grounded in case work. S IV, Th IX; 109J. Miss Gardiner.
- 134s. 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. MWF I; 109F. Mr. Waite.
- 135f,w,s.* 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. Ar. Miss Vaile, Mrs. Fenlason.
- 136f. Essentials of Medicine for Social Workers. A discussion of diseases most often encountered in social work, with a consideration of their social implications. MWF IX; 20Ph. Miss Gardiner.
- 137w. The History and Theory of Social Work. A consideration of the historical backgrounds of the modern social work movement and the evolution of the theory underlying it. MWF I; 108F. Miss Salsberry.
- 138w-139s. Mental Case Work. A study of the intellectual and emotional factors in human adjustment and their significance in case work. TS II and ar.; 20Ph. Miss Leahy.
- 140w. 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 developments of sociology. The theories are related to their social backgrounds. MWF II; 109J. Mr. Wallis.
- 141s. Contemporary Social Theory. An intensive study of developments in the social theory of the late nineteenth and twentieth centuries. TThS II; 109J. Mr. Wallis.
- 152f. Public Welfare Administration. Deals with the history of public welfare administration and special problems of state and county administration of public welfare activities. TThS II; 20Ph. Miss Vaile.
- 153f,w,s-154f,w,s-155f,w,s.* Advanced Field Training in Group or Case Work. May be taken in specialized fields of child welfare and medical, as well as family, work. Ar. Miss Vaile, Mrs. Fenlason.
- 160s. Population Problems. MWF III; 9F. Mr. Chapin.
- 187f,w,s. Seminar in Educational Sociology. A discussion of the sociological foundations of educational theory, with investigation of special problems. M IX, X; 206Bu. Mr. Finney.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 200f-201w-202s. Seminar in Applied Sociology. Mr. Kirkpatrick.
- 203f-204w-205s. Seminar in Social Theory.
- 206f-207w-208s. Seminar: Statistical Theory in Relation to Social Theory and Practice. Mr. Chapin.
- 209f-210w-211s. Seminar: The Theory of Social Evolution: The Cultural Approach to Sociology. (Instructors in the introductory course are required to take this seminar in the fall quarter.) Mr. Willey.

* A fee of \$3.50 per quarter is charged for this course.

- 215f-216w-217s. Seminar in Rural Sociology.
- 218f-219w-220s. Seminar in Social Work. Miss Vaile, Miss Gardiner, Miss Leahy, Miss Mead.
- 221f-222w-223s.* Graduate Field Training. Twelve hours per weeks each semester.
- 224f-225w-226s. Medical Social Work. Principles and methods of medical social case work. Interrelations within medical institutions and with the community. The organization and development of social work in hospitals and dispensaries, its trends and scope. Open only to full time students who wish to specialize in medical social work. Three hours a week. Ar. Miss Gardiner.
- 227f-228w-229s.* Advanced Graduate Field Training. Twelve hours a week each quarter. Miss Vaile, Miss Gardiner.

SOILS

Professor Frederick J. Alway; Associate Professor Clayton O. Rost; Assistant Professors Paul R. McMiller, Constantine C. Nikiforoff.

Prerequisites.—For major work, at least two years of work in chemistry, including both quantitative analysis and organic chemistry, and one year of work in general physics. A reading knowledge of French or German is required for the Master's degree. In certain cases where some other modern foreign language would be more valuable in connection with the thesis it may be substituted.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 101f. Chemical Analysis of Soils. A laboratory course on the chemical examination of soils, including both fusion and extraction methods for mineral nutrients. Prerequisites: Soils 4 and 5 and quantitative analysis. Five credits. MWF 1:30-5:20; 103So. Mr. Rost.
- 102f,w,s. Special Problems in Soils. Individual laboratory or field work upon some special soil problem in soil physics, soil chemistry, or soil management. Arrangements must be made in advance. Prerequisites: Soils 4 and 5, and other courses according to problem selected. Three to five credits, according to work. 103So. Mr. Alway, Mr. Rost.
- 104s. Soil Surveying. Field practice in surveying soils and the preparation of soil maps. Prerequisites: Soils 4 and 5. Three credits. Mr. McMiller.
- 107w. Fertilizers and Manures. Sources, composition, and uses of the various fertilizers, manures, and soil amendments. Lectures and laboratory work. Prerequisites: Soils 4 and 5. Two credits. TS IV; 204So. Mr. Rost.
- 108w. Physical Properties of Soils. A laboratory course on the determination of physical constants of soils, including mechanical composition. Prerequisites: Soils 4 and 5. Three credits. TTh 1:30-5:20; 204So. Mr. McMiller.

* A fee of \$3.50 per quarter is charged for this course.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201w. Classification of Soils. Fundamental requirements of classification. Different systems of soil classification. Soil forming factors. Soil morphology, genesis, geography and cartography. Lectures and readings. Prerequisites: Soils 4, 5, 101, and 108. Three credits. TThS. Mr. Nikiforoff.
- 202f,w,s. Research in Soils. The investigation in the field, in the laboratory, or in both, of soil problems. The particular problem which a student may select will depend upon his previous training in agronomy, botany, chemistry, geology, and physics. Credit, according to work. Mr. Alway.
- 203w. Seminar in Soils. Review of current literature; presentation and discussion of papers on research; study of methods of investigation of soils. Required of graduate students. One credit. T VII; 204Ch. Mr. Alway.

SPEECH

Professor Frank M. Rarig.*

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 101f-102w. Advanced Speech Composition. Structure and oral style. Psychology of persuasion. Briefing. Critical study of models. Written speeches. Reports. Prerequisites: Speech 41-42-43 or 45-46; Psy. 1-2; 10 credits in soc. sci. Six credits. Mr. Rarig.
- 105s. 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. Prerequisites: Speech 41-42-43 or 45-46; 81-82-83; Psy. 1-2. Three credits. MWF III; 308F. Mr. Rarig.
- 121f-122w.‡ Advanced Speech Problems. Factors determining the behavior of speakers and audiences. Prerequisites: Speech 41-42-43 or 45-46; Psy. 1-2. Recommended: Psy. 114-115; Anat. 4. Six credits. TThS III; 409F. Mr. Holmes.
- 141f-142w-143s.‡ Voice Science. The study of the voice mechanism and of vocal sound; methods of analysis and synthesis. The study of hearing. Experimental methods applied in individual research projects. Readings, reports, experiments. Prerequisites: Speech 41-42-43 or 45-46; Psy. 1-2; 4-5 or 7. Nine credits. Mr. Holmes.
- 162w-163s.‡ Speech Pathology. 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. Prerequisites: Speech 41-42-43 or 45-46; 61; 67; Psy. 1-2. Six credits. Hrs. ar. Mr. Bryngel-son.

* Mr. Rarig will act as adviser for all graduate students in speech.

‡ A fee of \$1 per quarter is charged for this course.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 207f-208w-209s. Seminar in Orators. A critical study of the great English and American orators. One historical period each quarter. Prerequisites: Speech 41-42-43 or 45-46; 101-102; Psy. 1-2; 140; 10 cred. in soc. sci. Six credits. Hrs. ar. Mr. Rarig.
- 261f-262w-263s. Seminar in Speech Correction. A study and critical analysis of current literature in the field of speech pathology. Thesis problems. New theories and clinical procedures. Specific cases for group study. Prerequisites: Speech 41-42-43 or 45-46; 61; 67; 121-122; 162-163; Psy. 1-2. Six credits. Hrs. ar. Mr. Bryngelson.
- 291f-292w-293s. Research and Thesis. Open to graduate students who are engaged in thesis projects. Six credits. Mr. Rarig, Mr. Bryngelson, Mr. Holmes.

SURGERY

(Including divisions of General Surgery, Experimental Surgery, Orthopedic Surgery, Urology, and Dental Surgery)

For staff and courses of study offered, see special bulletin of graduate work in medicine.

VETERINARY MEDICINE

Professor Clifford P. Fitch.

Prerequisites.—For major work, 12 credits; for minor work, 6 credits in the department.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 101w-102s. Advanced Anatomy of Domestic Animals. Advanced study of the structures involved in the type, conformation, and nutrition of the common farm animals. Dissection of farm animals, including a study of the osseous, muscular, and other principal anatomical structures. Mr. Kernkamp.
- 103f-104w. Advanced Comparative Physiology. An advanced course in physiology of the domestic animals, including laboratory work with special emphasis on animal nutrition. Mr. Hewitt.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 205f-206w-207s-208su. Veterinary Pathology and Bacteriology. Advanced problems. Specially adapted to meet the needs of graduate students. Offered as major or minor work. Credits ar. Mr. Fitch.

ZOOLOGY

Professors Dwight E. Minnich, William A. Riley,* Charles P. Sigerfoos, Jerry E. Wodsedalek; Associate Professor Adolph R. Ringoen; Assistant Professors Ralph W. Dawson, Samuel Eddy, and Clarence E. Mickel.

* Absent on leave, 1931-32.

Prerequisites.—For major work, Courses 1-2, 3-4, and at least 18 credits of advanced work approved by the department; for minor work, Courses 1-2, 3-4, or the equivalent.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 107f-108w.† Protozoology. Lectures, references, and laboratory work on the structure and life histories of Protozoa. Six credits. TThS I, II; 211,213Z. Mr. Sigerfoos.
- 109f-110w-111s. Experimental Zoology. A survey of animal behavior from the physiological viewpoint. Lectures, laboratory, reading. Nine credits. MWF IV; 211Z. Mr. Minnich.
- 117f-118w-119s.† Animal Ecology. Ecology of animals with special reference to insects. Lectures, laboratory, assigned reading and field work. Nine credits. TTh VI, VII, VIII; 401Z. Mr. Eddy, Mr. Hodson.
- 125f-126w-127s.† Advanced Entomology. Morphology and classification of insects, with lectures on the history of entomology. Nine credits. Ar.; 208Z. Mr. Mickel.
- 144f,s-145w-146s. Animal Parasites and Parasitism. Lectures and laboratory work. Origin and biological significance of parasitism; the structure, life history, and economic relations of representative parasites. Second term devoted primarily to the relation of insects to diseases of man and animals. Nine credits. WF VI, VII, VIII; 208Z. Mr. Riley.
- 148f-149w-150s. Histology and Organology. Comparative study of the microscopic structure of tissues and organs. Textbook, lectures, laboratory. Nine credits. MWF III, IV; 211,201Z. Mr. Ringoen.
- 160f-161w. Cytology. A survey of cell structure and behavior with special reference to genetic cytology. Lectures, reading, and laboratory work. Mr. Wodsedalek.
- 181w-182s. Comparative Embryology. A survey of the principles of animal development dealing with fundamental invertebrate and vertebrate types. Lectures, reference and laboratory work. Six credits. TTh VI, VII, VIII; 201Z. Mr. Ringoen.
183. Genetics and Eugenics. Facts and theories of heredity and the application of the laws governing natural inheritance for the improvement of the race. Three credits. TThS III; 313Z. Mr. Wodsedalek.
- 197f-198w-199s. Problems. Advanced work in some special line. Nine or 18 credits. Hrs. and days ar. Mr. Minnich, Mr. Riley, Mr. Sigerfoos, Mr. Wodsedalek, Mr. Ringoen, Mr. Eddy, Mr. Mickel.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201-203. Research in Entomology. Hrs. and days. ar. Mr. Riley.
- 205-207, 209-211, 265-267. See Entomology and Economic Zoology.
- 211-213. Research in Ecology. Mr. Eddy.
- 217-219. Experimental Zoology. Mr. Minnich.
- 229-231. Research in Animal Histology. Mr. Ringoen.
- 233-235. Research in Embryology. Mr. Ringoen.
- 237-239. Research in Animal Cytology. Mr. Wodsedalek.
- 261-263. Research in Animal Parasitology. Mr. Riley.

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