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West Central School and Station
Morris, Minnesota

Announcement for the Year 1924-1925

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SCHOOL CALENDAR

1924-1925

1924			
September	29	Monday	First term opens; registration
September	30	Tuesday	Organization of classes
October	25	Saturday	Field Day
November	1	Saturday	Visitors' Day
November	27	Thursday	Thanksgiving Day; a holiday
December	20	Saturday	First term closes; Christmas vacation begins
1925			
January	5	Monday	Christmas vacation ends; second term opens; registration
January	6	Tuesday	Organization of classes
February	12	Tuesday	Lincoln's birthday; (special exercises)
February	22	Friday	Washington's birthday; (special exercises)
March	20	Friday	Commencement activities begin
March	26	Thursday	Junior-Senior-Alumni banquet
March	27	Friday	Commencement Day
March	30	Monday	Boys' and Girls' Club Week opens
April	2	Thursday	Boys' and Girls' Club Week closes
June	15	Monday	Short course for farm women opens
June	19	Friday	Short course for farm women closes

WEST CENTRAL SCHOOL AND STATION

FACULTY

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

AT MORRIS

Paul E. Miller, M.Agr., Superintendent
Edwin J. Volden, Registrar
Pauline E. Annin, B.A., Preceptress
Cecil C. Chase, B.A., Preceptor
Georgia O. Moe, B.A., Librarian
Charlotte E. MacArthur, Secretary

AGRICULTURAL ENGINEERING

Ole O. Bye, Carpentry and Farm Structures
Albert C. Heine, Farm Motors and Drainage
Alex B. Rolfe, Farm Mechanics
Albert Anderson, Blacksmithing

AGRONOMY

Roy O. Bridgford, B.S., Agronomy and Farm Management
Jens C. Jensen, Assistant in Agronomy

HORTICULTURE

John A. Anderson, B.S.A., Botany and Horticulture
Alfred H. Butters, Gardener

ANIMAL HUSBANDRY

Philip S. Jordan, B.S., Animal and Dairy Husbandry
Allen W. Edson, B.S., Poultry and Bees
Leslie Stock, Herdsman

HOME ECONOMICS

Lola M. Cremeans, M.S., Foods and Cookery
Irene C. Peyton, B.S., Foods and Home Management
Huldah M. Johnson, R.N., Nursing
Ethel I. Jewett, B.S., Dressmaking and Millinery
Irma Erichsen, B.S., Clothing

ASSOCIATED SUBJECTS

Pauline E. Annin, B.A., English
Georgia O. Moe, B.A., English
Edwin J. Volden, Mathematics
Cecil C. Chase, B.A., History and Public Speaking
Martin J. Sorflaten, B.A., Music
Florence E. King, Business Training
Arletta H. Ness, Penmanship

OFFICERS OF ADMINISTRATION

Ole O. Bye, Superintendent of Buildings
Lola M. Cremeans, M.S., Director of Dining Hall
Huldah M. Johnson, R.N., School Nurse
Blanche I. Mumbleau, Accountant

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 cannot take advantage of the high schools and universities and who are limited in the time that 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 work. 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 economical 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 of this section.

ADMISSION

The school will admit any young man or woman who desires a technical training in agriculture and home economics. It is desirable that prospective students should have completed the eighth grade, altho 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 lines of work, high school subjects will be accepted for advanced credit. 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 School of Agriculture will open Monday, September 29, and close December 20. The winter term will open Monday, January 5, and close Friday, March 27. The school work covers a period of six months at a time when the student can best be spared from home.

ROOMS IN DORMITORIES

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, bedspreads, pillows. Preferences 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, and at least two nightgowns and bedroom slippers.

Each girl should bring with her in addition to her regular supply of clothing, kimona and bedroom slippers, laundry bag, gymnasium suit, and gymnasium shoes. The kimona 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, and made to hang on two closet hooks; the gymnasium suit should consist of a pair of black sateen bloomers and a white middy blouse. Standard pattern No. 9225 is recommended for the bloomers. Three and one-half yards of material 36 inches wide are required for the average size. Black gymnasium or tennis shoes complete this costume. For those who are unable to make the bloomers at home, assistance will be furnished at the school.

EXPENSES

Necessary expenses for the year do not exceed $150, including board and room. 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.

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.

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 ten 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 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. 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.

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.

TABLE OF CHARGES

Registration fee for any part of school year	$5.00
Deposit as guarantee of proper treatment of school property	5.00
Post-office box per term	.20
Health fee per term required for 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

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 physicial examinations for all students and care by the school nurse in case of illness. It does not provide for physicians' calls or extra nurses in case of serious sickness, where such are necessary, or extra costs caused by epidemics.

RULES AND REGULATIONS

Registration

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

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

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

Cancellation of Registration

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

5. 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.

6. For each change in registration after the first 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. No changes will be made after the second week. All changes in registration must be approved by the superintendent.

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

Absences

8. No student will be admitted to class after an absence without a pass from the preceptor or preceptress.

9. All work lost through absence in class must be made up.

Classification

10. In order to be classified as a junior, a student must have not to exceed 12 credit hours less than the required number for the freshman year.

11. In order to be classified as a senior, a student must have not to exceed 10 credit hours less than the required number for the first two years.

Marking System

12. The passing mark is 75 on the scale of 100.

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

14. 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.

15. 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 month of the following term, otherwise it automatically becomes a failure.

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

17. 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

18. 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

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

2. 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.

3. An honorable standing in deportment.

4. Payment of all accounts.

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 preceptress 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 in 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 are permitted to leave the campus in the evening only upon permission of the preceptors and preceptress.

The use of profanity and tobacco is strictly forbidden. Anyone not in accordance with the restrictions and not willing to lend a hand toward strong moral growth should not come to the school.

Infraction of dormitory rules may be sufficient cause for dismissal from school. Complete dormitory rules and regulations are posted in each dormitory room.

BUILDINGS AND EQUIPMENT

The physical plant now includes ten modern brick and stone buildings which compose the educational group and ten frame buildings which make up the farm group. The school group includes the girls' dormitory with facilities for seventy-five girls; two boys' dormitories with accommodations for one hundred fifty 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 and Gymnasium, with large, modern dining room and gymnasium; a new, modern Students' Hospital and Health Service Building equipped with twenty-seven beds, dispensary, and nurses' quarters; Home Economics Building with two foods laboratories, two sewing laboratories, laundering laboratory, home management rooms, classrooms and departmental offices; new Administration Building with auditorium, large library, business, registrar, and administration offices.

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 promo-

tion 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.

ORGANIZATIONS AND PUBLICATIONS

Students' Literary Societies

Students are urged to join a literary society. These societies offer pleasure as well as profit. They afford a training in conducting meetings, parliamentary law, and public speaking obtainable in no other way.

The following societies hold regular weekly meetings during the school year: the Vincent Literary Society, the Agricolae Literary Society, and the Ceres Club.

Professional Clubs

An engineering club for boys especially interested in agricultural engineering and a livestock club for students interested in this branch of agriculture 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 downtown 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 Joint 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, 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 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 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

The Gilfillan Trust Fund

This fund of $50,000 is the gift of the Honorable John B. Gilfillan, of Minneapolis, in trust to the University of Minnesota, the annual income from which shall be at the disposal of the Executive Committee of its Board of Regents either as a gift or a temporary loan to worthy students of the University who are residents of Minnesota. The annual income from the funds is $2000, which is loaned to students on their notes in amounts not exceeding $200 to any one person in one year, at the rate of 5 per cent per annum.

This fund may be used by the students of the West Central 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 West Central School of Agriculture, Morris, Minnesota.

INTERSCHOLASTIC ACTIVITIES

Each year the school is represented by two debating teams which debate similar institutions.

In athletics the school is represented by both football and basketball teams. These teams schedule games with high schools, colleges, and agricultural schools.

LIBRARY

The library is well equipped to supply the needs of the students. A large number of books has 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 whatever assistance she can in directing students in the selection of the books they may need in the pursuit of their work.

EXPERIMENT STATION

The West Central School and Station is now conducting extensive experiments in agronomy, soils, horticulture, animal husbandry, and agricultural engineering. Beginning with 1915 a special report has been issued each year describing the progress of the 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 crops grown upon 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, and Shorthorn cattle; Percheron horses; Shropshire sheep; Duroc Jersey hogs; White Leghorn and Barred 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

Long Courses

The regular courses cover a period of three sessions of six months each, beginning in October and closing in March. The long course for young men is so arranged as to make it possible for a 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, teaching, music, home nursing, public speaking, business training, etc. Both young men and young women may receive credit in music in connection with any of the courses. They may also choose academic subjects in the third and fourth years, preparatory to college 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, beef production, farm engineering, carpentry, advanced farm management, and academic subjects. The major lines for girls are dressmaking, advanced home management, 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 College of Agriculture, Forestry, and Home Economics of the University.

DEPARTMENT OF MUSIC

For those 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

26 and 27. Ten half-hour and ten group 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. A five-credit course in music analysis is also offered.

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 agricultural practice are applied to some branch of the farming enterprise which the project is desired 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.

The projects for boys include swine management, corn-growing, soybeans, market gardening, fruit-growing, potato-growing, incubation and brooding, management of the laying flock, dairying, bees, tractor operation, and farm accounts. For girls projects include canning, bread-baking, foods and cookery, garment-making, clothing repair, home-furnishing, home management, needlework, and clothing account.

BOYS' AND GIRLS' CLUB WEEK

During the week following the close of the regular school session, will be held the tenth annual junior short course, March 30 to April 3. This course is open to all boys and girls from twelve to eighteen years of age. A charge of $2.50 covers all expenses, including board and room for the entire week. Boys are given work in the machine shops, forge and woodwork shops, farm crops laboratories, and stock-judging pavilion. The girls are given work in sewing, cooking, and home nursing. At the close of the week, contests in corn-judging and stock-judging will be held for the boys, and the winner of each contest will be given a free trip to the 1925 Minnesota State Fair. For the girls, contests in bread-making and canning are held, with free trips to the Minnesota State Fair as prizes. Special instruction will be given in all boys' and girls' club projects. Games, music, entertainments, and a special junior short course party will make the entire week one of special interest to all who attend. Special moving picture entertainments are given each evening. A special circular describing this short course will be ready for distribution in February, 1925.

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.

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 to 27.

See page 12 for statement with reference to credit for home project work.

COURSES FOR BOYS

FRESHMAN YEAR

Required—first term	English I, 5 Farm Arithmetic, 5 Corn-Growing, 5 Types and Breeds, 5 Milk-Testing, 1 Carpentry I, 2 Blacksmithing I, 2 Gymnasium, 1
Required—second term	English II, 5 Carpentry II, 2 Blacksmithing II, 2 Stock-Judging I, 1 Penmanship, 3 Gymnasium, 1
Eight credit hours must be chosen from this group during freshman year	Spelling and Penmanship, 3 Social Training, 1 Farm Records and Accounts, 3 Elementary Beekeeping, 3 Poultry Production, 3 Cereal Crops, 5 Industrial Geography, 5 Automotive Engineering, 7 Steam Tractors, 3 Automotive Electricity, 3 Farm Shop Work, 1 Piano, 2 Violin, 2 Chorus, 1 Orchestra, 1

JUNIOR YEAR

Required—first term	English III, 5 Chemistry, 4 Gymnasium, 1
Required—second term	English IV, 5 Physics I, 5 Gymnasium, 1

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

First term only:
- General History I, 5
- Bookkeeping I, 5
- Algebra I, 5
- Garden and Orchard, 5
- Corn- and Grain-Judging, 2
- Cement Construction, 1
- Mechanical Drawing, 2
- Farm Drainage, 5
- Stock-Judging II, 1
- Beef Production, 3
- Advanced Shop Work, 2

May be taken either term:
- Management of the Laying Flock, 5
- Piano, 2
- Violin, 2
- Orchestra, 1
- Glee Club, ½

Second term only:
- Bookkeeping II, 5
- Algebra II, 5
- General History II, 5
- Forage Crops, 2
- Commercial Seed Production, 2
- Landscape Gardening, 3
- Farm Structures I, 2
- Stock-Judging III, 1
- Feeds and Feeding, 5
- Dairy Production, 3
- Gas Welding, 2
- Incubation and Brooding, 3
- Farm Management, 5
- Elementary Beekeeping, 3

SENIOR YEAR

Required—first term:
- English V, 5
- United States History, 5
- Soils, 5
- Gymnasium, 1

Required—second term:
- English VI, 5
- Government, 5
- Gymnasium, 1

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	Geometry I, 5 Farm Structures II, 2 Agricultural Physics II, 5 Animal-Breeding, 3 Bookkeeping I, 5	First term only
	Stock-Judging IV, 2 Meats, 2 Piano, 2 Violin, 2 Orchestra, 1 Glee Club, ½	May be taken either term
	Geometry II, 5 Bookkeeping II, 5 Agricultural Botany, 5 Advanced Electricity, 3 Farm Marketing, 3 Farm Mechanics, 5 Animal Diseases, 3 Incubation and Brooding, 3 Public Speaking, 3	Second term only

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 seven special credits, including credits for play, debate, and musical organizations, shall count towards graduation.

COURSES FOR GIRLS

FRESHMAN YEAR

Required—first term	English I, 5 Garment-Making I, 4 Foods and Cookery I, 3 Drawing and Design I, 1 Gymnasium, 1
Required—second term	English II, 5 Garment-Making II, 4 Foods and Cookery II, 3 Drawing and Design II, 1 Gymnasium, 1

Eleven to 14 credit hours must be chosen from this group each term	Social Training, 1 General Science, 5 Home Accounts, 3 Home Nursing I, 3	First term only
	Home Nursing II, 3 Horticulture, 5	Second term only
	Laundering, 2 Poultry, 3 Beekeeping, 3 Glee Club, ½ Chorus, 1 Spelling and Penmanship, 3 Music (instrumental or vocal), 2	Either term
	*Spelling and Penmanship, 5 Typewriting, 2	Must be taken both terms

JUNIOR YEAR

Required—first term	Dressmaking I, 3 Elementary Dietetics, 3 English III, 5 General History I, 5 Gymnasium, 1	
Required—second term	Dressmaking II, 3 English IV, 5 General History II, 5 Gymnasium, 1 Elementary Dietetics II, 3	
Four to 9 credit hours must be chosen from this group each term or from electives not taken in freshman year	House-Planning and Decoration, 3 Algebra I, 5 Bookkeeping I, 5 Typewriting, 2 Chemistry I, 5 Applied Art, 2	First term only
	Textiles, 3 Nursing III, 3 Algebra II, 5 Bookkeeping II, 5 Shorthand II, 5 Typewriting, 2 Chemistry II, 5 Horticulture, 5	Second term only
	Public Speaking, 3 Poultry, 3 Beekeeping, 3 Glee Club, ½ Chorus, 1 Music (instrumental or vocal), 2	Either term

*** Students taking business training electives will register in the five-hour course.**

SENIOR YEAR

Required—first term	English V, 5 United States History, 5 Dressmaking III, 3 Gymnasium, 1 Millinery, 2	
Required—second term	English VI, 5 Government, 5 Dressmaking IV, 3 Gymnasium, 1	
Required—first or second term	Home Management, 5	
Seven to 12 credit hours in this group or from electives not taken in junior year	Nursing IV, 3 Geometry I, 5 Chemistry I, 5 Algebra I, 5 Bookkeeping I, 5 Business Training I, 5 Dictation I, 2 Applied Art, 2	First term only
	Millinery II, 1 Chemistry II, 5 Algebra II, 5 Geometry II, 5 Horticulture, 5	Second term only
	Beekeeping, 3 Poultry, 3 Public Speaking, 3 Glee Club, ½ Chorus, 1 Music (instrumental or piano), 2	Either term

Through their choice of electives, girls may prepare themselves for one of several lines of work. At the time of registration, girls will be advised how to choose their work so that it will prepare them for the future work which they desire. 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.

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; diseases, 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 judging 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 on the farm. Lab. 2, 2 hrs.; 2 credits.

Commercial Seed Production. Breeding and growing purebred seed corn and grain on the farm, and the best methods of marketing these products. 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. Management of land, labor, and capital in their relation to the farm business. 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. 3 hrs.; 3 credits.

Advanced Studies in Farm Management. Advanced work in some of the more important problems of farm management, including farm labor, cost of production, marketing, and similar subjects. Rec. 1 hr.; lab. 4, 2 hrs.; 5 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 in the same. 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.

Beef Production. Production of beef cattle, both purebred and market stock, including from a practical standpoint, feeding and management of the herd, 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. 3 hrs.; 3 credits.

Management of Laying Flock. Practice in feeding and management, mixing feeds, a study of laying rations, and keeping accounts. Each student will care for a laying flock during the entire time of the course. Rec. 2 hrs.; lab. 6 hrs.; 5 credits.

Incubation and Brooding. A study of 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. Rec. 2 hrs.; lab. 1, 2 hrs.; 3 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. 3 hrs.; 3 credits.

AGRICULTURAL ENGINEERING

Woodwork 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, $1.25.

Woodwork II. Continuation of Course I. Lab. 2, 2 hrs.; 2 credits; fee, $1.25.

Forge Work I. Blacksmithing; forging and welding of iron and steel, making and tempering hand tools. Work designed to be especially helpful in the repair and operation of machinery. Lab. 2, 2 hrs.; 2 credits; fee, $1.50.

Forge Work II. Continuation of Forge Work I. Lab. 2, 2 hrs.; 2 credits; fee, $1.50.

Farm Shop Work. A course in simple sheet metal work, soldering, harness repair work, rope work, belt-lacing, use of taps and dies, pipe-fitting, etc. Lab. 1, 2 hrs.; 1 credit; fee, $1.25.

Farm Drainage. Practice with level and chain; work in leveling, ditching, locating, laying tile, running lines, figuring areas, staking out buildings, mapping, and estimating costs. Rec. 3 hrs.; lab. 2, 2 hrs.; 5 credits.

Farm Structures I. Design, location, and erection of farm buildings; study of proper pitches; roof trusses, barn frames; estimates of costs. Working models are made in the shop from these plans. Lab. 2, 2 hrs.; 2 credits.

Farm Structures II. A continuation of Farm Structures I. Designing of buildings needed on the home farm, and the working out of a general plan that will meet the builder's requirements. Lab. 2, 2 hrs.; 2 credits.

Cement Construction. Properties of sand, gravel, cement, and concrete. Practice in proportioning and mixing concrete; in making concrete blocks and fence posts; and designing foundations. Lab. 1, 2 hrs.; 1 credit; fee, $1.

Automotive Engineering. A study of internal combustion engines with emphasis placed on tractor, truck, and automotive engines. A careful study of carburetion, ignition, lubrication, and cooling systems. Practice is given in the repair and adjustment of all automotive equipment. Rec. 3 hrs.; lab. 8 hrs.; 7 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.

Steam Tractors. A study of the construction, operation, and repair of the steam traction engine. The course leads to the state examinations for engineer's license. Rec. 2 hrs.; lab. 2, 3 hrs.; 4 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.

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.

Advanced Carpentry. Preparation aiming to bring together in applied way earlier elements of course with such topics as designing and estimating. Final credit dependent upon eight months of actual work under approved carpenter. Lab. as arranged.

Farm Mechanics. Selection, use, and care of farm machinery. A study is also made of the installation and operation of lighting, heating, plumbing, ventilation, and sewerage disposal systems for the farm home. Rec. 3 hrs.; lab. 4 hrs.; 5 credits.

Advanced Shop Work. A course intended for those who desire more comprehensive work. Advanced work is offered in oxyacetylene welding and cutting, making and tempering of hand tools, and lathe practice. Lab. 4 hrs.; 2 credits; fee, $3.

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.

Garden and Orchard. Planning, planting, culture, value, and management of the orchard and garden on the general farm. Rec. 5 hrs.; 5 credits.

Horticulture. A general course including the principles of growing vegetables, fruits, flowers, and ornamental plantings. The work is taught with special emphasis upon application of the principles to the student's home conditions. Rec. 5 hrs.; 5 credits.

ENGLISH

English I. Reading, spelling, and a brief review of the principles of grammar. Considerable time is devoted to oral reports. Short written themes 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 extensively 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.

English IX. Public speaking. Drill in voice exercise, platform deportment, and memorized selections for expression; extemporaneous speaking. Rec. 3 hrs.; 3 credits.

MATHEMATICS

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 course. Rec. 5 hrs.; 5 credits.

Home Accounts. For girls. Similar to farm accounts for boys except that application is made to home instead of farm work. Rec. 3 hrs.; 3 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.

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.

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 exercises, calisthenics, and games. 1 credit.

Gymnasium. (Boys.) Gymnasium is required of all boys who live in school dormitories. The gymnasium with its facilities is kept open every afternoon and evening for the use of students. 1 credit.

SOCIAL SCIENCE

Commercial Geography. Designed to give the student a view of the broad relation of geography to commerce. Rec. 5 hrs.; 5 credits.

General History I. Designed to give the student a general outlook upon civilization in the making, and to show what nations and men have helped civilization in its onward course. Rec. 5 hrs.; 5 credits.

General History II. Continuation of Course I. Rec. 5 hrs.; 5 credits.

American History. Designed to present in a clear, concise, and connected manner the main events in the history of the American people. Rec. 5 hrs.; 5 credits.

Government and Law. Local, state, and national governmental forms and practices. A brief study of common contracts, deeds, mortgages, etc. Rec. 5 hrs.; 5 credits.

General Science. This course deals with five major topics: air, water, food, protection, and the work of the world. Each topic deals with a series of projects. Rec. 5 hrs.; 5 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

General Chemistry. A general introductory course in chemistry treating of the fundamental principles necessary for an understanding of common daily phenomena. Rec. 3 hrs.; lab. 2, 2 hrs.; 5 credits.

Food and Household Chemistry. Application of general principles of chemistry to food and its uses and to household problems such as textiles, dyeing, soaps and other cleansing agents. Rec. 3 hrs., lab. 2, 2 hrs.; 5 credits; fee, $1.

Agricultural Chemistry. A general introductory course preparatory for later work in agronomy and animal husbandry. Rec. 3 hrs.; lab. 2, 2 hrs.; 5 credits; fee, $1.50.

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. 3, 2 hrs.; 3 credits; fee, $1.

Foods and Cookery II. A continuation of Course I including the study of batters and doughs, including popovers, griddle cakes, muffins, cake, puddings, pies, and bread. Lab. 3, 2 hrs.; 3 credits; fee, $1.

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, 2 hrs.; 3 credits; fee, $1.50.

Elementary Dietetics II. A continuation of Course I. Rec. 1; lab. 2, 2 hrs.; 3 credits; fee, $1.50.

Home Management. Study of dietaries, problems in management, and actual management of a dining room and kitchen. Rec. 3; lab. 3 days per capita; 5 credits; fee, 75 cents.

Home Accounts. Application of the keeping of accounts of home operations; attention to budget, cash paid out, cash received, and business forms. Rec. 5 hrs.; 5 credits.

Laundering. Includes care of laundry room and utensils, study of water, soap, starch, removal of stains, washing of woolen garments, ironing; also the principles of dry cleaning. Lab. 2; 2 credits.

Social Training. (Girls.) Subject-matter includes proper speech, table etiquette, and dress; also conversation and social correspondence. Rec. 1; 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; 1 credit.

CLOTHING AND RELATED ART

Garment-Making I. An apron, a holder, a chemise, and a petticoat are made in this course. Problems in darning and patching are required. Various kinds of material and their wearing qualities, simple decorative trimmings, and cost of finished garments are discussed. Lab. 4, 2 hrs.; 4 credits.

Garment-Making II. A study of cotton and linen dress fabrics. A gingham dress and a middy blouse are made. Simple problems in decorative needlework are given. Lab. 4, 2 hrs.; 4 credits.

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, 2 hrs.; 1 credit.

Drawing and Design II. Continuation of Drawing I. Lab. 1, 2 hrs.; 1 credit.

Elementary Dressmaking I. Includes the planning and making of a wool dress. Lab. 3, 2 hrs.; 3 credits.

Elementary Dressmaking II. An afternoon or informal party dress and an infant's layette are required in this course. Lab. 3, 2 hrs.; 3 credits.

Advanced Dressmaking I. A silk dress is made in this course. Materials are purchased under the direction of the instructor. Lab. 3, 2 hrs.; 3 credits.

Advanced Dressmaking II. Includes the making of underwear and dress for graduation. Lab. 3, 2 hrs.; 3 credits.

Millinery I. Design and color harmony in hats, alteration of frames, making and trimming of simple hats. Lab. 2, 2 hrs.; 2 credits; fee, $1.25.

Millinery II. Continuation of Course I. This includes spring millinery. Lab. 1, 2 hrs.; 1 credit; fee, $1.25.

Textiles. Standard fabrics and textile fibers; tests for adulterations in fabrics; clothing in relation to health; the clothing budget. Rec. 2; lab. 1, 2 hrs.; 3 credits; fee, $1.

House-Planning and Decoration. 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. 1 hr.; lab. 2, 2 hrs.; 3 credits.

Applied Art. Application of the principles of design to the making and decorating of useful household furniture. Lab. 2, 2 hrs.; 2 credits.

HOME NURSING

Home Nursing and Public Health I. Structure and functions of the human body; personal hygiene; bed-making; bandaging. Rec. 3; 3 credits.

Home Nursing and Public Health II. Continuation of Course I. Rec. 3; 3 credits.

Home Nursing III. Communicable diseases, home nursing equipment, hygienic requirements during infancy, first aid in emergencies, preparation and serving of food for the sick. Rec. 3, 3 credits.

Home Nursing IV. Continuation of Course III. Prenatal care; infant nutrition and care. Rec. 3; 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; transposition 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; block 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 Hadyn 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: Marzo, 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, Shoebruck, 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 course 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. A class meeting daily during the semester will analyze a large amount of standard music material, giving the student a clear insight into the structural features of great compositions. 5 credits.

Musical Theory and Appreciation. Classes offered in 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.

Mandolin Club. Consists of first, second, third, and fourth mandolins. Pupils with limited time find in this club amusement and recreation. Through a few private lessons, anyone may acquire the necessary technique to become a member.

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.

Spelling and Penmanship I. (Business training students.) Daily drill and individual instruction in penmanship; daily drill in spelling, the use and meaning of words, and rules for spelling. Rec. 5 hrs.; 5 credits.

Spelling and Penmanship II. Continuation of Course I. 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. 2 to 5 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. Lab. 2, 2 hrs.; 2 credits.

Dictation II. Continuation of Course I. Lab. 2, 2 hrs.; 2 credits.

Business Training I. Duplicating and mimeographing, filing and indexing, business ethics. Rec. 5 hrs.; 5 credits.

Business Training II. Continuation of Course I. Rec. 5 hrs.; 5 credits.

Bookkeeping I. Purpose of accounts and principles of account classification; capital and revenue; accruals; principles of valuation; depreciation; preparation and interpretation of balance sheets, income accounts, and other business statements. Rec. 5 hrs.; 5 credits.

Bookkeeping II. Continuation of Course I. Rec. 5 hrs.; 5 credits.

THE 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.

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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 Bulletin *of the* University *of* Minnesota

Northwest School and Experiment Station
Crookston, Minnesota

Announcement for the Year 1924-1925

Vol. XXVII No. 32 July 12 1924

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

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1924

JULY

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AUGUST

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1925

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OCTOBER

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NOVEMBER

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DECEMBER

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SCHOOL CALENDAR

1924-1925

1924			
October	1	Wednesday	Registration
	2	Thursday	Organization of classes
November	11	Tuesday	Armistice Day exercises and Home Coming Day
	27	Thursday	Thanksgiving Day
December	19	Friday	First term closes; Christmas recess begins
1925			
January	5	Monday	Registration of new students
	6	Tuesday	Second term begins; organization of classes
February	9-13	Week	Northwest School Farmers' Week
March	27	Friday	Second term closes
March April	30-3	Week	Junior Short Course

COMMENCEMENT WEEK

March	21	Saturday	Interclass field meet
	22	Sunday	Baccalaureate address
	23	Monday	Intersociety declamatory contest
	24	Tuesday	Superintendent's reception to graduating class
	25	Wednesday	Musical recital and class play
	26	Thursday	Class Day exercises and commencement

THE NORTHWEST SCHOOL AND STATION

FACULTY

Lotus D. Coffman, Ph.D., LL.D., President.
William Watts Folwell, LL.D., President Emeritus.
Walter C. Coffey, M.S., Dean of the Department of Agriculture.

AT CROOKSTON

Conrad G. Selvig, M.A., Superintendent.
Arthur H. Larson, B.S., Preceptor, Registrar, Academic Subjects.
Fanny B. Lippitt, B.S., Matron, Dining Hall, Foods and Nutrition.
Mildred Schenck, B.S., Preceptress, Foods and Cookery.
Olga E. Nettum, Secretary.
Kate Bedard, Accountant.
Edward W. Avery, B.S., Public Speaking, Debate, Advanced Subjects.
Agnes Bothne, B.A., Music and Vocal Training.
Elmer R. Clark, B.S.A., Pure Seed Work and Home Projects.
Ray S. Dunham, B.S., Farm Crops and Soils.
Arnold M. Foker, Carpentry and Farm Engineering.
Orville M. Kiser, B.S.A., Livestock.
Arthur J. Kittleson, Extension in Boys' and Girls' Club Work.
Delmar H. LaVoi, B.S.A., Livestock, Physical Training, Assistant Preceptor.
Thomas M. McCall, B.S.A., Horticulture.
Bernice I. Nolan, Clothing and Textiles, Assistant Preceptress.
Adolph K. Pierce, Business Training, Assistant Preceptor.
Alvey M. Pilkey, Poultry.
Severin Rishovd, Farm Motors and Mechanics.
Norma Helen Rupert, English, Assistant Preceptress.
Anne Simley, B.A., English.
Ann Thiel, R.N., School Nurse, Home Nursing.
Reefa G. Tordoff, Piano.
Sturges L. Victor, B.S., M.E., Farm Motors and Mechanics.

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 autobus service is maintained.

PURPOSES

It 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 to 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 October 1, 1924, and classes will begin at 8:00 o'clock on Thursday, October 2. The fall term closes on December 19, 1924.

The winter term will open for registration on January 5, and classes will begin at 8:00 o'clock on January 6, 1925. The winter term closes March 27, 1925.

COURSES OF STUDY

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 26. The regular course for both young mmen 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 dressmaking, 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.

DEPARTMENT OF MUSIC

For those who are interested, credit courses in piano instruction are offered. Twelve half-hour and twelve group 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.

HOW TO GET TO THE SCHOOL

Check all baggage to Crookston and bring checks to the school. A charge of twenty-five 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 fifty 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 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 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, 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, 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, gymnasium suit, and gymnasium 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, and made to hang on two closet hooks; the gymnasium suit should consist of a pair of black sateen bloomers and a white middy blouse. Standard pattern No. 9225 is recommended for the bloomers. Three and one-half yards of material 36 inches wide are required for the average size. Black gymnasium or tennis shoes complete this costume. For those who are unable to make the bloomers at home, assistance will be furnished at the school.

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 25 cents 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 $1.25 will entitle each student to attend the lecture course consisting of five numbers.

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 ten 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 for one month's board and room, and to pay for his books and fees. This will amount to from $30 to $35.

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.

TABLE OF CHARGES

Registration fee for any part of school year	$ 5.00
Non-residents of Minnesota	10.00
Deposits as guarantee of proper treatment of school property	5.00
Health fee per term, required of all students except those living at home	2.00
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
Lecture course, five numbers	1.25

Special fees in laboratory courses are as follows: blacksmithing, $3 a term; carpentry, engineering, farm mechanics, cooking, sewing, chemistry, corn studies, or dairying, $1 each a term. A rental 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, where 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 course of study, including all of the required work and enough elective work to make a total of 150 credit hours for the boys and 144 for the girls.

2. Honorable standing in deportment.

3. 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.

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. A satisfactory standing in this summer work, or its equivalent in practical work done at the school, is required for graduation. Ten of the 150 credits are earned by home projects.

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 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 chapel 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 school day at 11:40 a.m., the students assemble in the auditorium, a commodious room seating five hundred people. 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 elocution 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 students. Each student is expected to associate himself with one of these societies as early in his course as possible.

MUSICAL ORGANIZATIONS

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

For those who are interested, credit courses in piano and voice instruction are offered. Twelve half-hour and twelve group 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.

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 a monthly 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.

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 larger number, to provide the means of encouraging many to acquire the training which the school offers, and to stimulate greater effort in school work.

CLASS OF 1917 PRIZE

The class of 1917 has provided $140, the interest of which shall be awarded annually to the student who makes the greatest progress in debating.

STUDENT LOAN FUNDS

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.

Northwest School Loan Fund

Through the effort of a committee of Crookston citizens, a students' loan fund has been provided for the use of students at the Northwest School of Agriculture to supplement the above mentioned fund. This committee will provide money for loans as needed. This money will be loaned to students at 6 per cent interest as a temporary loan. For information regarding this loan fund, address the Northwest School of Agriculture, Crookston, Minnesota.

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.

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, 1925.

Dressmakers

Two three-month courses, beginning in October, 1924, and January, 1925, are offered. Each student drafts, cuts, fits, and finishes dresses and garments of various kinds. Beginning students are taught to make their own garments and those who have had some experience, to become dressmakers.

Junior Short Course

The thirteenth annual Junior Short Course, from March 30 to April 3, 1925, is open to boys and girls from 12 to 18 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

A short course for farmers was organized at this school in 1911 to meet the needs of men and women who wish to study the problems of the farm and the home. The exhibit of farm crops in connection with the course was the origin of the annual farm crops show held at Crookston during the second week in February. A five days' meeting at this time, with strong programs for both men and women, serves the purpose of the original short course.

EXPERIMENT STATION

The Northwest School and Station is now conducting extensive experiments in agronomy, soils, horticulture, animal husbandry, and agricultural engineering. Beginning with 1910, a special report has been issued each year describing the progress of the work.

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 upon 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, Shorthorn, and Hereford cattle; grade and purebred Percheron horses, Shropshire sheep, Duroc Jersey hogs, White Leghorn and Barred 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

BOYS' THREE-YEAR COURSE

FIRST YEAR

Required of All

Fall Term		*Spring Term*	
Credit Hours		Credit Hours	
5	English A	5	English A
5	Livestock*	5	Livestock*
	Farm Dairying A		Study of Breeds H
	Poultry B		Poultry B
5	Farm Crops*	5	Farm Crops*
	Plant Life A		Cereal Crops A
5	Arithmetic A*	5	Arithmetic A*
	Gymnasium and Personal Hygiene A		Gymnasium and Personal Hygiene A
5	Elective from the following:	1-3	Summer Home Projects
		5	Elective from the following:
25		25	
5	Blacksmithing B*		
5	Farm Motors H	5	Carpentry C*
5	Farm Mechanics F*	5	Farm Motors I
5	Industrial Geography A	5	Industrial History B
1	Music B	1	Music B
3	Typewriting	3	Typewriting
5	Shorthand	5	Shorthand

Students having a State Board certificate in arithmetic need not take that subject.

SECOND YEAR

Required of All

Fall Term		*Spring Term*	
Credit Hours		Credit Hours	
5	English B	5	English B
5	Livestock	5	Livestock
	Stock-Feeding E		Stock-Feeding F
	Stock-Judging G		Stock-Judging D
	Poultry B	5	Farm Crops
5	Farm Crops		Soils Management D
	Fruit and Vegetable Crops C	5	Forage Crops B
5	Farm Accounts B		Gymnasium
	Gymnasium	1-3	Summer Home Projects
5	Elective from the following:	5	Elective from the following:
25		25	
5	Commercial Law B	5	Bookkeeping A
5	Ancient History C	3	Field Machinery G
3	Heating, Lighting, and Cement Work E	5	Modern History C
5	Mechanical Drawing D*	1	Music B
1	Music B	1	Parliamentary Law E
3	Typewriting	3	Typewriting
5	Shorthand	5	Shorthand

* Will be offered both terms.

THIRD YEAR
Required of All

Fall Term

Credit Hours	
5	English C
5	Livestock
	Herd Management C
	Meat-Cutting I*
	Poultry B
5	Farm Crops
	Forestry D
	Plant-Breeding E
5	Civics and Farm Law D
	Gymnasium
2	Farm Marketing C
3	Rural Sociology B
1	Music B
26	

Spring Term

Credit Hours	
5	English C
5	Livestock
	Livestock Business Management D
	Meat-Cutting I*
5	Farm Crops
	Soil Fertility C
	Farm Management F
5	Physics A
	Gymnasium
2	Farm Marketing C
3	Rural Economics A
1	Music B
26	

CREDIT REGULATIONS REGARDING BOYS' 3-YEAR COURSE

In addition to the required work of the term, students must elect enough work to make a total of not less than 23 or more than 26 credit hours. Exceptions may be allowed by the Committee on Students' Work.

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, and other student activities on a basis to be determined by the Students' Work Committee.

One to four credits per term may be earned by approved work in instrumental or vocal music. A special fee will be charged for such courses. The same credit may be earned without the fee by membership in the orchestra by those who are competent for the work.

A class will not be maintained for less than six students.

HOME MAKERS' COURSE

Capital letters following the names of courses refer to descriptions given on pages 17 to 24.

FIRST YEAR
Required of All

Fall Term

Credit Hours	
5	English A
3	Physiology and Public Health C
4	Foods and Cookery A
3	Elementary Garment-Making P
1	Drawing and Design M
1	Music B
1	Social Training I
	Physical Training C
6	Elective from the following:
24	

Spring Term

Credit Hours	
5	English A
5	Arithmetic A†
2	Public Health C
4	Foods and Cookery A
3	Garment-Making P
1	Music B
	Physical Training C
1-3	Summer Home Projects
4	Elective from the following:
24	

* Elective. † Offered both terms.

General and Agricultural Electives

5	Industrial Geography A	3	Farm Dairying B†
5	Poultry B†	5	Industrial History B
4	Special Music	5	Plant Life A†
		4	Special Music

Office Training Electives

5	Arithmetic A	3	Rapid Calculation D
5	Industrial Geography A	3	∫ Spelling G ⌇ Penmanship G
3	∫ Spelling G ⌇ Penmanship G	5	Shorthand
5	Shorthand	3	Typewriting
3	Typewriting		

SECOND YEAR

Required of All

Fall Term

Credit Hours	
5	English B
4	Foods and Cookery B
2	Textiles R
4	Elementary Dressmaking K
2	Home Nursing E
1	Music B
	Physical Training D
1	Costume Design L
6	Electives
24	

Spring Term

Credit Hours	
5	English B
3	House Planning and Furnishing J
2	Home Nursing E
3	Dressmaking N
1	Music B
	Physical Training D
1-3	Summer Home Projects
10	Electives
24	

General and Agricultural Electives

5	Ancient History C	5	Mechanical Drawing D
5	Fruit and Vegetable Crops C	5	Modern History C
2	Laundering Q	1	Parliamentary Law E
4	Special Music	4	Special Music

Office Training Electives

5	Bookkeeping A	5	Stenography E
5	Stenography E	3	Typewriting H
3	Typewriting H		

THIRD YEAR

Required of All

Fall Term

Credit Hours	
5	English C
5	Physics A
3	Home Management D
1	Art Needlework K
1	Music B
	Physical Training
3	Rural Economics A
6	Electives
24	

Spring Term

Credit Hours	
5	English C
4	Civics D
3	Institutional Management F
2	Dressmaking N
1	Music B
	Physical Training
3	Rural Sociology B
6	Electives
24	

† Offered both terms.

General and Agricultural Electives

3	Farm Forestry D	3	Farm Management F
2	Floriculture B	2	Plant-Breeding E
2	Household Accounts E	4	Special Music
2	Nutrition H		
4	Special Music		

Office Training Electives

2	Farm Marketing C	5	Commercial Law B
5	Shorthand F	2	Farm Marketing C
3	Typewriting H	3	Office Training C

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, 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.

Upon the completion of two summers of supervised work in addition to this course, graduates will be admitted to the College of Agriculture, Forestry, and Home Economics and to state teachers' colleges.

Students from other schools who wish to prepare for college or University entrance may elect subjects from the school courses which will meet the necessary requirements.

OUTLINE OF COURSE

Fall Term		*Spring Term*	
Credit Hours		Credit Hours	
6	Elementary Algebra B	6	Elementary Algebra B
6	Plane Geometry C	6	Plane Geometry C
6	English D	6	English D
6	English History F	6	Advanced United States History G
2	Comparative Agriculture D	2	Comparative Agriculture D

DESCRIPTION OF COURSES

AGRICULTURE

A. 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. Mr. Clark.

B. Forage Crops. Grasses, legumes, root, 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. Mr. Dunham.

C. Soil fertility. A study of elementary chemistry and its application to soils and fertilizers. Laboratory experiments in elementary chemistry and soil tests. Mr. Dunham.

D. 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' farms. Mr. Dunham.

E. Farm Accounts. Practice in keeping accounts. A study of the income tax and cost accounting for the farmer. Mr. Dunham.

F. Farm Management. Systems of farming; selection of farms; 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. Mr. Dunham.

AGRICULTURAL ENGINEERING

A. Agricultural Physics. Nature of matter and force; heat; light; sound and electricity in their application to everyday use. Mr. Clark.

B. 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 blacksmith repair work on the farm. Mr. Foker.

C. Carpentry. Care and use of tools taught by means of practical farm problems; methods of sharpening tools; practical application of steel square; farm building construction, including foundation, framing, rafter-cutting, estimating and selecting material. Mr. Foker.

D. Drawing. Use of tools and value of drawings in designing buildings and machinery. Drawings of carpentry exercises and work from drawings in shop afford direct application. Students design

dwellings, etc., estimating quantity of material, cost, etc. Mr. Foker.

E. Farm Heating, Lighting, Plumbing, and Cement Work. Lectures including the heating and lighting of farm homes, the installation of plumbing and water systems, and the use and making of concrete. Practical work is done by the students in pipe-fitting and in the making and placing of concrete. Mr. Foker.

F. Farm Mechanics. Practical work in concrete construction, soldering, pipe-fitting, babbitting and bearing scraping, rope work, belt-lacing, and harness repair. Mr. Victor, Mr. Rishovd.

G. Field Machinery. Care and adjustment of both horse and tractor drawn implements, including plows, disc harrows, binders, mowers, and other harvesting and belt machinery. Practical work in making adjustment and repairs. Mr. Victor, Mr. Richovd.

H. Motors; Care and Operation. Principles, construction, and handling of stationary and traction gasoline engines, including timing, ignition, starting and lighting systems, carburetion, cooling, and lubrication. The student is given a thoro knowledge of the care and operation of the gas engine. Mr. Victor, Mr. Rishovd.

I. Motors: Auto and Tractor Repair. Practical work in overhauling and repairing automobiles and tractors, including complete motor and transmission overhauling; front and rear axle adjustment; and the common carburetor and electrical repairs which can be made in the farm shop. Mr. Victor, Mr. Rishovd.

DAIRY AND ANIMAL HUSBANDRY

A. Farm Dairying. A study of the principles and practices of producing dairy products, including a discussion on dairy barns, silos, herd management, milk production and testing, including record-keeping. Mr. Kiser.

B. Farm Poultry. The study of breeds; planning and arrangement of poultry houses; feeds and feedings; killing and dressing fowls. Mr. Pilkey.

C. Herd Management. Principles governing breeding and building up herds, with special reference to the value of purebred sires. Problems of sanitation and disease. Mr. Kiser.

D. Livestock Management. This course comprises a study of breed associations, registration, pedigrees, advertising, sales, and markets. Mr. Kiser.

E. Stock-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; formulation of rations. Mr. Kiser.

F. Stock-Feeding. Prerequisite E. Feeding livestock under farm conditions. Consideration of experimental work and present prac-

tice. Practical feeding problems. Efficiency and economy in the feeding of rations. Mr. Kiser.

G. Stock-Judging. Attention is called to desirable and undesirable qualities in the various breeds. Instruction is given in comparative judging of breeds and classes of livestock. Mr. Kiser, Mr. LaVoi.

H. Study of Breeds. The types and breeds of horses, beef and dairy cattle, sheep and swine are studied as to origin, history, characteristics, adaptation and general economic importance. This course is supplemented by practice in judging horses, cattle, sheep, and hogs. The station herds are used for this purpose. Mr. LaVoi.

I. Meat-Cutting. Slaughtering of hogs, sheep, and beeves. Judging a carcass. Study of meat cuts and meats. Mr. Kiser.

PLANT LIFE AND HORTICULTURE

A. Plant Life. 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. Mr. McCall.

B. Floriculture. 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. Mr. McCall.

C. Fruit and Vegetable Crops.

Fruit-Growing.—Importance of farm orchard and small-fruit garden 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. Mr. McCall.

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. Mr. McCall.

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. Mr. McCall.

D. Farm Forestry. Why, how, when, and where to plant wind breaks 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. Mr. McCall.

E. Plant-Breeding. The factors which cause plants to vary are studied, together with the fundamental principles underlying the breeding and development of plants. Practice work in crossing plants is given in the experiment station greenhouse. Mr. McCall.

ENGLISH

A. Freshman English. Oral and written compositions, with particular attention to sentence structure. Punctuation and spelling. Letter-writing. Drills for the purpose of eliminating errors. The reading of simple classics to illustrate fable, allegory, parable, myth, and ballad. Miss Rupert.

Public Speaking.—One hour a week. Reading aloud, drilling upon articulation and enunciation, short talks on familiar subjects, public programs to enable the students to learn to speak clearly and easily before an audience. Miss Rupert.

Debating.—One hour a week. Principles of argumentation, briefs, debating in class, in public programs, and in debating societies. Mr. Avery.

B. Junior English. Practical business English. Magore's text. Paragraph and methods of paragraph development. Narration, description, and exposition in oral and written composition. Study of good literature as basis for composition work and means of increasing student's vocabulary. Miss Simley.

Public Speaking.—Extemporaneous talks, longer discussions, and a little dramatic work. Miss Simley.

Debating.—A development and a continuation of the first year. Mr. Avery.

C. Senior English. Study of whole composition with reference to principles of unity, coherence, and emphasis. Exposition studied in oral and written composition work. Reading of best English writers with view of increasing students' appreciation of good literature. Miss Simley.

Public Speaking.—The dramatization of scenes from literature studied, after-dinner speeches, and talks. Miss Simley.

D. Advanced English. Oral and written composition illustrative of forms of discourse and principles of composition previously learned. Study of the novel and the short story; the drama; the essay and the oration; narrative and lyrical poetry. Miss Simley.

INDUSTRIAL HISTORY AND CIVICS

A. Industrial Geography. Study of climate, rainfall, location, and other geographical conditions affecting the primary industries. Mr. La Voi.

B. Industrial History. A study of the growth of industry, commerce, labor, population, and agriculture in the United States. Mr. La Voi.

C. Ancient and Modern History. A study of the world's history, with particular emphasis placed on the development of institutions, states, industries, and organizations that have influenced the progress of civilization. Mr. Larson.

D. Civics and Farm Law. Legislative, judicial, and executive departments and their functions. School district, township, county, and state

government. National government is also considered. One hour per week is devoted to essentials of law relating to the farm. Mr. Clark.

E. Parliamentary Law. The essentials of parliamentary practice as necessary in conducting public meetings effectively. Mr. Avery.

F. English History. A study of the political and social development of England. A study of history of English literature is included. Miss Simley.

G. Advanced United States History. The political and industrial development of this nation. Special emphasis will be placed on territorial expansion, immigration, political parties, and conditions in industry.

RURAL ECONOMICS AND SOCIOLOGY

A. Rural Economics. Attention is given to the consideration of factors affecting agricultural production and farm products. Mr. LaVoi.

B. Rural Sociology. The problems of rural communities, of rural health and sanitation, and of rural social institutions will receive attention. Mr. LaVoi.

C. Farm Marketing. Fundamentals in connection with the problems confronting the farmer today in disposing of his products. Mr. Selvig.

D. Comparative Agriculture. A study of the different systems of agriculture, marketing, rural credit facilities, and rural life of the principal agricultural countries of the world. Mr. Selvig.

HOME ECONOMICS

FOODS AND HOME MANAGEMENT

A. Foods and Cookery. Elementary cooking. Classification of foods and a study of the scientific principles underlying the cooking of the carbohydrate, fat, and protein foods; doughs and batters; beverages, desserts, and salads. Miss Schenck.

B. Foods and Cookery. Advanced cooking. Canning and preserving; planning and serving of meals. Miss Schenck.

C. Physiology and Public Health. Review of structure of human body; digestion, absorption, and metabolism of foods; fundamental principles of human nutrition. The general principles of public hygiene and sanitation are included. Miss Thiel.

D. Home Management. Distribution of family income; household accounts; purchasing supplies; planning and serving meals; relation of cost to income. Miss Schenck.

E. Home Nursing. Home care of the sick; sick room etiquette; care of children; first aid in emergencies; preparation and serving of food for the sick. Practical work is given in assisting the regular school nurse. Miss Thiel.

F. Household Accounts. Housekeeping as a business; the average income; the budget and its apportionments, the economic and administrative

responsibility of women in regulating and controlling the cost of living through judicious expenditure. Miss Schenck.

G. Institutional Management. Study of planning, purchasing, care, and preparation of food in quantity; organization and administration, and practice house work. Miss Lippitt.

H. Nutrition. Simple problems of nutrition with caloric values and menus worked out for the adult man, woman, and children of different ages. Planning of family dietary; cost of dietaries; food for the sick and convalescent. Miss Lippitt.

I. Social Training. A series of lectures on proper speech; table etiquette; care of children; first aid in emergencies. Practical work is given in assisting the regular school nurse. Miss Schenck.

J. House-Planning and Furnishing. Location, construction, and planning of farm houses; heating, lighting, ventilation, and equipping house; artistic and economical furnishing with work on cost and schemes of furnishing, floor and wall coverings, curtains and pictures for each room. Miss Schenck.

CLOTHING

K. Art Needlework. Review of principles of design and color harmony. Decorative stitches and use in original design. Artcraft work. Prerequisite, Drawing and Design. Miss Nolan.

L. Costume Design. Principles of design as applied to dress. Special emphasis given to different types and figures. Prerequisite, Drawing and Design. Miss Nolan.

M. Drawing and Design. This course treats of the fundamental principles in designs and color harmony, with special emphasis on house furnishings. Miss Nolan.

N. Dressmaking. This course includes the more advanced problems, as modeling on the dress form. Underwear and dress for graduation are made in this course. Miss Nolan.

O. Elementary Dressmaking. Making of wool middy; wool dress; afternoon or informal party dress and infant's layette. Miss Nolan.

P. Elementary Garment-Making. Hand stitches as applied to simple undergarments and household articles; middy blouse and wash dress are additional problems of this course. Care of sewing machines. Use of commercial patterns. Miss Nolan.

Q. Laundering. Care of laundry room and utensils, study of water, soap, starch, removal of stains, washing of woolen garments, ironing; also the principles of dry cleaning. Miss Nolan.

R. Textiles. Survey of processes concerned in the manufacture of cotton, wool, silk, and flax, and tests for adulteration and substitution. Miss Nolan.

MATHEMATICS

A. Arithmetic. Drill for speed and accuracy; application of principles to everyday farm problems, as measurements of material, extension, capacity; marketing of grain, stock, and products; purchase of machinery and supplies; cash accounts, business forms, and interest. Mr. Avery.

B. Algebra. This work covers *First Course in Algebra,* by Hawkes-Lubby-Touton, or equivalent text, omitting ratio and proportion, graphical representation, and imaginaries. Mr. Larson.

C. Geometry. The course in geometry covers Wentworth and Smith's *Geometry,* from Book I to Book VIII, or equivalent text, except the work in symmetry, maxima, and minima. Mr. Larson.

MUSIC

A. Piano and Vocal. *Piano.*—Instruction adapted to needs of each student. Technical exercises for development and control of the fingers, hands, and arms. Studies and compositions by best composers. A special fee is charged for this work. Miss Bothne, Miss Tordoff.

Voice.—Exercise in breathing and tone-placing, for relaxing the throat, for formation of vowels and consonants, and for sight reading. Songs by American and foreign composers are studied. This work also requires a special fee. Miss Bothne.

Chorus Work.—A glee club, chorus, and quartets are organized during the year. Students with the best voices are admitted to these. No special fee is charged. Miss Bothne.

B. Music. In the regular course of study, there is offered one hour a week in music each year, consisting of work in ear-training, vocal development; sight reading and chorus; and appreciation of music. Miss Bothne.

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

A. Personal Hygiene. Importance of proper care of human body. Special attention is given to foods, water, air, narcotics, cleanliness, clothing, exercise, first aid to injured, care of sick, and care of special organs of the body. Mr. LaVoi.

B. Gymnasium. Required of all men not excused because of physical disability. Aims to inspire pupils with desire to reach and maintain physical efficiency. Calisthenics with dumb-bells, Indian clubs, etc. Games or running follow light apparatus work. Mr. LaVoi.

WOMEN

C. Physical Training. For freshman girls not having had gym. Exercises in correct posture and walking habits. Exercises to develop quick thinking and action. Simple folk dances. Miss Schenck.

D. Physical Training. For junior, senior, and advanced girls. Exercises on light and heavy apparatus, and advanced folk dances. Miss Schenck.

BUSINESS TRAINING

A. 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. Mr. Pierce.

B. Commercial Law. This course aims to give the student a better knowledge of his rights, privileges, and limitations as a citizen of the United States. A thoro study is made of contracts, negotiable instruments, sales, real estate, and right of master and servant. Mr. Pierce.

C. Office Training. This course, given the second year, combines the work of the shorthand and typewriting classes into one; and the student receives practical office work, including dictation and letter-writing, filing, and mimeographing. Mr. Pierce.

D. Rapid Calculation. This course is designed for the student who has passed arithmetic, but wishes to master shorter methods of calculating type problems, and desires to gain speed in addition, subtraction, multiplication, and division. Mr. Pierce.

E. Shorthand I. During the first year, the students complete the *Manual of Gregg Shorthand,* as well as many easy business letters. Students should write at least 75 to 80 words a minute on unfamiliar matter. Mr. Pierce.

F. Shorthand II. The third semester of shorthand reviews the *Manual,* gives much new dictation material, including *Gregg Speed Studies,* and work from the *Gregg Writer.* The students' speed should be raised to 100 words a minute. Mr. Pierce.

G. Spelling and Penmanship. Practical drills closely related to work in other subjects aiming to give proficiency in everyday requirements. Mr. Avery.

H. Typewriting I and II. Proper use of the machine; accuracy in touch typing through finger drills, and writing of required exercises. Third term includes business letters and tabulating and executing legal documents. Forty to fifty words a minute required. Mr. Pierce.

SUMMER HOME PROJECTS

AGRICULTURAL PROJECTS

1. 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 fat tests, feed consumed, etc. 5 credits. Mr. Kiser.

2. 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 credits. Mr. Kiser.
3. Sheep-Raising. Care of farm flock for one season, with complete records of feeding and management. 1 to 2 credits. Mr. Kiser.
4. Potato Production. Production of one or more acres of potatoes for seed, and study of seed selection and treatment, control of diseases, cultural practices, cost of production, and financial returns. 3 to 5 credits. Mr. McCall.
5. Garden Production. Growing one-eighth acre or more of specified crops, with notes and cost records. 1 to 3 credits. Mr. McCall.
6. 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 credits. Mr. McCall.
7. Corn Production. Production of one or more acres of a standard variety of corn for seed, following up-to-date methods of seed selection, curing, testing, and cultural operations as taught in the classroom. 3 to 5 credits. Mr. Dunham.
8. Pure Seed Production. Production of one or more acres of a pure standard variety of wheat, oats, or barley, with special attention to preserving purity of seed and to producing high quality seed grain. 1 to 3 credits. Mr. Clark.
9. Alfalfa, Sweet Clover, and Soybeans. Growing of one or more acres of sweet clover or alfalfa, with records of labor and other production costs, yields, and notes on observations. 1 to 3 credits. Mr. Dunham.
10. Farm Accounts. Includes the keeping of a complete system of financial accounts on the home farm, production cost, and other farm records for one season. 5 credits. Mr. Dunham.
11. Poultry Production. Feeding and care of a farm flock for egg production, with complete records of production and cost. 3 to 5 credits. Mr. Pilkey.
12. Building Construction. Planning, locating, and constructing a garage, machine shed, poultry house, or other farm building, on the home farm. 1 to 3 credits. Mr. Foker.
13. 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 to 5 credits. Mr. Victor.
14. Baby Beef. Care and feeding of baby beef with records for cost of production. 5 credits. Mr. Kiser.
15. Hogging Off. The growing of corn for hogging off purpose with records of cost of production and results. 2 to 3 credits. Mr. Kiser.
16. Ton Litter. The keeping of records of production on one litter of any breed of swine. 3 credits. Mr. Kiser.
17. Soil Fertility. The keeping of records and noting effects of fertilizers on home farm. 3 to 5 credits. Mr. Dunham.
18. Community Service. The organization and promotion of community, social, or religious organizations. 5 credits. Mr. Selvig.

HOME ECONOMICS PROJECTS

1. 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. 1 credit. Miss Schenck.
2. Canning Meat. The canning of not less than twelve quarts of meat by the "oven method," with notes and cost records. 1 credit. Miss Schenck.
3. Preserving. Student must make 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 credit. Miss Schenck.
4. Baking. Includes the baking of nine batches of yeast bread and six batches of quick breads, and reports on baking, time, and cost of materials. 1 credit. Miss Schenck.
5. House Dress. Make a washable house dress for self or other member of the family. 1 credit. Miss Nolan.
6. Made Over Dress. Make over a dress for self or other member of the family. 1 credit. Miss Nolan.
7. Table Linen. Hem half dozen table napkins and a lunch cloth by hand with the damask or French hem. 1 credit. Miss Nolan.
8. Embroidery. Embroider 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 credit. Miss Nolan.
9. Hemstitching. Hemstitching either single or double half dozen handkerchiefs or a thirty-six inch square lunch cloth. 1 credit. Miss Nolan.
10. Cooking and Serving. Cook and serve six vegetables three times each. 1 credit. Miss Schenck.
11. Cake-Making. Make eight cakes. Four sponge cakes and four butter cakes. 1 credit. Miss Schenck.
12. Baking Cookies. Make twelve bakings of cookies, six of which are drop cookies and six of which are rolled out. 1 credit. Miss Schenck.
13. Desserts. Make and serve six hot desserts and six cold desserts. 1 credit. Miss Schenck.
14. Pie-Baking. Make twelve pies, six of which are two-crust pies and six of which are one-crust pies. Miss Schenck.
15. Crocheting. Crochet edges for a library scarf and a dresser scarf and a towel or make tatting for each of these. In each case the lace should be sewed on to the cloth by hand. 1 credit. Miss Nolan.

SUMMARY OF ATTENDANCE

1923-24

Regular School Course	Men	Women	Total
Advanced	5	0	5
Seniors	28	17	45
Juniors	26	21	47
Freshmen	67	23	90
	126	61	187
Junior Short Course, 1924	57	55	112
	183	116	299

STUDENTS

1923-24

ADVANCED

Anderson, Jesse, Erie
Anderson, Selmer, Erie
Johnson, Iver, Crookston
Kopecky, Albert, Angus
*Mansfield, John, Swift

SENIORS

Aakre, Theresa, Goodridge
*Adamski, Sylvester, Oslo
Balk, Howard, Guthrie
Davids, Robert, Bagley
Eidsmoe, Melvin, Neilsville
Ellingson, Mabel, Decorah, Iowa
Engelstad, Alice, Neilsville
Gandrud, Allen, Detroit
Gandrud, Ebenhard, Detroit
Gibbons, Helen, Crookston
Groven, Ole, Bagley
Gunufson, Gladys, Fertile
Hamrick, Marie, Angus
Hanson, Hector, Fertile
Hanson, James, Cass Lake
Harstad, Martin, Fertile
Henderson, Harry, Halstad
Hermanson, Ruth, Fertile
Hofdahl, Orlie, Hazel
Hogenson, Raymond, Winger
Howard, Oliver, Highlanding
Jewell, Philip, Walker
Johnson, Bert, Kratka
Larson, Carl, Crookston
Lofthus, Edwin, East Grand Forks
Luchau, Walter, Gary
Lundin, Inger, Erskine
Miller, Lydia, Roseau
Miller, Wallace, Roseau
Nelson, Emma, Gatzke
Olson, Edgar, Middle River
Oswald, Mildred, Fertile
Peloski, Anna, Greenbush
Pulkrabek, Gertrude, Angus
*Reski, Adolph, Oslo
Rice, Gladys, Bronson
Sharpe, Jacob, Shelly
Solem, Arnie, Thief River Falls
Sorenson, Stella, Plummer
Strickler, Marie, Euclid
Swanson, Arnold, Hallock
Turgeon, Walter, Brooks
Udstrand, Jalma, Holt
Voxland, Alfred, McIntosh
Wardeberg, Andrew, McIntosh

JUNIORS

Aanerud, Alma, Greenbush
Amundson, Alice, East Grand Forks
Amundson, Harold, East Grand Forks
Anderson, Elmer, Clearbrook
Armstrong, Raymond, Euclid
Bergh, Cecil, Halstad
Carlson, Stella, Hallock
Dunn, Mildred, Northcote
Eilertson, Einer, Drayton, N.D.
Flekke, Anna, Overly, N.D.
Flekke, Helen, Thief River Falls
Forseth, Oscar, Halstad
Forsness, Agnes, Greenbush
Hamre, Selma, McIntosh
Harleman, Maurice, Gary
Hoialman, Robert, Fosston
Hoper, Anna, Stephen
Jensen, Arthur, Crookston
Johnson, Chester, Fergus Falls
Jones, Elizabeth, Lancaster
Krogstad, Elmer, Fertile
Lervold, Ellen, Halstad
Lindberg, Rudolph, Plummer
Loven, Einar, Gatzke

*Graduate of both the advanced and three-year course.

Mayer, Lawrence, Strathcona
Miller, Elmer, Erie
Nelson, Julius, Radium
Nelson, Robert, Radium
Neske, Theodore, Princeton
Ofstedal, Clarence, Winger
Olson, Mancur, Buxton, N.D.
Onneland, Amy, East Grand Forks
Osterloh, Amber, Angus
Osterloh, Kate, Angus
Parenteau, Armand, Red Lake Falls
Paulson, Laura, Stephen
Sharpe, Benneth, Shelly
Silnes, Theodore, Halma
Skatvold, Joseph, Twin Valley
Skaurud, Florence, Twin Valley
Skaurud, James, Twin Valley
Strickler, Esther, Euclid
Strommer, Della, Clearbrook
Thompson, Cora, McIntosh
Viker, Russel, Halstad
Wahl, Florence, Strathcona
Woods, Margaret, Spooner

FRESHMEN

Anderson, Rolf, Fisher
Applequist, Alvera, Warren
Barsaloux, Lawrence, Crookston
Berg, Emil, Fosston
Bergerson, Daniel, Argyle
Bergseid, Theodore, Hawley
Boyer, John, Audubon
Breivold, Ole, Wanke
Brekke, Lloyd, McIntosh
Britten, Odell, Donaldson
Brown, James, Warroad
Brown, Richard, Warroad
Burk, Earl, Brooks
Carlson, Albert, Stephen
Chandler, Harold, Euclid
Chandler, Raymond, East Grand Forks
Confer, Harry, Angus
Covlin, John, Erskine
Eklund, Elwilda, Gilbert
Eklund, Iver, Gilbert
Fladeland, Orvis, Grygla
Forder, Naomi, Gatzke
Fort, Tillie, Erie
Hagen, Louis, Erskine
Harden, Helen, Ebro
Hedahl, Almer, Twin Valley
Hedstrand, Elmer, East Grand Forks
Helm, Helen, Fertile
Henschke, Luverne, McIntosh
Hoppe, Alicia, Crookston
Hornseth, Einer, Thief River Falls
Howe, Owen, Roosevelt
Hruska, Caroline, Lockhart
Hurner, Benjamin, Glyndon
Jennings, Paul, Angus
Jensen, Paul Ulen
Jesse, Earl, Shell Lake, Wis.
Johnson, Elmer, Drayton, N.D.
Johnson, Ruth, Fertile
Kotrba, Matilda, Erie
Kozojed, Rose, Germantown
Krogstad, Clarence, Gully
Larter, Mabel, Lancaster
Lerud, Clifford, Twin Valley
Letness, Lawrence, Thief River Falls
Lewis, Victoria, Warroad
Luchau, Earl, Gary
Luchau, Raymond, Gary
Lundberg, Violet, Kennedy
Magneson, Ray, Grygla
Merseth, Berdie, Clearbrook
Minski, Clarence, Kennedy
Minski, Melvin, Kennedy
Munson, Oscar, Fertile
Nelson, Agnes, Lockhart
Nelson, Albert, Strathcona
Nelson, Clarence, Gary
Olson, Sidney, Crookston
Olson, Vivian, Thief River Falls
Pederson, Arthur, Clearbrook
Person, Melvin, Ulen
Peterson, Edna, Grygla
Peterson, Oliver, Grygla
Ramse, Arthur, McIntosh
Rostvold, Martin, Grygla
Rude, Julia, Gonvick
Rude, Mabel, Fertile
St. Martin, Leo, Gentilly
Sandbeck, Harry, East Grand Forks
Sewill, Clarence, Angus
Shablow, Victor, Orleans
Shawstad, Walter, Gary
Sheldrew, Wesley, Grygla
Sletteland, Oscar, Munich, N.D.
Sollie, Hannah, Fertile
Solum, Norman, Barnesville
Sorby, Helga, Fosston
Stenborg, Phinney, Clearbrook
Strand, William, Mentor
Swenson, Oliver, Hawley
Thompson, Ernest, Fosston
Torkeldson, Anders, Stephen
Vroman, John, Crookston
Walhaug, Clarence, Plummer
Walhaug, Lily, Plummer
Walters, Harold, Beltrami
Warnes, Bertram, Karlstad
Welman, Hefter, Bagley
Wyvell, Norman, Ogema
Ystenes, Theodore, Bejou

The Bulletin *of the* University *of* Minnesota

The Law School

Announcement for the Years 1924-1926

Vol. XXVII No. 31 July 10 1924

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Member of the Association of American Law Schools

UNIVERSITY CALENDAR
1924-25

1924			
September	18	Thursday	Payment of fees closes, except for new students
September	18-20		Entrance examinations
September	22-26		Examinations for removal of conditions
			Physical examinations for all new students
			Registration period,[2] colleges of Science, Literature, and the Arts, Agriculture, Forestry, and Home Economics, and Education
September	22	Monday	First semester evening extension classes begin[3]
September	25-26		Registration days[2] for all colleges not included above
September	26	Friday	Payment of fees for new students closes
September	29	Monday	Fall quarter begins, 8:30[1] a.m.
October	23	Thursday	Senate meeting, 4:30 p.m.
November	1	Saturday	Home Coming Day; classes dismissed the third and fourth hours
November	4	Tuesday	Election Day; a holiday
November	11	Tuesday	Armistice Day; a holiday
November	27	Thursday	Thanksgiving Day; a holiday
December	4	Thursday	State Day Convocation
December	17-20		Final examination period
December	18	Thursday	Commencement Convocation
			Senate meeting, 4:30 p.m.
December	20	Saturday	Fall quarter ends, Christmas vacation begins, 5:20 p.m.
1925			
January	5	Monday	Christmas vacation ends, winter quarter begins, 8:30[1] a.m.
January	30	Friday	First semester evening extension classes close
February	2	Monday	Second semester evening extension classes begin[3]
February	12	Thursday	Lincoln's Birthday; a holiday
February	19	Thursday	Charter Day Convocation
			Senate meeting, 4:30 p.m.
March	16-19		Final examination period
March	21	Saturday	Winter quarter ends, spring vacation begins, 5:20 p.m.

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

[2] Registration subsequent to the date specified will necessitate the approval of the college concerned. See also penalty fees for late registration, page 10.

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

March	30	Monday	Spring vacation ends, spring quarter begins, 8:30[1] a.m.
April	10	Friday	Good Friday; a holiday
May	14	Thursday	Cap and Gown Day Convocation
May	21	Thursday	Senate meeting, 4:30 p.m.
May	29	Friday	Second semester evening extension classes close
May	30	Saturday	Memorial Day; a holiday
June	10-13		Final examination period
June	13	Saturday	Spring quarter closes, 5:20 p.m.
June	14	Sunday	Baccalaureate service
June	15	Monday	Fifty-third annual commencement
June	19-20		Summer Session first term begins, registration and payment of fees
June	22	Monday	Classes begin, 8:00 a.m.
July	4	Saturday	Independence Day; a holiday
August	1	Saturday	First term Summer Session closes
			Registration and payment of fees for second term closes
August	3	Monday	Second term classes begin
September	5	Saturday	Second term Summer Session closes

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 and peculiar circumstances shall justify the appropriate committee of the college concerned permitting registration at a later date.

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

FACULTY

Lotus Delta Coffman, Ph.D., LL.D., President
William Watts Folwell, LL.D., President Emeritus
Everett Fraser, B.A., LL.B., Dean and Professor of Law
Cephas D. Allin, M.A., LL.B., Professor of Political Science
Henry W. Ballantine, B.A., LL.B., Professor of Law
Wilbur H. Cherry, B.A., LL.B., Professor of Law
Henry J. Fletcher, LL.M., Professor of Law
Henry L. McClintock, S.J.D., Assistant Professor of Law
R. Justin Miller, B.A., LL.B., J.D., Professor of Law
James Paige, M.A., LL.M., Professor of Law
Henry Rottschaefer, B.A., J.D., S.J.D., Professor of Law
Ernest C. Carman, LL.B., Instructor in Practice
Rex H. Kitts, B.A., LL.B., Instructor in Law
Melkeor U. S. Kjorlaug, B.A., LL.B., Instructor in Practice

PROFESSORIAL LECTURERS

Howard S. Abbott, B.L., Minneapolis
Homer B. Dibell, B.A., LL.B., Associate Justice of the Supreme Court of Minnesota

SPECIAL LECTURERS

Rome G. Brown, B.A., Minneapolis
Charles W. Bunn, B.S., St. Paul
Bert Fesler, Duluth, Judge of the District Court
Edward Lees, Commissioner of the Supreme Court of Minnesota
Hugh V. Mercer, LL.M., D.C.L., Minneapolis
Thomas D. O'Brien, St. Paul, formerly Justice of the Supreme Court of Minnesota

GENERAL INFORMATION

OBJECT AND METHOD OF INSTRUCTION

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

The object of the Law School is to provide a thoro training in the law and to prepare students for practice in any jurisdiction where the Anglo-American legal system prevails. Particular emphasis is laid upon the statutes, the special doctrines of law, and the rules of practice that obtain in the state of Minnesota.

Instruction is given by the use of the "case system." This method of teaching law, which has been approved by experience and which is now employed in the leading law schools of the country, has the twofold merit of enabling the student to acquire a thoro and practical knowledge of legal principles, and to become familiar with those processes of legal reasoning which have determined the form and character of our jurisprudence, and will govern its future development.

The faculty is composed chiefly of resident professional law teachers who devote their entire time and energy to teaching. The courses in practice are taught by men experienced in practice at the Minnesota bar. In addition, courses of lectures on special topics are given by distinguished lawyers and judges, selected primarily from the bar of Minnesota.

ADMISSION

Regular Students

Candidates for admission to the Law School must have completed at least two years of work with an average, for all work completed, one grade above the passing mark in the College of Science, Literature, and the Arts of the University of Minnesota, or some other accredited college or university. The minimum requirement is 90 credits and 90 honor points. Such candidates may be admitted upon presenting their diplomas or other credentials showing the completion of such college work to the registrar of the University. Altho two years of college education satisfy the Law School's entrance requirements, prospective law students are urgently advised to take a full college course or at least three years if possible.

Special Students

A limited number of applicants who are twenty-one years of age and have preliminary education sufficient at least to entitle them to admission to the College of Science, Literature, and the Arts[1] may, on petition to the faculty, be admitted to the Law School as special students. The petitioner should state age, education, grades, occupation since leaving school, reason for not qualifying as a regular student, and should present all

[1] These requirements are stated in full in the current bulletin of the College of Science, Literature, and the Arts.

evidence to enable the faculty to determine his fitness for the study of law. Special students can qualify for bar examinations, but cannot qualify for a degree.

ADVANCED STANDING

No credit is given for time spent in private reading or for study in a law office. The candidate for graduation must spend three years in residence, either at this Law School or at some other school which is a member of the Association of American Law Schools. A student coming from such other law school must possess the preliminary education required for admission to this school and must spend at least one year in attendance at this school before he can qualify for a degree. Attorneys-at-law, however, who have been admitted to practice in the state of Minnesota and who have had two years of academic work in college, may enter the third year law class without examination upon presentation to the registrar of their certificates of admission to the bar, and shall be entitled to the degree of bachelor of laws upon satisfactorily completing such courses, aggregating 36 credits (one year's work), as the law faculty may designate.

REGISTRATION

New students should register on or before the opening of the first term.[1] Such students will not be permitted to enter the Law School at the beginning of the second or third term unless entitled to advanced standing. Lectures in all subjects begin promptly on the opening day of the term, and those who join their classes later will necessarily be seriously handicapped in their work. No student will be admitted to classes unless he registers within ten days after the opening of the term, except by special action of the faculty and for good cause shown. (See Tuition and Other Fees, post page 10.)

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

A student in the College of Science, Literature, and the Arts of this University who has by the end of his junior year secured not less than 135 credits selected in accordance with the regulations of that college and 135 honor points, may take during his senior year the first year law course, and upon its completion receive the degree of bachelor of arts. Upon completion of the work of the remaining two years in law, such student will receive the degree of bachelor of laws, thus obtaining both degrees in six years. Several Minnesota colleges also permit students who have completed three years' work to transfer to this Law School and accept the first year of law in completion of the requirements for their B.A. degree.

RECOMMENDED PRE-LEGAL COURSES

The College of Science, Literature, and the Arts requires students preparing to enter the Law School after two or more years in that college

[1] See page 10 for the provisions as to penalty for late registration.

to comply with its rules. The following course, available under these rules, is recommended by the faculty of the Law School:

1. Latin, 0 to 20 credits
2. Rhetoric, English A-B-C
3. Natural science, 10 credits
4. Political Science 1
5. Philosophy 2, and 50-51
6. History 31-32 and 33-34
7. Economics 3-4

Other subjects recommended for pre-legal students are Psychology 1-2; Public Speaking 45-46, 55-56-57; Economics 1-2, 54, 143-144, and 167-168; History 146-147, and 116-117-118; Philosophy 1, 3, 124, and 129; Political Science 7, 11, 15, 121-122, 123, and 161.

REGULATIONS GOVERNING CLASS WORK, EXAMINATIONS, GRADES, AND PROMOTIONS

Every student registered in the Law School is required to attend with regularity all lectures, whether special or in course, that may be prescribed for his class, to prepare all papers and other class exercises that may be assigned, and to perform all services in connection with the practice court that may be required of him. These requirements apply to all special students as well as to candidates for graduation. Serious delinquency in discharging these requirements may be regarded by the faculty as sufficient reason for requiring the delinquent student to withdraw from the school.

Final examinations are held only as the several courses are completed, whether they extend through one, two, or three terms, and credit is given only for an entire course and not for any part thereof. The ratings given, A, B, C, and D, signify passing grades of varying degrees of merit, A being the honor mark. E signifies a condition and F a failure. I signifies that the course has not been completed because of illness or a similar reason.

A student who fails to pass the regular final examinations of his class in more than two subjects cannot return to the school, except by special permission of the faculty granted on petition showing cause.

A student, who at the end of any term, receives conditions or failures in more than two subjects may by vote of the faculty be denied the privilege of continuing in the Law School.

A student who is denied the privilege of continuing in the school or is required to repeat the entire work of the year, is not entitled to examinations to remove conditions.

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

A student who receives a condition in a subject is entitled to one examination only to remove such condition. Examinations for the removal of conditions are held only during the week prior to the beginning of the fall term. All conditions must be removed before entering upon the work of the next year. If not removed at that time they become failures and the student must repeat the subjects in course.

Candidates for graduation the following June in Arts or Law may take examinations on the day following the spring recess to remove not more than two conditions in the first term subjects, or during the examination period at the end of the third term to remove not more than two

conditions in second term subjects. Any student desiring to take examinations under this provision is required to give notice in writing of his intention, specifying the subjects in which the examinations are desired, such notice to be filed in the office of the dean not less than three weeks before the date of the examination requested.

A student who is absent from the school two consecutive years must satisfy the requirements in force when he returns.

ELECTIVES IN OTHER DEPARTMENTS OF THE UNIVERSITY

Students in the Law School may be permitted, after completion of the work of the first year, and under proper regulations to elect, without extra charge, courses offered in other departments of the University, provided that such election does not interfere with their law studies; but such election of courses in other departments may be made only with permission of the law faculty. Among the subjects which may be profitably selected are English composition, English and American constitutional history, public speaking and debating, political science, economics, and sociology.

LIBRARIES

The library of the Law School contains more than thirty-nine thousand volumes, including all the American reports, state and federal, Interstate Commerce and other commission reports, nearly all the English, Australian, New Zealand, Indian, and Canadian reports, the English, federal, and state statutes (with a few exceptions), the standard digests, encyclopedias, legal periodicals, and textbooks. To this collection substantial additions, particularly in foreign law, are constantly being made. Further library facilities are afforded by the generous action of the Bar Association of Minneapolis in granting to the students the free use of its library located in the Court House. Besides the University and Bar Association libraries, the State Law Library, located at the Capitol in St. Paul, is accessible to students.

STATE AND UNITED STATES COURTS

The University is located within easy reach of both the federal and state courts. The United States courts are in session in St. Paul and Minneapolis during the greater part of the school year. The Supreme Court of Minnesota, sitting at St. Paul, the district courts of Ramsey and Hennepin counties, and the municipal courts of St. Paul and Minneapolis are open and in session almost constantly, and afford the student abundant opportunity for witnessing the trial of actual cases and hearing the argument of appeals.

EXPENSES

Careful estimates of the expenses of a student attending the Law School, together with other general information useful to students, are to be found in the bulletin of general information, to be had upon application to the registrar of the University.

FEES

Tuition fees (per quarter)	
Residents of Minnesota	$30.00
Nonresidents	40.00
Tuition fees (per credit hour)	
Residents of Minnesota	2.75
Nonresidents	3.75
Deposit* (first quarter only)	5.00
Health fee (per quarter)	2.00
Minnesota Union or Shevlin Hall (per quarter)	1.00
Special fees:	
Examination for removal of conditions	1.00
Special examinations	5.00

Penalty Fees:

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

INQUIRIES

Further particulars as to any phase of the work of the Law School not given herein, or in the bulletin of general information, will be cheerfully given upon request. Communications addressed at any time to the dean of the Law School of the University of Minnesota, Minneapolis, Minnesota, will receive prompt attention.

SUMMER SESSION

A limited amount of work will be offered by the Law School faculty during the summer quarter, June 22 to September 5, 1925. The quarter will be divided into two terms, the first from June 22 to August 1, the second from August 3 to September 5. The work of each term is complete in itself. This summer work is designed to enable students to lighten the burden of the regular academic year, or to supplement the course required for a degree. The courses will be announced in a separate bulletin, which will be sent on application.

* The following charges are made against the general deposit for each student in addition to such charges as may be incurred for lockers, library penalties, laboratory breakage, etc.:

Minnesota Daily, per quarter	$0.50
Post-office box, per quarter	.20
University Address Book	.35

COURSES OF STUDY

The curriculum leading to the degree of bachelor of laws covers a period of three academic years. To qualify for graduation, a student must complete the entire work of the first and second years and the required work of the third year, together with a sufficient number of electives to aggregate 12 hours of work during each term of the third year.

Students, unless they be of exceptional ability and industry, who find it necessary to devote a considerable portion of their time and energy to work not connected with their law studies are strongly advised to limit their work in the Law School to not more than ten hours in the classroom per week, and thus extend the period of their study of law over four years. The credit hour tuition fee enables students to extend the period of study at slight additional expense.

No student, unless permitted by special action of the faculty, will be allowed to carry more than the regularly prescribed work for the year, or proportional work for any term.

Attendance upon all special lectures scheduled is required; and all students in the Law School may be required to serve as jurors or witnesses in any proceedings before the practice court.

All the courses offered by the Law School are given between the hours of 8:30 a.m. and 5:30 p.m.

FIRST YEAR COURSES

Contracts. Offer and acceptance; consideration; contracts under seal; the Statute of Frauds; rights of beneficiaries and assignees; joint and several contracts; conditions; illegality; impossibility; and discharge of contracts. Corbin, *Cases on Contracts*. Three hours. Mr. Ballantine.

Property I. Real and personal property distinguished; possessory rights, liens, pledges; title to personal property by accession, confusion, gift, and finding. Theory of feudal land tenure; rights incident to ownership; profits; easements; licenses; covenants running with land. Warren, *Cases on Property*. Three hours. Mr. Fraser.

Torts. General principles underlying law of civil liability for wrongful conduct; specific wrongs of deceit, defamation, malicious prosecution, interference with contracts and trade, etc. Ames and Smith, *Cases on Torts* (edition of 1909-10), Vols. I and II. Three hours. Mr. Paige.

Common Law Actions and Equity I. The several forms of action at common law. Relation of forms of action to substantive law. Introduction to equity. Morgan, *Lectures*. Cook and Hinton, *Cases on Common Law Pleading*. Cook, *Cases on Equity Jurisdiction*, Vol. I. Two hours. Mr. McClintock.

Criminal Law and Procedure. The common and statutory law of crimes; criminal procedure. Mikell, *Cases on Criminal Law and Criminal Procedure*. Two hours. Mr. Miller.

Agency. Principal and agent, master and servant—their rights and obligations, mutually and as to third persons. Goddard, *Cases on Agency*. Two hours. Mr. Rottschaefer.

SECOND YEAR COURSES

Constitutional Law. Nature of American constitutional system; legislative, executive, and judicial departments; fundamental rights; due process of law; police power; taxation; eminent domain; the Federal government and its general powers; interstate commerce. Hall, *Cases on Constitutional Law*. Two hours. Mr. Rottschaefer.

Equity II. Nature of equity jurisdiction; injunctions; bills of peace; interpleader; specific performance; bills for account. Ames, *Cases on Equity*, Vols. I and II. Two hours. Mr. McClintock.

Private Corporations. The nature, creation, and citizenship of corporations; *ultra vires* contracts and acts; stock issues; rights and liabilities of stockholders, officers and agents of corporations; rights of creditors. Richards, *Cases on Private Corporations*. Two hours. Mr. Ballantine.

Property II and Decedents' Estates. (1) Titles and conveyancing; the execution of deeds and estates created thereby; executive sales and priorities; actions concerning real property. Dibell, *Cases on Real Property*. (2) Testamentary capacity; execution, revocation, and republication of wills; descent; probate of wills and administration of estates. Dibell, *Cases on Wills and Descent*. Two hours. Mr. Dibell.

Negotiable Instruments. Formal and essential requirements of negotiable instruments, and the nature of the liability of the respective parties thereto; acceptance; endorsement; transfer; presentment; notice of dishonor; the Negotiable Instruments Law. Colson's Huffcutt, *Cases on Negotiable Instruments*. Two hours. Mr. Paige.

Sales. Contracts resulting in the transfer of title to personal property, and the special rights and remedies of the buyer and seller. Williston, *Cases on Sales* (second edition). Two hours. Mr. Fletcher.

Trusts. Nature and incidents of the trust relationship; methods of creating trusts; rights and obligations of trustees and beneficiary; constructive trusts, charitable trusts. Scott, *Cases on Trusts*. Two hours. Mr. Fraser.

Brief-Making and Drafting. Practical exercises in the writing of briefs and in the preparation of legal documents. Examination of abstracts of title. One hour. Mr. Ballantine, Mr. Kitts.

THIRD YEAR COURSES

Practice and Practice Court (required). This course deals with the various proceedings in an action from the commencement thereof, through trial and appellate courts, to final satisfaction of judgment, including

work in the practice course. Sunderland, *Cases on Trial and Appellate Practice* (1924 edition). Three hours. Mr. Cherry, Mr. Miller, Mr. Carman, Mr. Kjorlaug.

Evidence (required). Burden of proof; judicial notice; admission and exclusion of evidence; competency, privilege, and examination of witnesses; hearsay rule and recognized exceptions; opinions and conclusions; circumstantial evidence; best evidence rule; parole evidence rule. Hinton, *Cases on Evidence.* Two hours. Mr. Cherry.

Pleading. Common Law and Code Pleading (required). Demurrers, pleas, replications, departure, new assignment, amendment, set-off and counterclaim. Relation of code to common law pleading, parties, splitting and joinder of causes, the complaint, answer, demurrer, reply, motions, bills of particulars, amendment, and aider. Cook and Hinton, *Cases on Common Law Pleading.* Hinton, *Cases on Code Pleading* (2nd edition). Two hours. Mr. Miller.

Property III. Conditional and future interests in land: reversion and remainders; executory limitations by way of use and devise; powers; rule against perpetuities; conditions in restraint of alienation. Minnesota restrictions on future interests and trusts. Kales, *Future Interests,* American Casebook Series, and selected cases. Two hours. Mr. Fraser.

Conflict of Laws. The rules applied by courts in enforcing rights acquired under the law of a sister state or a foreign country. Lorenzen, *Conflict of Laws* (2nd edition). Two hours. Mr. McClintock.

Mortgages. Legal and equitable mortgages of realty and chattels; rights of mortgagor and mortgagee at law and in equity; foreclosure, redemption, extension, assignment, and discharge of mortgages. Dibell, *Cases on Mortgages.* One hour. Mr. Dibell.

International Law. (1) International Relations in Time of Peace; territorial jurisdiction; jurisdiction on the high seas; nationality. (2) International Relations as Modified by War; measures short of actual war; effect of war as between enemies; relation between belligerents and neutrals. Scott, *Cases on International Law.* Two hours. Mr. Allin.

Damages. Exemplary damages; nominal damages; direct and consequential damages; elements of injury; function of court and jury; liquidated damages; entire and prospective damages: limitations of interest; aggravation and mitigation. Special applications. Beale, *Cases on Damages* (third edition). Two hours, half year. (Not given in 1924-25.)

Insurance. Nature and requisites of the contract; premiums and assessments; insurable interests; concealment; representations and warranties; waiver and estoppel; rights under the policy; beneficiaries, assignees, and creditors; construction of the policy. Vance, *Cases on Insurance.* Two hours, half year. (Not given in 1924-25.)

Municipal Corporations. Legislative control; officers and agents; power to incur indebtedness, to pass ordinances, to grant franchises, to levy taxes, to issue securities, to own and operate public utilities; municipal

liability for torts. Abbott, *Cases on Municipal Corporations.* Two hours, first half year. Mr. Abbott.

Public Utilities. Origin of common callings, peculiar duties and liabilities incident thereto, the modern law applicable to those engaged in public service, particularly common carriers, with special reference to the Interstate Commerce Act and similar state statutes. Textbook to be announced. Two hours, first half year. Mr. Rottschaefer.

Taxation. This course deals only with the legal questions arising in connection with the assessment of property and the levying and collection of taxes. Beale, *Cases on Taxation.* Two hours, second half year. Mr. Rottschaefer.

Partnership. The nature and formation of the partnership relation; the rights and liabilities of the partners, both *inter se* and as to third parties. Gilmore, *Cases on Partnership.* Two hours, second half year. Mr. Paige.

Suretyship. The surety distinguished from the guarantor, the guaranty insurer, and the endorser; surety's defenses against creditor; surety's rights to subrogation, indemnity, contribution, and exoneration; creditor's rights to surety's securities. Ames, *Cases on Suretyship.* Two hours, first half year. Mr. Fletcher.

Quasi Contracts. Nature and scope of quasi contracts, benefits voluntarily conferred by mistake, in partial performance of a contract, in the absence of a contract; benefits conferred under duress; waiver of tort. Thurston, *Cases in Quasi Contracts.* Two hours, half year. (Not given in 1924-25.)

Bankruptcy. Origin, history, and nature of the bankruptcy law; jurisdiction of the courts; acts of bankruptcy; practice; receivers; claims, preferences; assets, trustees; liens; adverse claimants; summary jurisdiction; crimes, composition, discharge. Selected cases. Two hours, second half year. Mr. Fletcher.

Persons. Marriage and divorce; parent and child; guardian and ward; property law peculiar to the marriage relation; rights and liabilities of persons under the disabilities of coverture, infancy, insanity, etc. Paige, *Cases on Domestic Relations.* Two hours, first half year. Mr. Paige.

WORK IN PRACTICE

Members of the third year class, in addition to classroom instruction in practice, engage in the exercises of the practice court. Each student is assigned a number of cases in which he is required to draw the necessary pleadings, to see to the service of process and pleadings, and to prepare for and conduct the trial. In at least one of the cases so assigned, the student must take steps to secure or oppose a provisional or extraordinary remedy. Each student also serves as a witness in several cases. The trial is followed by a discussion of the conduct of the case, led by the instructor who has acted as judge.

Students prepare three sets of papers, which include all papers ordinarily used in the prosecution and defense of a civil action in the District Court and on appeal to the Supreme Court. The papers are explained and discussed in class.

Members of the third year class are required to serve as assistants in the office of the Legal Aid Society and to attend at the office of the society during the periods assigned for such service.

MILITARY SCIENCE AND TACTICS

Students who have completed the Basic Course, R.O.T.C., may be selected for advanced work by the professor of military science and tactics.* Those who pursue the Advanced Course are required to sign an agreement with the government to continue the two years' course to completion. This includes attendance at a training camp, held normally during the summer following the first year's advanced work. The camp is conducted free of cost to the student, and in addition, while actually in camp, the student receives the pay prescribed for the seventh grade in the army. Students pursuing the Advanced Course are also furnished a special uniform and receive a fixed allowance per day. The total government compensation for the two years' advanced work amounts to something over $200. Students who satisfactorily complete the Advanced Course will be commissioned in the Officers' Reserve Corps of the United States Army.

INFANTRY COURSES

No.	Title	Hour	Day	Bldg.	Instructor
51f-52w	First Year Adv. Course.....	II	MWF	A	Ar
		III	MWF	A	Ar
		VI	MWF	A	Ar
		VIII	MWF	A	Ar
		I, II	TThS	A	Ar
		III, IV	TThS	A	Ar
		VI, VII	TTh	A	Ar
		VIII, IX	TTh	A	Ar
53s	First Year Adv. Course.....	VII, VIII, IX	T or W	A	Ar
		IV	TS	A	Ar
54f-55w	Second Year Adv. Course.....	II	MWF	A	Ar
		III	MWF	A	Ar
		VI	MWF	A	Ar
		VIII	MWF	A	Ar
		I, II	TThS	A	Ar
		III, IV	TThS	A	Ar
		VI, VII	TTh	A	Ar
		VIII, IX	TTh	A	Ar
56s	Second Year Adv. Course.....	VII, VIII, IX	T or W	A	Ar
		IV	TS	A	Ar

ATTENDANCE FOR 1923-24

Third year class	126
Second year class	85
First year class	72
Total	283

* Must be legally eligible for enrolment in R.O.T.C. Consult P.M.S.&T.

The following resolution was adopted by the American Bar Association, September 1, 1921. It was approved by a national conference of state and local bar associations, February 24, 1922, and by the Minnesota State Bar Association, September 1, 1922.

"(1) The American Bar Association is of the opinion that every candidate for admission to the bar should give evidence of graduation from a law school complying with the following standards:

(a) It shall require as a condition of admission at least two years of study in a college.

(b) It shall require its students to pursue a course of three years' duration if they devote substantially all of their working time to their studies, and a longer course, equivalent in the number of working hours, if they devote only part of their working time to their studies.

(c) It shall provide an adequate library available for the use of the students.

(d) It shall have among its teachers a sufficient number giving their entire time to the school to insure actual personal acquaintance and influence with the whole student body.

The Council on Legal Education and Admission to the Bar is directed to publish from time to time the names of those law schools which comply with the above standards and of those which do not and to make such publications available so far as possible to intending law students."

The University of Minnesota Law School is the only school in the state of Minnesota approved by the council.

The Bulletin *of the* University *of* Minnesota

The Medical School

Announcement for the Year

1923-1924

Vol. XXVI No. 24 June 28, 1923

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Minneapolis, Minnesota

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

1923

JULY

Su	Mo	Tu	W	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	..	..	..	..
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AUGUST

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SEPTEMBER

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OCTOBER

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NOVEMBER

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DECEMBER

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1924

JANUARY

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FEBRUARY

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MARCH

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APRIL

		1	2	3	4	5
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MAY

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JUNE

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JULY

Su	Mo	Tu	W	Th	Fr	Sa
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AUGUST

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SEPTEMBER

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21	22	23	24	25	26	27
28	29	30	..	..	..	..
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OCTOBER

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NOVEMBER

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DECEMBER

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UNIVERSITY CALENDAR

1923-24

1923			
September	15	Saturday	Payment of fees closes, except for new students
September	17-25		Examinations for removal of conditions and entrance examinations Physical examinations for all new students
September	18-22		Registration period,† colleges of Science, Literature, and the Arts, and Agriculture, Forestry, and Home Economics
September	24-25		Registration days† for all colleges not included above
September	25	Tuesday	Payment of fees for new students closes
September	26	Wednesday	Fall quarter begins, 8:30* a.m.
October	25	Thursday	Senate meeting, 4:30 p.m.
November	12	Monday	A legal holiday (Sunday, November 11, Armistice Day)
November	17	Saturday	Home Coming Day; classes dismissed the third and fourth hours
November	29	Thursday	Thanksgiving Day; a holiday
December	6	Thursday	State Day Convocation
December	13	Thursday	Commencement Convocation
December	13	Thursday	Senate meeting, 4:30 p.m.
December	20	Thursday	Fall quarter ends, Christmas vacation begins, 5:20 p.m.
1924			
January	4	Friday	Christmas vacation ends, winter quarter begins, 8:30* a.m.
February	12	Tuesday	Lincoln's Birthday; a holiday
February	14	Thursday	Charter Day Convocation
February	14	Thursday	Senate meeting, 4:30 p.m.
February	22	Friday	Washington's Birthday; a holiday
March	21	Friday	Winter quarter ends, spring vacation begins, 5:20 p.m.
April	2	Wednesday	Spring vacation ends, spring quarter begins 8:30* a.m.
April	18	Friday	Good Friday; a holiday

* First hour classes begin at 8:15 at University Farm.

† Registration subsequent to the dates specified will necessitate the approval of the college concerned. See also penalty fees for late registration, page 26.

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 and peculiar circumstances shall justify the appropriate committee of the college concerned permitting registration at a later date.

May	15	Thursday	Cap and Gown Day Convocation
May	15	Thursday	Senate meeting, 4:30 p.m.
May	30	Friday	Memorial Day; a holiday
June	15	Sunday	Baccalaureate service
June	18	Wednesday	Fifty-second annual commencement
June	18	Wednesday	Spring quarter closes, 5:20 p.m.
June	21	Saturday	Summer Session first term begins, registration and payment of fees
June	24	Tuesday	Classes begin, 8:00 a.m.
July	4	Friday	Independence Day; a holiday
July	31	Thursday	First term Summer Session closes
			Registration and payment of fees for second term closes
August	1	Friday	Second term classes begin
September	5	Friday	Second term Summer Session closes

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[1] Died February 25, 1923.

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LEO G. RIGLER, B.S., M.D., Assistant in Medicine
EDWIN F. ROBB, B.A., M.D., Assistant in Pediatrics
HAROLD J. ROTHSCHILD, M.D., Assistant in Ophthalmology and Oto-Laryngology
J. MARTIN SANSBY, B.S., M.D., Assistant in Pediatrics
JENNIE SCHEY, R.N., Assistant in Nursing
ELLERY D. SIMPSON, B.A., M.D., Assistant in Surgery
ADAM M. SMITH, B.S., M.D., Assistant in Medicine
HARRIE M. SOLOMON, R.N., Assistant in Nursing
ALEXANDER STEWART, M.D., C.M., Assistant in Pediatrics
MAURICE B. VISSCHER, B.A., Assistant in Physiology
ARCHIBALD W. WARD, M.D., Assistant in Medicine
EUGENE F. WARNER, M.D., Assistant in Pediatrics
CLARENCE E. WILLCUTT, M.D., Assistant in Obstetrics and Gynecology
DANIEL E. ZISKIN, D.D.S., Assistant in Dental Diseases

TEACHING FELLOWS

J. WARREN BELL, B.S., M.D., Teaching Fellow in Obstetrics and Gynecology
OSCAR B. BERGMAN, B.S., Teaching Fellow in Pathology
CLAUDE M. CLEVELAND, M.D., Teaching Fellow in Obstetrics and Gynecology
WALTER P. COVELL, B.S., Teaching Fellow in Anatomy
LAWRENCE R. GOWAN, B.A., M.D., Teaching Fellow in Medicine
HENDRIE W. GRANT, M.D., Miller Hospital Fellow in Ophthalmology and Oto-Laryngology
HALVOR O. HALVORSON, B.S., Teaching Fellow in Bacteriology and Immunology
EMIL D. HAUSER, B.S., M.D., Miller Hospital Fellow in Surgery
FRANK G. HEDENSTROM, B.S., M.D., Teaching Fellow in Pediatrics
HERMAN H. JENSEN, B.A., M.S., Teaching Fellow in Pharmacology
JOSEPH T. KING, B.S., Teaching Fellow in Physiology
LLOYD E. MCFARLANE, B.S., M.D., Teaching Fellow in Surgery
MARY A. MCLOON, B.A., M.D., Teaching Fellow in Pediatrics
IRWIN A. MONTANK, B.A., Shevlin Fellow in Bacteriology and Immunology
ARTHUR G. MULDER, Teaching Fellow in Physiology
CARTER H. OSBORNE, B.S., M.D., Teaching Fellow in Anatomy
LAWRENCE F. RICHDORF, B.S., M.D., Teaching Fellow in Pediatrics
EVERETT ROWLES, B.A., Teaching Fellow in Anatomy
ALICE RUPP, B.A., Teaching Fellow in Physiology
HENRY O. RUDD, B.S., M.D., Teaching Fellow in Ophthalmology and Oto-Laryngology
WILLIAM P. SADLER, B.A., M.D., Teaching Fellow in Obstetrics and Gynecology

GORDON H. SCOTT, B.A., Teaching Fellow in Anatomy
ROY E. SWANSON, B.S., M.D., Teaching Fellow in Obstetrics and Gynecology
GLENN W. TUTTLE, B.S., Teaching Fellow in Pathology
ALEXANDER E. VENABLES, M.D., Miller Hospital Fellow in Medicine
OWEN H. WANGENSTEEN, B.A., B.S., M.D., Teaching Fellow in Medicine
MACNIDER WETHERBY, B.S., M.B., Teaching Fellow in Medicine

GENERAL INFORMATION

ADMISSION

The Medical School is conducted on the four-quarter system. Beginning students are received at the opening of the fall quarter; in a few instances, if there are vacancies, they may be received at the beginning of the summer or winter quarter. 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.

SUMMARY OF REQUIREMENTS FOR ADMISSION

Ninety quarter credits of college work, carrying 90 honor points, and including rhetoric, 9 credits; chemistry, 20 credits; physics, 12 credits; and zoology, 12 credits; a reading knowledge of French or German; subject to detailed requirements and rules governing limited registration.

DETAILED STATEMENT OF REQUIREMENTS FOR ADMISSION

The two years of college work are defined as including not less than 90 quarter credits (60 semester credits) carrying at least an equal number of honor points. A candidate's record must also show a number of honor points equal to the total number of credits in the required subjects of rhetoric, chemistry, physics, and zoology. In other words, a student's pre-medical college work both in required and also in elective subjects must be of such a grade that the honor points equal or exceed the number of credits. To understand this requirement it should be noted that on the basis of A, B, C, and D as passing marks, D gives no honor points; C, one honor point for each credit; B, two honor points for each credit; A, three honor points for each credit. It is impossible for a student with only the minimum passing grades to secure admission. Students with a high ratio of honor points to total credits, especially in their required work, are given preference in the selection of candidates for admission.

The pre-medical college credits must include the following:

1. *Rhetoric:* 9 quarter (6 semester) 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:* 20 quarter (13 semester) credits, including general chemistry, qualitative and quantitative analysis, and organic chemistry with laboratory work. At Minnesota, Courses 4-5 (or 1, 2, 3) 11, 27, 31-32 are necessary. Students are advised to take chemistry in high school.

3. *Physics:* 12 quarter (8 semester) credits, covering mechanics, sound, heat, light, electricity and magnetism, with proper laboratory work. At Minnesota, Courses 1 and 2, 21 and 22, 31 and 32, 41 and 42 (a total of 16 credits) meet the requirement. Students are advised to complete them all, but, if desired, Course 35 may be substituted for 31 and 32. See bulletin of the College of Science, Literature, and the Arts for description of these courses and statement of prerequisites.

4. *Zoology:* 12 quarter (8 semester) credits, including proper laboratory work. At Minnesota, Animal Biology 5-6-7, meets this requirement.

5. *Foreign language:* Sufficient high school or college training to insure a reading knowledge of French or German medical literature. This requirement is fulfilled as regards French:

(a) By passing any two of Courses 8, 9, 10 in Scientific French in the Department of Romance Languages of this University or by acceptable courses covering similar work done elsewhere;

or (b) By passing an examination conducted by the Department of Romance Languages. The minimum preparation demanded for admission to this examination is 15 credits of French with an average mark of C, or satisfactory equivalent.

The language requirement is fulfilled as regards German:

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

or (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. *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.

A psychologic test will be required of all new students, if possible before acceptance; otherwise upon appearance of each student for registration.

UNCLASSED STUDENTS

Students prepared for particular courses in departments of the Medical School may be admitted as unclassed students. Such students receive subject credit for courses satisfactorily completed but are not entitled to legal time credit toward the bachelor of medicine or doctor of medicine degree. This time requirement is defined by statute in the various states and cannot be disregarded or shortened by students desiring a degree in medicine and a license to practice.

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. See Opportunities for Physicians, page 22 of this bulletin.

REGISTRATION LIMITED

On account of the limited capacity of the school, the incoming (third year or freshman) class will be limited to one hundred. Application blanks may be obtained from the dean's office, and should be filled out and returned by June 1, so as to give ample time for the study of students' records.

The last day for receiving applications for the freshman year will be July 1. If pre-medical college work was done elsewhere than at the University of Minnesota, detailed credentials, certified by the proper officer of the college attended and showing subjects, credits, and grades, must be presented by July 1.

No candidate with conditions or deficiencies will be accepted.

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 record of their previous work, as detailed above under Requirements for Admission. 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.

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

ADMISSION WITH ADVANCED STANDING

Honorably dismissed students of Class A medical schools may be received into advanced classes provided vacancies occur. Such students must make formal application on the blank provided and must submit credentials covering pre-medical and medical studies. Such credentials must show that the student had the pre-medical requirements and has maintained the standard of scholarship required of students in this school.

As a rule notebooks and other evidences of laboratory work must be presented. The amount of advanced standing to be granted a student from another school is decided by the respective departments in conference with the Students' Work Committee. Subject credit, but not legal time credit, may be given for studies pursued other than in medical schools.

The fourth (sophomore) year is limited to one hundred students.

The fifth and sixth (junior and senior) years are limited to one hundred in each class, in divisions of fifty students. Division A begins the work of the fifth year in the summer quarter; Division B in the fall quarter. Students desiring to enter the junior year from other schools should bear these facts in mind in making application for admission.

COMBINED COURSES IN ARTS OR SCIENCE AND MEDICINE

Students who are candidates for the degree of bachelor of arts, who have successfully completed three years, or 135 credits and honor points, under the rules of the College of Science, Literature, and the Arts, may elect their fourth year in the Medical School and secure the remaining 45 credits and 45 honor points, required for the bachelor of arts degree, in this school.

Similarly, students who have completed, with the required number of honor points, the work of the first two years, or 90 quarter credits (60 semester credits), in the College of Science, Literature, and the Arts of this University, or in another approved college, may enter the Medical School, and upon the successful conclusion of the first two years of medical study, earning the required credits and honor points, will receive the degree of bachelor of science.

It will be understood that in either of these combined courses the required pre-medical subjects must be included, viz.; rhetoric, chemistry, zoology, physics, and a reading knowledge of French or German. All special requirements of the College of Science, Literature, and the Arts must likewise be fulfilled; see bulletins of that college.

Macalester College announces that students who successfully complete three years of work in that college followed by one year of successful work in the Medical School of this University may receive the bachelor of arts degree from Macalester College.

THE CURRICULUM

DEPARTMENTAL HOURS

	Clock hours		Clock hours
Physical chemistry	99	Surgery	381*
Anatomy, gross and microscopic	704	Obstetrics	222*
Bacteriology	176	Pediatrics	168*
Physiology, including physiologic chemistry	440	Ophthalmology and Oto-Laryngology	116*
Pathology	352	Roentgenology	11
Preventive Medicine and Public Health	57	Electives†	924
Pharmacology	187	Total	4,518
Medicine	692*		

ARRANGEMENT OF COURSES

Department and Course	Third (Freshman) Year			Fourth (Sophomore Year)		
	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	5th qtr.	6th qtr.
Anat. 5, 6, 7 (Dissection)	15	15	..	..	..	..
Anat. 103 (Histology	..	..	15	..	..	..
Anat. 107 (Embryology)	..	..	9	..	..	..
Chem. 40 (Physical Chem.)‡	9	..	..	..	..	..
Physiol. 100-101 (Physiol. Chem.)	..	9	9	..	..	..
Bact. 1 (Gen. Bact.)‡	..	9	..	..	..	..
Anat. 111 (Neurology)	..	..	..	10	..	..
Physiol. 103-104 (Physiology)	..	..	..	11	11	..
Bact. 101 (Spec. Bact.)	..	..	..	7	..	..
Path. 101-102 (Pathology)	..	..	..	..	15	15
Pharm. 102-104 (Gen. & Exp. Pharm.)	..	..	..	..	2	9
Med. 48, 49, 50 (Phys. Diag.)	..	..	..	4	2	4½
Surg. 50 (Bandaging)	..	..	..	1	..	..
Ped. 100 (Ped. Diag.)	..	..	..	..	..	1
Electives	..	..	..	..	6	6
Total clock hours per week	24	33	33	33	36	35½

* Not including proportional time for student internship, elected by most students.

† Including student internship or other electives, 30 hours a week in last two quarters.

‡ Half the class takes physical chemistry in the winter and general bacteriology in the fall.

Department and Course	Division A						Division B					
	Fifth Year			Sixth Year			Fifth Year			Sixth Year		
	Su.	F.	W.	S.	Su.	F.	F.	W.	Su.	F.	W.	S.
Pharm. 105-106 (Pharm. & Ther.)	2	2	..	..	..	..	2	2	..	..	..	..
Pharm. 107 (Ther. Conf.)	..	..	..	..	1	..	..	..	..	..	1	..
Pharm. 108 (Presc.-Writing)	..	1	..	..	..	..	..	1	..	..	..	..
Path. 103 (Hygiene)	..	3	..	..	..	..	3	..	..	..	..	..
Path. 109 (Clin. Path. Conf.)	..	..	1	1	..	..	..	..	1	1	..	..
Med. 51-52 (Gen'l Med.)	3	3	..	..	..	..	3	3	..	..	..	..
Med. 53 (Phys. Diagnosis)	4	2	..	..	..	..	2	4	..	..	..	..
Med. 54 (Clin. Ch. & Mic.)	6	..	..	..	..	..	6	..	..	..	..	..
Med. 55 (Phys. Diag. Lects.)	1	..	..	..	..	..	1	..	..	..	..	..
Med. 56 (Prac. Therapy)	..	..	1	..	..	..	..	..	1	..	..	..
Med. 57 (Med. Clinic)	1	1	..	..	..	..	1	1	..	..	..	..
Med. 58 (Med. Clinic)	..	..	1	1	..	..	..	..	1	1	..	..
Med. 60, 62 (Mth. Infec. & Jur.)	..	..	..	..	..	2	..	..	..	2	..	..
Med. 63 (Med. Clinic)	..	..	..	..	1	1	..	..	..	..	1	1
Med. 69 (Nerv. Dis.)	..	3	..	..	..	..	..	3	..	..	..	..
Med. 70 (Psychiatry)	..	..	1	..	..	..	..	..	..	..	1	..
Med. 79, 80 (Dermatology)	1	1	..	..	..	..	1	1	..	..	..	..
Surg. 51 (Prin. Surg.)	3	..	..	..	..	..	3	..	..	..	..	..
Surg. 53 (Gen'l Surg.)	..	3	..	..	..	..	..	3	..	..	..	..
Surg. 55-56 (Regional)	..	..	2	2	..	..	..	2	2	..	..	..
Surg. 58 (Fractures)	..	..	..	2	..	..	..	..	..	..	..	2
Surg. 59 (Diag. Clinic)	1	..	..	..	..	..	..	1	..	..	..	..
Surg. 72 (Orthopedia)	..	..	..	..	..	1	..	..	..	..	..	1
Surg. 73 (Genito-Urinary)	..	..	..	1½	..	..	..	..	..	..	..	1½
Surg. 79 (Roentgenology)	..	..	..	..	1	..	..	..	..	..	1	..
Obst. 51-52 (Obstetrics)	3	3	..	..	..	..	3	3	..	..	..	..
Obst. 53 (Oper. Obst.)	..	..	..	1	..	..	..	..	..	1	..	..
Obst. 54 (Gyn. Diag.)	1	...	..	..	..	..	1	..	..	..	..	..
Obst. 55 (Gynecology)	..	..	2	..	..	..	..	2	..	..	..	..
Obst. 56, 57 (Obst. & Gyn.)	..	..	..	..	2	2	..	..	..	2	2	..
Ped. 101, 102 (Pediatrics)	..	3	2	..	..	..	..	..	2	3	..	..
Oph. & Otol. 77 (Ophthal.)	..	..	..	..	2	..	..	..	2	..	..	..
Oph. & Otol. 79 (Otology)	..	..	..	..	..	1	..	..	..	1	..	..
Oph. & Otol. 81 (Rhin. & Lar.)	..	..	..	1½	..	..	..	..	..	1½	..	..
Section Exercises	4½	4½	..	..	..	..	4½	4½	..	..	..	..
Clerkship. Sect. Clin., etc	..	..	25	25	..	..	..	..	25	25	..	..
Electives†	6	6	..	..	30	30	6	6	..	..	30	30
Total clock hours per week	36½	35½	37	37	35	35	36½	36½	34	35	36	36½

Figures represent actual hours each week.

† The elective work in the final six months may be a student internship in one of the hospitals under University control or affiliation. A credit value of 30 hours a week is arbitrarily assigned to the student internships. If a student does not desire or does not secure a student internship, he may elect other work equivalent to 30 hours a week. This may all be in one department or distributed. This work may be elected in a science department or in the Department of Preventive Medicine and Public Health, in which cases the student cannot substitute additional work in such department for the required intern year, i.e., either the student internship or the regular graduate internship must be spent in clinical studies.

MARKING SYSTEM

Four passing marks, indicated by the symbols A, B, C, and D, represent different degrees of merit. While a mark of D passes a student in an individual course, not less than an average of C is regarded as satisfactory work. To effect this the honor point system is used. D gives no honor points; C gives one honor point for each credit hour; B, two honor points per credit hour; A, three honor points per credit hour. See rules below founded on this system.

E represents a condition, which may be removed by examination and by such supplementary work as the department imposing it may require. F stands for a failure and calls for a repetition of the work in class. I stands for incomplete and grants the student one month's time for the completion of the required work.

SCHOLARSHIP RULES

1. Any student who, at the end of any given quarter, receives mark E or F in more than fifty per cent of his registered work in that quarter, will be dropped for an indefinite period for poor scholarship; such percentage to be estimated upon a credit hour basis.

2. Students who secure less than 25 quarter honor points in the required courses of the third (freshman) year will be denied further registration in the Medical School.

3. Students who by the end of the fourth (sophomore) year have secured less than seventy quarter honor points, sixty of which were for the required courses, will be denied further registration in the Medical School.

4. Students must secure their Bachelor's degrees, i.e., they must complete the required and elective work of the first two years of the medical course with at least 90 honor points, together with the fulfillment of all requirements in the Arts College, before they can register for the second clinical period, (clerkship). Students who had a Bachelor's degree before entering the Medical School, or who received such degree at the end of the freshman medical year, must likewise secure at least 90 honor points on the required and elective science subjects in the Medical School before they can register for the second clinical period.

No work in a clinical department except normal Physical Diagnosis, Medicine 48, 49, 50, can be counted toward a Bachelor's degree.

5. Students must maintain an average grade of C in the work of each of the three clinical periods of the combined junior and senior years, such average to be computed on a clock hour basis.

6. Students dropped under any of the above rules will not be eligible to condition examinations nor to reinstatement, nor to take summer school courses, excepting upon recommendation of the Students' Work Committee and affirmative vote of the Administrative Board.

RULES GOVERNING PHYSICAL EXAMINATIONS AND PROPHYLACTIC INOCULATION

1. Physical examinations shall be required of all medical students before they enter upon the work of the freshman and of the junior years. These examinations will be performed at the beginning of the fall quarter respectively of the freshman and the junior years and no student will be permitted to enter upon the work of these years until he presents a certificate from the Students' Health Service that such an examination has been performed.

2. All students in the Medical School shall be protected against smallpox by vaccination, and no student will be permitted to enter the winter quarter of his freshman year until the Students' Health Service shall report that such immunization has been completed. Students who enter with advanced standing must be certified by the Health Service as to such immunization before registering for their second quarter in the Medical School.

3. All students entering the Medical School shall be tested by means of the Schick test as to immunity against diphtheria. All students who are found to be nonimmune must be protected by means of toxin-antitoxin inoculations, and no student will be permitted to enter the sophomore year until the Students' Health Service shall report that immunization against diphtheria has been accomplished.

4. Medical students, particularly at the beginning of their junior year, are urged to avail themselves of the opportunity to be protected against typhoid fever and paratyphoid by antityphoid and paratyphoid inoculations which may be received at the Students' Health Service.

5. Registration will not be complete in the respective quarters named until these rules are fulfilled.

REQUIREMENTS FOR GRADUATION: DEGREES

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 the full four-year period of required and elective work in the Medical School in compliance with the scholarship rules are the essentials for the bachelor of medicine degree. An approved hospital internship or advanced laboratory work or public health study for one year is the additional requirement for the doctor of medicine degree. This degree *cum laude* is granted to a student of high grade who presents an acceptable thesis.

The required internship insures to the practitioner of medicine a year of varied clinical experience under supervision, and gives to the public assurance of efficiency in the graduate. The alternative of advanced laboratory work is also valuable as preparation for medical practice, and for training those who desire to enter the profession of medical teaching.

The alternative of public health study meets a growing demand for trained medical sanitarians.

During the intern year students may not practice medicine outside the hospital nor take out permits to prescribe alcohol. This applies also to students who elect the year in laboratory or public health work.

CLINICAL OPPORTUNITIES

THE MINNESOTA GENERAL HOSPITAL

The Elliot Memorial Building, the product of a bequest of the estate of the late Dr. and Mrs. A. F. Elliot, supplemented by legislative appropriations, provides 192 beds. Three fourths of the service is free to poor people. There are 50 per diem beds, but no private rooms.

During the next year about 50 beds will be added to the University Hospital through the erection of the Todd Memorial Hospital for Eye, Ear, Nose, and Throat, to be constructed with funds provided by Mrs. F. C. Todd, friends of Dr. Todd, and the state of Minnesota; also about 50 beds through the erection of a Cancer Institute donated through the Citizens Aid Society, by Mrs. George Chase Christian, President.

THE UNIVERSITY DISPENSARY

The dispensary is housed in Millard Hall. A nominal charge is made for those who can pay. Others are treated free. The service is subdivided into medical, surgical, gynecological, obstetrical, children's, eye, ear, nose, and throat, skin, syphilis, genito-urinary, nervous and mental, orthopedic, and dental clinics. It enrolled 15,859 new patients and received 68,437 patients' visits during the year 1922.

Sections of the senior and junior classes are assigned to these clinics daily, and are trained in case history-taking, in physical examinations and diagnosis, in prescription-writing, and in general therapeutic methods.

A Social Service Department is maintained in relation to the hospital system and dispensary.

AFFILIATED HOSPITALS

The Minneapolis General Hospital and the City and County Hospital of St. Paul are closely affiliated with the Medical School of the University. One half of their clinical service is under the direction of the faculty.

The combined resources of these two hospitals cover some fourteen hundred beds. Every phase of clinical service is represented.

The State Hospital for the Crippled and Deformed, at Phalen Park, St. Paul, is used for instruction in orthopedic surgery. Its surgeon and his aides are members of the faculty. Graduate interns and student interns of the University Hospital are assigned in rotation to its service.

The Hennepin County Tuberculosis Sanatorium at Glen Lake, an institution of over 400 beds, is used for clinics and for student intern instruction.

The Miller Hospital, St. Paul, of about 200 beds, is used regularly for student intern instruction and elective clinics.

Student internships are offered in certain private hospitals.

Clinics are held in other institutions, as Pillsbury House, Margaret Barry House, and the St. Paul Free Dispensary.

PLAN OF CLINICAL TRAINING

With the initiation of the four-quarter system, the Medical School offers a method of clinical instruction which is designed to promote more individual training and opportunities of observation and experience in hospitals.

To realize this plan, the entire period of clinical instruction, covering ten quarters in time, is arranged in four divisions.

1. An introductory clinical division of two quarters, within which students take didactic and laboratory courses in medicine, surgery, obstetrics, and pediatrics; advanced work in applied pharmacology; and clinics devoted to study in the general phenomena of disease and the principles of physical diagnosis.

2. An intermediate clinic division of two quarters in which the emphasis is placed upon clinical clerkships, wherein the students, under the supervision of resident instructors and teaching fellows, make and record physical examinations of patients and laboratory investigations of clinical material; and also attend general and special clinics and hospital rounds conducted by the departmental or divisional chiefs. At the same time, they take lectures in the special branches of medicine, surgery, etc. The clinics in this period are concentrated in the University Hospital and Dispensary.

3. An advanced division, also covering two quarters, the work of which is chiefly elective. Among the electives are student internships (see page 60). Student interns reside in the hospitals, and their work in the wards is supervised by faculty members on the hospital staffs. They are kept in touch with the school by their attendance upon semi-weekly series of lectures upon advanced topics. Student internships are assigned on the basis of scholarship, provided each candidate is acceptable to the hospital of his choice. Student internships cannot be promised to every student of the advanced clinical division. Those not so provided take other elective work to fill the same number of hours, 30 per week. Final examinations in clinical branches are held at the close of the student internship, and the bachelor of medicine degree is granted to successful candidates.

4. A regular internship division, covering four quarters, during which students are assigned and registered as regular interns in approved hospitals, where their educational work is supervised and certified to the school. A year of advanced laboratory work or a year of public health work may be accepted in lieu of the advanced internship.

By registration as a junior in Division A and the successive use of four quarters of study in each year, the student may complete his clinical requirements in two and one-half instead of three years. By the rotation of class divisions, one division is graduated at the close of each half year, i.e., in December and June.

MILITARY SCIENCE AND TACTICS

(Reserve Officers' Training Corps)

This department has been organized as a part of the general Reserve Officers' Training Corps movement in the educational institutions of the country. The object of the Medical Corps unit of the R.O.T.C. is to give to students, during their regular course in the medical school, special training which will fit them to become, upon graduation, officers in the medical section of the Officers' Reserve Corps of the Army. Medical students who desire to qualify for commissions, are required to devote 90 hours each year to this work, but credit for 60 hours may be given for subjects in the regular curriculum which have a military value. This leaves 30 hours, or practically 1 hour per week, required of each student in this department.

Students cannot be admitted to the Advanced Course until they have completed the Basic Course, but students who have satisfactorily completed the Basic Course in any other unit (branch of army) will receive credit for the same upon presenting satisfactory evidence, and may be admitted directly to the Advanced Course.

Students in the Basic Course receive no pay or allowance, but students in the Advanced Course receive commutation of subsistence at the per diem rate annually prescribed by the secretary of war (30 to 40 cents per day).

In addition to the work outlined above, each student in the Advanced Course is required to attend one medical R.O.T.C. camp during his course. This camp begins as early in the summer as possible after the closing of the medical schools and lasts for six weeks. At camps the tactical and field duties of medical service are emphasized and demonstrated. Each student receives his expenses to and from camp, and pay at the rate of an enlisted man, seventh grade, for the time spent there. The student is thus afforded a vacation which is pleasant and profitable.

While the special work of this department is of necessity military in its nature, it is also professional. A great portion of the work will be found to be applicable to civil medical practice as well as to military service, so the graduate who may never be called to active duty will find value in the time given to this department. Each course affords three credits toward graduation. (See page 60.)

LIBRARY

The library of the Medical School consists of the general medical library, housed in Millard Hall, and of collections of books in the departmental libraries of Surgery and Anatomy. These departmental collections are available to students and investigators. The medical library is open from 9 a.m. to 10 p.m. Two hundred sixty-six current journals are on file; 19,000 bound volumes and 45,000 unbound volumes and monographs, etc., are cataloged.

The General University Library and the libraries of other schools and colleges in the University and of the Hennepin County and Ramsey County medical societies are accessible to students of medicine.

PRIZES, FELLOWSHIPS, AND ASSISTANTSHIPS

The Rollin E. Cutts Prize in Surgery.—Dr. Martha Smith Cutts, '91 medical, established, as a memorial to her husband, the late Dr. Rollin E. Cutts, a fund of $500, the income of which is awarded, in the form of a gold medal, to the member of the senior class of the Medical School who presents the best thesis evidencing original work upon an approved surgical subject. The winner of this prize in 1922 was Fred Richardson.

The Shevlin Fellowship.—A fellowship, representing the income of $10,000, established in the Graduate School by the late Thomas H. Shevlin, is open to candidates for one full year's work in medical research. The holder of this fellowship in 1922-23 is Alice Rupp, B.A. (Wellesley), who is majoring in physiology.

Several student assistantships and fellowships in the fundamental and clinical department are available for properly prepared students.

FEES

The quarterly fee in the Medical School is $60 for residents of Minnesota and $70 for nonresidents, payable at the beginning of each quarter. No fee is charged for the final hospital or advanced laboratory year.

A health fee of $2 per quarter is paid by each student.

A fee of $1 per quarter is charged each student for the privilege of the Minnesota Union or Shevlin Hall.

A deposit of $10 each year is required as a caution fee. The following charges are made against the general deposit for each student in addition to such charges as may be incurred for lockers, library penalties, laboratory breakage, etc.:

Minnesota Daily, per quarter	$0.50
Post-office box, per quarter	.20
University Address Book	.35

Any balance remaining from this deposit will be returned to the student at the close of each year.

Students who take less than the regular course of study may arrange their fees at the rate of $2.50 (non-residents $3) for each weekly clock hour per quarter.

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

A fee of $1 is payable for a condition examination; and one of $5 for a special examination.

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

SELF-SUPPORT

The University maintains a Bureau of Employment. The medical course is difficult and should occupy the full time of students of average ability. However, a considerable number earn a part of their expenses throughout the school year. A few earn all their expenses, but as a rule students wholly dependent on themselves should take less than full work. Superior students may be appointed to teaching fellowships which permit some medical study.

MEDICAL WORK

Owing to legal and ethical implications, students may not engage in any kind of medical service or practice except by permission of the Students' Work Committee. Medical work includes service as assistant to a physician or clinic, residence or internship in a hospital, assistance in a medical laboratory, etc. Penalty for disobedience of this rule will be suspension from the school. No unlicensed physician may serve as substitute or locum tenens in Minnesota.

MICROSCOPES

Each student must be provided, by purchase or rental, and 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 hemocytometer and a stethoscope of approved form.

THE SUMMER SESSION

The summer quarter will be conducted in two terms; students may attend either or both. The session will begin about June 20.

Regular programs of instruction covering the first, third, and fifth quarters of junior and senior (fifth and sixth) years of the course in medicine are offered in the summer quarter. For this work regular fees are charged and regular credit toward the bachelor of medicine or doctor of medicine degree is given.

In addition, undergraduates in medicine are admitted in the Summer Session for the following purposes: (1) to secure advanced standing in courses of the regular session; (2) to remove conditions or failures; (3) for research or special study in medical subjects.

For courses of instruction offered and schedule of fees for special courses see bulletin of the Summer Session.

THE GRADUATE SCHOOL IN MEDICINE

The Graduate School in Medicine offers to suitably prepared graduates in medicine courses covering two and three years, leading to the degree of master of science or doctor of philosophy in the specialty in which the major work is done. The Graduate School includes the opportunities for study and research offered by the Mayo Foundation for Medical Education and Research, at Rochester, Minnesota, as well as those of the Medical School at Minneapolis.

Further information may be found in the announcement of the Graduate School or in the circular of information on graduate work in medicine. Application blanks for fellowships and scholarships may be had upon request.

Fellowships in the pre-clinical sciences pay $900 the first year, $1,200 the second year, and $1,500 the third year. In the clinical departments the stipends are $600 the first year, $750 the second year, and $1,000 the third year. About 150 fellowships are available each year at Rochester and Minneapolis.

SHORT 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.

Short courses in various clinical specialties are offered each spring by the Medical School in co-operation with the Extension Division of the University. Special circulars are sent on application.

THE SCHOOL OF NURSING

The School of Nursing is conducted as part of the Medical School. Four hospitals have combined their services into one school of nursing under the University of Minnesota. There are the University Hospital, the Minneapolis General Hospital, the Miller Hospital, St. Paul, and the Northern Pacific Hospital, St. Paul. Every phase of nursing practice is represented in these institutions. Students are shifted among these hospitals so as to secure a thoro training. The regular course covers three years. The diploma is granted by the University.

A combined course in the College of Science, Literature, and the Arts and the School of Nursing, leading to the degree of bachelor of science and graduate in nursing, is also offered. This course covers a period of five years.

For further information, see the bulletin of the School of Nursing.

PUBLIC HEALTH

A Department of Preventive Medicine and Public Health has been organized in the Medical School. This department is closely associated with the State Board of Health (whose laboratories are on the University campus), the Students' Health Service, and the non-official health organizations of Minnesota.

Under the supervision of the Department of Preventive Medicine and Public Health undergraduate and graduate curricula in public health will be formulated. It is believed that the arrangement of elective studies in the regular medical course will be particularly advantageous to students who wish to prepare themselves in public health and during the same time acquire the doctor of medicine degree. A course leading to the bachelor of science degree in public health will also, probably, be offered. A course in public health nursing, carried on for several years, will be continued.

A special bulletin on public health instruction and opportunities at the University of Minnesota will be sent on request.

COURSE IN EMBALMING

A course in embalming is conducted for a period of twelve weeks, commencing about January 1 each year. Certificates are issued to candidates successfully completing the course, and are accepted for state license by the State Board of Health.

Circular of information will be sent upon request.

COURSES IN MEDICAL TECHNOLOGY

The demand for clinical and laboratory technicians, trained in the principles and technique of the medical sciences is increasing. The vocation is one that offers satisfactory objectives, a large measure of usefulness, and fair compensation.

A special circular on courses for medical technicians will be sent upon request.

COURSES IN HOSPITAL SOCIAL SERVICE

A special circular outlining such courses is being prepared. Pending the publication of this circular, prospective students may correspond with the Social Service Division, University Hospital.

COMBINED COURSE IN MEDICINE AND DENTISTRY

A combined course leading to the degrees of M.B. and D.D.S. is being considered by the dental and medical faculties. Meanwhile students contemplating such a course are advised to complete the admission requirements for the Medical School and the first two years of medical science in that school. They should meanwhile consult the Administrative

Board of the Medical School and the dental faculty as to the extent to which each will accept elective credit from the other. In general it may be stated that the medical course in anatomy, bacteriology, physiology, pharmacology, and pathology will be accepted by the Dental College. Other joint credits may possibly be arranged. Students may use the summer quarters if desired. While no statement can be made as to the time required for both degrees, it may be said that both faculties will favor liberal arrangements which safeguard the standards of the two schools and the two professions.

DESCRIPTION OF COURSES*

PRE-CLINICAL OR LABORATORY DEPARTMENTS

ANATOMY

Professors CLARENCE M. JACKSON, JOHN B. JOHNSTON, THOMAS G. LEE, RICHARD E. SCAMMON; Associate Professors CHARLES A. ERDMANN, ANDREW T. RASMUSSEN; Assistant Professors LEROY A. CALKINS, HYMAN S. LIPPMAN, CHESTER A. STEWART; Instructors HELEN M. KEPLER, SHIRLEY P. MILLER, WILLIAM T. PEYTON; Assistant MYRON O. HENRY; Teaching Fellows WALTER P. COVELL, CARTER H. OSBORNE, EVERETT ROWLES, GORDON H. SCOTT.

Departmental Office, Institute of Anatomy

REQUIRED COURSES

1w. ANATOMY FOR EMBALMERS. 55 hours. DR. ERDMANN and assistants.

2f,w,s,su. ELEMENTARY ANATOMY. School of Nursing. 44 hours; 4 credits.† DR. KEPLER.

3f. ELEMENTARY ANATOMY. For dental nurses. 33 hours; 3 credits. MR. MILLER.

4s. HUMAN ANATOMY. For students in Physical Education. 66 hours; 4 credits. Including one laboratory period weekly. DR. ERDMANN.

5f,su-6w,su. GROSS HUMAN ANATOMY. Dissection, including osteology. Every student required to dissect lateral half of the body. Third-year medical students. 330 hours; 18 credits. DR. JACKSON, DR. ERDMANN, DR. CALKINS, DR. PEYTON.

9f-10w. SYSTEMATIC ANATOMY. Lectures and recitations on the gross morphology of the various systems of the body. Laboratory work upon human and mammalian material. Freshman dental students. 220 hours; 10 credits. DR. JACKSON, MR. MILLER, MR. ROWLES.

11s. ANATOMY OF THE HEAD AND NECK. Dissection of the human head and neck, with lectures and recitations. Sophomore dental students. 99 hours; 5 credits. MR. MILLER, MR. ROWLES.

14w,su. HISTOLOGY AND EMBRYOLOGY. Minute structure and development of the tissues and organs. Second-year dental students. Prerequisites: Courses 9-10, 11. 143 hours; 8 credits. DR. JACKSON, DR. LEE, DR. KEPLER.

* 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.

† 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 of the various tissues and organs. Third-year medical students. Prerequisite: Course 5-6. 165 hours; 9 credits. DR. LEE, DR. SCAMMON, DR. RASMUSSEN, DR. KEPLER.

107s,su. HUMAN EMBRYOLOGY. Development of the human body. Third-year medical students. Prerequisite: Course 5-6. 99 hours; 6 credits. DR. SCAMMON, DR. CALKINS, DR. KEPLER.

111f,su. HUMAN NEUROLOGY. A study of the central nervous system and sense organs. Fourth-year medical students. Prerequisites: Courses 103, 107. 110 hours; 6 credits. DR. RASMUSSEN, DR. KEPLER.

ELECTIVE COURSES

121f,s. ANATOMICAL TECHNIQUE. Microtechnique, reconstruction, and museum methods, etc. 66 hours; 3 credits. DR. LEE.

126f,w,su. ADVANCED HISTOLOGY. A study of special preparations, including practice in the identification of unknown specimens. Prerequisite: Course 103. 33 hours; 1½ credits. DR. LEE.

129f-130w-131s.* TOPOGRAPHIC ANATOMY. Based upon a study of serial cross sections of the human body. Prerequisite: Course 5-6. 33 hours (or more); 2 credits (or more). DR. JACKSON.

133f,su. ANATOMY OF THE FETUS AND CHILD. A survey of prenatal and postnatal development. Prerequisites: Courses 5-6, 107. 33 hours; 3 credits. DR. SCAMMON.

134w. 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.

135f,su. PHYSICAL DEVELOPMENT OF CHILDHOOD. Lectures, with study of illustrative material. Primarily for students in the College of Education. 22 hours; 2 credits. DR. SCAMMON.

137f-138w-139s-140su.* IMPLANTATION AND PLACENTATION. Fourth-, fifth-, or sixth-year medical, or graduate students. Prerequisite: Course 107, or equivalent. 66 hours; 3 credits. DR. LEE.

143s. APPLIED ANATOMY. Relationships, with reference to clinical applications. Medical or graduate students. Prerequisite: Course 5-6. 33 hours; 1½ credits. DR. ERDMANN.

145f-146w.* SPECIAL DISSECTIONS. Dissections of special regions, including preparation of museum specimens. Prerequisite: Course 5-6. 33 hours; 1½ credits. DR. ERDMANN.

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

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. RASMUSSEN.

153f-154w-155s-156su.* ADVANCED ANATOMY. Advanced work, largely individual in character, in gross anatomy, histology, embryology, or neurology. Hours and credits to be arranged. DR. JACKSON, DR. JOHNSTON, DR. LEE, DR. SCAMMON, DR. RASMUSSEN.

157f. ADVANCED HISTOLOGY AND EMBRYOLOGY OF THE EYE, EAR, NOSE, AND THROAT. Prerequisite: Courses 103, 107. 66 hours; 3 credits. DR. SCAMMON.

160f-161w-163su.* SEMINAR IN GROWTH OF CHILDREN. A study with graphic analysis of data on physical development of children of school age. Prerequisite: Course 135, or equivalent. Hours and credits to be arranged. DR. SCAMMON.

201f-202w-203s-204su.* RESEARCH IN ANATOMY. Research work in gross or microscopic anatomy, neurology, histology, or embryology. Hours and credits to be arranged. DR. JACKSON, DR. JOHNSTON, DR. LEE, DR. SCAMMON, DR. RASMUSSEN.

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

Professor WINFORD P. LARSON; Associate Professor ARTHUR T. HENRICI; Assistant Professor ROBERT G. GREEN; Instructors BERYL S. GREEN, DAVID O. SPRIESTERSBACH; Teaching Fellow HALVOR O. HALVORSON; Shevlin Fellow IRWIN A. MONTANK.

Departmental Office, Millard Hall

REQUIRED COURSES

1su,f,w,s. ELEMENTARY BACTERIOLOGY. An elementary lecture and laboratory course covering the general principles of bacteriology. This course is intended for students with a limited preparation in biology and chemistry who wish to acquire a practical, working knowledge of bacteriology. 66 hours; 4 credits. MR. SPRIESTERSBACH.

51su,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: ten credits in chemistry and ten credits in biology. 99 hours; 5 credits. DR. LARSON, DR. HENRICI, DR. GREEN, and assistants.

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

101f,su. SPECIAL BACTERIOLOGY. The pathogenic bacteria, especially in relation to definite diseases; principles of infection and immunity. Fourth-year medical students and others. Prerequisite: general bacteriology. 77 hours; 4 credits. DR. LARSON and assistants.

102s. SPECIAL BACTERIOLOGY FOR DENTAL STUDENTS. The mouth flora; systemic diseases secondary to focal infections of the mouth. Prerequisite: general bacteriology. 66 hours; 4 credits. DR. HENRICI and assistants.

ELECTIVE COURSES

103w. SPECIAL BACTERIOLOGY FOR STUDENTS OF AGRICULTURE. Bacteriology of the soil; the nitrogen-fixing bacteria; bacteria that cause plant diseases; bacterial diseases of domestic animals; the bacteriology of milk and dairying. Prerequisite: general bacteriology. 66 hours; 4 credits. DR. HENRICI and assistants.

105f. HOUSEHOLD BACTERIOLOGY. The decay, fermentation, and putrefaction of foodstuffs; molds; canning; bacterial food-poisoning. Prerequisite: general bacteriology. 44 hours; 3 credits. MISS BENTON.

114s. THE HIGHER BACTERIA. Study of morphology, cultivation, and classification of actinomycetes, yeasts, and molds. Prerequisites: general and special bacteriology. 44 hours; 3 credits. DR. HENRICI.

116w. COURSE IN IMMUNITY. Laws of hemolysis. Quantitative relationship between antigen and antibody. Wasserman reaction. Opsonins. Vaccines. Precipitin reaction. Blood-grouping. Abderhalden reaction. Anaphylaxis. 44 hours; 3 credits. DR. LARSON.

117s. PATHOGENIC PROTOZOA. Study of parasitic Protozoa of man, including spirochaets; their morphology and life histories; cultural methods. Prerequisites: general and special bacteriology; Animal Biology 144-145-146. 44 hours; 3 credits. DR. LARSON.

118f. MORPHOLOGY AND TAXONOMY OF BACTERIA. Cytology of bacteria; consideration of morphological, biochemical, and immunological characters as data for classification. Prerequisites: general and special bacteriology. 44 hours; 3 credits. DR. HENRICI.

119f. BACTERIOLOGICAL CHEMISTRY. Microphysics of bacteria. Inorganic and organic constituents. Permeability of cells. Bacterial metabolism. Pigments. Chemical analyses of bacteria. Factors stimulating enzyme production. Nitrogen fixation. Prerequisites: general and special bacteriology; physiologic chemistry or phytochemistry. 66 hours; 4 credits. DR. GREEN and assistant.

120w. CONTINUATION OF 119f. Bacterial enzymes. Bacteriolysants. Split protein production. Bacterial toxins. Chemical considerations of immunity. Bacterial activity in the alimentary tract. Pigment production. Autolysis of bacteria. Immunochemistry. Permeability of

bacterial cells. Behavior of bacteria toward electricity. 66 hours; 4 credits. Dr. Green and assistant.

121w. The Common Fermentations. Acetic, lactic, butyric, alcoholic, and other fermentations considered from the physical, chemical, and practical standpoint in relation to the various causal organisms and their conditions of growth. Prerequisites: Bacteriology 51, organic chemistry. 44 hours; 3 credits. Mr. Spriestersbach.

150f-151w or 150w-151s. Advanced Bacteriology. Opportunity of working out special problems. Prerequisites: general and special bacteriology. Limited to ten students. Arrange credits. Dr. Larson, Dr. Henrici.

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.

203f,w,s. Seminar in Bacteriology. 1 credit. Staff.

PATHOLOGY

Professor Elexious T. Bell; Assistant Professors Benjamin J. Clawson, James S. McCartney, Jr., Margaret Warwick; Instructors Kano Ikeda, John F. Noble, William A. O'Brien, Theodore H. Sweetser; Teaching Fellows Oscar B. Bergman, Glenn W. Tuttle.

Departmental Office, 110, Institute of Anatomy

REQUIRED COURSES

4f. Pathology for Students in Dentistry. 165 hours; 9 credits. Dr. Clawson, Dr. McCartney, Mr. Bergman, Mr. Tuttle.

101w. Pathology. Part I. The general principles governing pathologic changes. Fourth-year medical students. Prerequisites: histology, embryology, and special bacteriology. 165 hours; 9 credits. Dr. Bell, Dr. McCartney, Dr. Clawson, Dr. O'Brien, Mr. Bergman, Mr. Tuttle.

102s. Pathology. Part II. The pathologic processes of infectious diseases; the special pathology of organs, systems of organs, and tissues of the body. Fourth-year medical students. Prerequisites: Pathology, Part 1. 165 hours; 9 credits. Dr. Bell, Dr. Clawson, Dr. McCartney, Dr. O'Brien, Mr. Bergman, Mr. Tuttle.

104su,f,w,s. Autopsies. Technique; making records; examination of fresh organs, microscopic study. Three or four students called to each post-mortem; excused from classes. Fifth- and sixth-year medical students. Staff.

ELECTIVE COURSES

106. PATHOLOGIC TECHNIQUE. Methods of preparation of microscopic and gross specimens; practice with freezing microtome, embedding methods, stains, museum specimens, etc. Hours and credits arranged.

107f,w,s. APPLIED PATHOLOGY. Laboratory studies in the examination of routine operative and autopsy specimens. Hours and credits arranged. Staff.

108f,su. DIAGNOSIS OF TUMORS. Prerequisite: Pathology 102. 66 hours; 3 credits. DR. BELL, DR. MCCARTNEY, DR. WARWICK.

109su,f,w,s. CLINICAL PATHOLOGICAL CONFERENCE. Presentation of clinical data on selected cases and of the pathological specimens from these same cases, with discussions of etiology and diagnosis. 11 hours in each quarter. Required in clerkship period. Elective for others. Staff.

110s. GYNECOLOGICAL PATHOLOGY. DR. BELL, DR. ADAIR.

111. NEUROPATHOLOGY. DR. J. C. MCKINLEY.

112. PATHOLOGY OF DISEASES OF THE EYE, EAR, NOSE, AND THROAT. DR. CAMP.

113. STUDENT EXTERNSHIP IN PATHOLOGY. Full-time work in autopsies and surgical pathology.

114. SURGICAL PATHOLOGY. DR. SWEETSER.

201. RESEARCH. Graduate students, of the necessary preliminary training, may elect research, either as major or minor in pathology. Hours and credits to be arranged.

PHARMACOLOGY

Professor ARTHUR D. HIRSCHFELDER; Associate Professor EDGAR D. BROWN; Teaching Fellow HERMAN H. JENSEN.

Departmental Office, Millard Hall

REQUIRED COURSES

1f,w. ELEMENTARY PHARMACOLOGY. A brief study of drugs for nurses and others. 44 hours; 3 credits. MR. JENSEN.

2s. THERAPEUTICS AND TOXICOLOGY FOR STUDENTS IN PHARMACY. Drugs are studied in groups as governed by their medicinal and toxic properties. Poisonous action and doses. Remedial measures other than those depending upon drugs are considered. 33 hours; 3 credits DR. BROWN.

4w. DENTAL PHARMACOLOGY. The study of drugs, including their actions. For second-year dental students. 44 hours; 4 credits. DR. BROWN.

6w. EXPERIMENTAL PHARMACOLOGY. Experiments upon the effects of the important drugs. For dental and pharmacy students and nurses. 22 hours; 1 credit. DR. BROWN, MR. JENSEN.

101w. INTRODUCTION TO PHARMACOLOGY. Pharmaceutical preparations; dosage; principles of prescription-writing; relation of chemical structure to the action of drugs. Fourth-year medical students. 22 hours; 2 credits. DR. HIRSCHFELDER, DR. BROWN.

102s. GENERAL PHARMACOLOGY, Part I. A detailed study of drugs important in medical practice. Fourth-year medical students. 33 hours; 3 credits. DR. HIRSCHFELDER, DR. BROWN.

104s,su. EXPERIMENTAL PHARMACOLOGY. Exercises illustrating the preparation and action of medicine. Fourth-year medical students. 66 hours; 3 credits. DR. HIRSCHFELDER, DR. BROWN, MR. JENSEN.

106f. GENERAL PHARMACOLOGY, Part III. Same as Course 102, in continuation. Fifth-year medical students. 22 hours; 2 credits. DR. HIRSCHFELDER, DR. BROWN.

106f. GENERAL PHARMACOLOGY, Part III. Same as Course 102, in continuation. Fifth-year medical students. 22 hours; 2 credits. DR. HIRSCHFELDER, DR. BROWN.

107w,su. THERAPEUTIC CONFERENCE. Discussion of treatment based upon a study of notes of typical cases. Advanced clinical division. 11 hours. DR. HIRSCHFELDER, DR. BROWN.

108f,w. PRESCRIPTION-WRITING. The principles of prescription-writing. Fifth year. 11 hours. 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. BROWN.

110f,su. DETECTION OF POISONS. Hours and credits arranged. DR. BROWN.

201f,w,s. SEMINAR IN PHYSIOLOGY AND PHARMACOLOGY. Reviews of recent literature. 11 hours; 1 credit. Staff.

203su,f,w,s. RESEARCH IN PHARMACOLOGY. Open to graduate and advanced students. Hours and credits arranged. DR. HIRSCHFELDER, DR. BROWN.

PHYSIOLOGY

Professors ELIAS P. LYON, JESSE F. MCCLENDON, FREDERICK H. SCOTT; Associate Professors RICHARD OLDING BEARD, CHAUNCEY J. V. PETTIBONE; Assistant Professor ESTHER M. GREISHEIMER; Instructors WILLIAM W. SWANSON, GERTRUDE I. THOMAS;[1] Assistant MAURICE VISSCHER; Teaching Fellows JOSEPH T. KING, ARTHUR G. MULDER, ALICE RUPP.

Departmental Office, Millard Hall

REQUIRED COURSES

4f,w,s,su. HUMAN PHYSIOLOGY. A brief course for academic, home economics, and nursing students. Lectures and laboratory work. Prerequisites: high school or college biology and chemistry. 5 credits. DR. BEARD or DR. GREISHEIMER, and assistants.

5f,w,s,su. HUMAN PHYSIOLOGY. Same as Course 4 without laboratory work. Pharmacy students. 4 credits.

57f,su.* PHYSIOLOGIC CHEMISTRY. Intermediate course for academic, dentistry, physical education students, and others. Prerequisites: general chemistry and anatomy or zoology. 66 hours; 4 credits. DR. PETTIBONE and assistants.

58w,su-59s,su.* HUMAN PHYSIOLOGY. An intermediate course for academic, dental, and physical education students, and others. Prequisites: general chemistry and anatomy or zoology. 66 hours; 4 credits each quarter. DR. LYON, DR. SCOTT, DR. GREISHEIMER, and assistants.

100su,w-101su,s. PHYSIOLOGIC CHEMISTRY. The components of the animal body; foods, digestion, the excreta, and metabolism. Third-year medical students and others. Prerequisite: organic chemistry and physics. 198 hours; 6 credits each quarter. DR. MCCLENDON, DR. PETTIBONE, and assistants.

103su,f. PHYSIOLOGY OF MUSCLE, NERVE, BLOOD, CIRCULATION, DIGESTION. Fourth-year medical students and others. Prerequisites: organic chemistry and animal biology. 121 hours; 8 credits. DR. LYON, DR. SCOTT, DR. GREISHEIMER, and assistants.

104w,su. PHYSIOLOGY OF THE NERVOUS SYSTEM AND SPECIAL SENSES, RESPIRATION, METABOLISM, NUTRITION, AND EXCRETION. Fourth-year medical students and others. Prerequisites: Course 103, or organic

* Courses 57, 58-59 constitute a sequence recommended for students who wish a knowledge of human physiology, but who do not desire the detailed consideration given in Courses 100-101, 103, and 104. A student cannot receive credit for both of these sequences, nor for both 4 and 58-59.

[1] Dietitian, University Hospital, co-operating in Course 137.

chemistry and neurology. 121 hours; 8 credits. DR. LYON, DR. SCOTT, DR. BEARD, DR. GREISHEIMER, and assistants.

ELECTIVE COURSES

108. SEMINAR IN PHYSIOLOGIC OPTICS. For graduate and medical students. 22 hours; 2 credits. Prerequisite: Course 104 or equivalent. DR. LYON.

110. PHYSIOLOGIC OPTICS. A laboratory course. For graduate and medical students. Prerequisite: Course 104 or equivalent. 33 hours; 1 credit. DR. LYON.

113su,f,w,s. PROBLEMS IN PHYSIOLOGY. Arranged by instructors with qualified students. Each student will be assigned a topic for special laboratory study, leading in some cases to original investigation. Conferences and reading. May be taken one or more quarters. Prerequisite: Course 103, 104 or equivalent. 66 hours; 3 credits or arranged. DR. LYON, DR. SCOTT, DR. GREISHEIMER.

115s. APPLIED PHYSIOLOGY. The application of physiology as a basis for interpretation of symptoms and signs of abnormal function. Three lectures weekly. Prerequisite: Courses 103, 104 or equivalent. 3 credits. DR. GREISHEIMER.

131w. ADVANCED PHYSIOLOGY OF MUSCLE, BLOOD, CIRCULATION, AND DIGESTION. Alterations due to physiologic conditions. Prerequisite: Physiology 103. 66 hours; 3 credits. DR. SCOTT.

137f. FOODS AND PRACTICAL DIETETICS. A study of human foods and food values; of caloric indices and balanced dietaries. Exercises in the practical preparation of foods. Prerequisite: physiologic chemistry. Limited to twelve students. 66 hours; 3 credits. DR. BEARD, MISS THOMAS.

153f,w,s,su. PROBLEMS IN PHYSIOLOGIC CHEMISTRY. Special work arranged by instructors with qualified students. May be taken one or more quarters. Prerequisite: Course 100-101. Hours and credits arranged. DR. MCCLENDON or DR. PETTIBONE.

155f. PHYSICAL CHEMISTRY OF VITAL PHENOMENA. The application of electric conductivity; osmotic pressure; freezing points; hydrogen ion concentration; negative osmose; colloid chemistry and surface tension to physiological problems. Prerequisite: Course 100-101. 22 hours; 2 credits as lectures only. However, the student may take laboratory in addition under Course 153. DR. MCCLENDON.

162w. CHEMICAL ANALYSIS OF BLOOD. Laboratory work to determine the chemically important constituents. Lectures and reading. Prerequisite: Physiology 101. 66 hours; 3 credits. MR. SWANSON.

163w. METABOLISM. Lectures and laboratory work on special phases of metabolism. Lectures may be taken alone; number of students unlimited. 22 hours; 2 credits. Laboratory course limited to ten students. Prerequisite: Physiology 101. 33 hours; 1 credit. DR. PETTIBONE.

164s. BIOCHEMICAL DIAGNOSIS. Applications of biochemistry to medicine. Lectures. 11 hours; 1 credit.

201f,w,s. SEMINAR IN PHYSIOLOGY AND PHARMACOLOGY. For instructors and advanced students. 11 hours; 1 credit. DR. LYON, DR. HIRSCHFELDER, and staff.

203f,w,s,su. RESEARCH IN PHYSIOLOGY. Hours and credits arranged. DR. LYON, DR. SCOTT, DR. GREISHEIMER.

205f,w,s,su. RESEARCH IN PHYSIOLOGIC CHEMISTRY. Hours and credits arranged. DR. MCCLENDON, DR. PETTIBONE.

PREVENTIVE MEDICINE AND PUBLIC HEALTH

UNIVERSITY STAFF

Assistant Professors HAROLD S. DIEHL (Director), JAY A. MYERS; Instructors RUTH E. BOYNTON, HALLY J. FISHER, WILLIAM P. SHEPARD, FLORENCE V. WHIPPLE.

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Associate Professor ALBERT J. CHESLEY (Executive Secretary); Assistant Professors ORIANNA MCDANIEL (Director, Division of Preventable Diseases), E. MARION WADE (Chief of Laboratories), HAROLD A. WHITTAKER (Director, Division of Sanitation); Instructors ROBERT W. ARCHIBALD (Bacteriologist), JAMES A. CHILDS (Engineer), LESTER W. FEEZER (Assistant Director, Division of Venereal Diseases).

REQUIRED COURSES

2w. FIRST AID. For women in physical education. Laboratory demonstrations and practice. General care and observation of patients. Emergencies and first aid treatment. Prerequisites: Animal Biology, 9 credits. 1 credit. MISS FISHER.

5f. ELEMENTARY PREVENTIVE MEDICINE FOR NURSES. A descriptive course tracing the development and growth of public health with special reference to the past fifty years and a consideration of the various phases of preventive medicine in the present day. 1 credit. DR. SHEPARD.

12s. HYGIENE AND FIRST AID TO THE SICK AND INJURED. For freshman engineers. Lectures, demonstrations, and recitations. Promotion of health. Sources, routes, and prevention of communicable diseases. 1 hour; no credit. DR. SHEPARD.

52f,w,s. HEALTH CARE OF THE FAMILY. For students of Home Economics. First aid; communicable diseases; their transmission and prevention; hygiene of infancy, maidenhood, maturity. The care of the sick room; observation and care of the patient. Elementary symptomatology. Prerequisites: Bacteriology 1, Physiology 4. 3 credits. DR. BOYNTON, MISS FISHER.

53f. ELEMENTS OF PREVENTIVE MEDICINE. For public health nurses. Susceptibility, resistance and immunity to disease; methods of spread and the prevention of communicable and degenerative diseases; importance of heredity and environment; protection of food, water, and milk. Prerequisites: Psychology 1-2, Bacteriology 1 (or equivalent). DR. DIEHL, DR. SHEPARD.

54w. PUBLIC HEALTH METHODS AND PRACTICE. For public health nurses. School health work; supervision of water and milk supplies; epidemiology; sanitation; vital statistics; health services; industrial clinics; health education; state and local health organizations at work. Prerequisites: 53. 48 hours; 3 credits. DR. DIEHL, DR. SHEPARD.

55f. PREVENTIVE MEDICINE AND GENERAL HYGIENE. Personal and public factors which favor occurrence of disease among individuals and communities; modes of transmission and importance of environment in the spread of disease. Practicing physicians' responsibilities in health work. Medical students. 33 hours; 3 credits. DR. DIEHL, DR. MYERS, DR. SHEPARD.

56f,w,s,su. PUBLIC HEALTH ADMINISTRATIVE AND FIELD WORK. Demonstrations of health agencies at work; boards of health, laboratories, filtration, pasteurization, and garbage disposal plants. Presentation of actual health problems. Groups of 10 to 15 medical students for 8 weeks. Prerequisite: 55. 32 hours; 2 credits. Staff.

58w,su. MATERNAL AND CHILD HYGIENE. For public health nurses. Maternal welfare program; importance of breast feeding; origin and conduct, infant welfare clinics in cities and rural communities; consideration of child of pre-school and school age as to malnutrition, physical defects, cardiac and nervous disorders. Prerequisites: 50 or 52 or 53. 18 hours; 1½ credits. DR. ADAIR, DR. HUENEKENS, DR. BOYNTON, and others.

59w. SOCIAL HYGIENE. For public health nurses. Relation to public health. Sex development to age of twelve; adolescence; sex incorrigibility. Methods of education in schools. Responsibility of public health nurse. Prevention and control of venereal disease; clinics; follow-up system. Prerequisite: 50 or 52 or 53. 12 hours; 1 credit.

60w. THE TUBERCULOSIS PROBLEM. For public health nurses. History of tuberculosis movement and campaign in the United States. Early diagnosis and sanatorium treatment. Tuberculosis in children. The psychology of tuberculosis; supervision of returned sanatoria patients. State program for the eradication of tuberculosis; legislation. Prerequisite: 50 or 52 or 53. 12 hours; 1 credit. DR. MYERS.

61w. MENTAL HYGIENE. For public health nurses. History of movement; factors underlying mental disease; diagnosis of feeble-mindedness and border-line cases; institutional treatment; insanity; its relation to social work and to the institution; the importance of psychiatric nursing. Prerequisites: 50 or 52 or 53, and Psychology 1-2. 12 hours; 1 credit. DR. HAMILTON and others.

62w,su. PRINCIPLES OF PUBLIC HEALTH NURSING. For public health nurses. Its historical development; principles of organization; methods of administration; general visiting nursing; special branches of public health nursing; financing; system of records; special lectures and observation excursions. Prerequisite: 53. 36 hours; 3 credits. MISS WHIPPLE.

63f,w,s,su. FIELD PRACTICE IN VISITING NURSING. For public health nurses. Lectures, demonstrations, supervision, and field practice in bedside care of general and maternity patients; communicable disease, tuberculosis and mental cases with special emphasis upon recognition of social problems, co-operation with social agencies and accurate record-keeping. Prerequisite: 62. 176 hours; 5 credits.

64f,w,s,su. FIELD PRACTICE IN INFANT WELFARE NURSING. For public health nurses. Supervised practice in teaching the value of breast feeding; of determining the eligibility for clinic; of keeping complete records. Practice in the conduct of infant welfare and pre-school age clinics with necessary follow-up visits. Prerequisites: 62 and 58. 132 hours; 3 credits. MISS WHIPPLE.

65f,w,s. FIELD PRACTICE IN SCHOOL NURSING. For public health nurses. Routine inspections with the school nurse; assistance at medical examinations; general sanitary inspections; home visits; visits to special classes as sight-saving, defective speech and hearing, subnormal, open air, and tuberculosis schools. Prerequisite: 62. 80 hours; 2 credits. MISS WHIPPLE.

66f,w,s,su. FIELD PRACTICE IN COUNTY NURSING. For public health nurses. Student nurse observes and assists nurse on rounds in county, in routine physical inspection of school children, home calls, health talks and classes in home nursing, organizing, advertising, and conducting of the rural clinic. Prerequisite: 62. 80 hours; 2 credits. MISS WHIPPLE.

67f,s,su. FIELD PRACTICE IN A TUBERCULOSIS SANATORIUM. For public health nurses. Observation and practical care of pulmonary, osseous. laryngeal tuberculosis; tuberculosis enteritis; general sanatorium treatment; special treatment; exercise; laboratory; occupational therapy and the reading of literature on tuberculosis. Prerequisites: 60 and 62. 112 hours; 2 credits. DR. MARIETTE.

ELECTIVE COURSES

50f,su. 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. 48 hours; 3 credits. For juniors and seniors in Arts or Education. DR. SHEPARD.

72w. HEALTH LAWS AND STATISTICS. An elementary course on health legislation, national, state, and local. The use of statistics in health work; their compilation, interpretation, and value. Prerequisite: 54 or 55. 12 hours; 1 credit. MR. FEEZER.

73w. OCCUPATIONAL HYGIENE AND DISEASE. For non-medical students. Working hours and conditions as related to health; specific occupational diseases, their causes and prevention; importance of temperature; light and dust; wages and disease; industrial medical and nursing services. Prerequisite: 50 or 52 or 54. 2 credits. DR. MYERS.

80f,su. EDUCATIONAL HYGIENE. Intended for teachers interested in health education. Consideration of hygiene of physical and mental growth, health supervision of school children, teaching of health subjects, and sanitation of the school plant. Prerequisites: Biology 1-2; Psychology 1-2. 36 hours; 3 credits. DR. DIEHL, DR. BOYNTON.

101s. 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: 54 or 55. 48 hours; 2 credits. DR. MYERS.

102f,w,s,su. SANITATION. Sanitary supervision of water and milk supplies, sewage, refuse, and garbage disposal systems. Practical work, including field investigations, laboratory examinations, interpretation of results, recommendations to correct unsatisfactory conditions, report-writing and office procedure. Prerequisites: Bacteriology 101; Chemistry 21 or 27, and 32 or 37; Physics 22, 32, 42. Credits and hours arranged. MR. WHITTAKER, DR. ARCHIBALD, MR. CHILDS.

103f,w,s. PUBLIC HEALTH BACTERIOLOGY. Modern methods of a public health laboratory in making diagnoses; in the preparation of vaccines, and in research. Prerequisites: Bacteriology 101, 116. 3 credits or arranged. MISS WADE.

104f,w,s,su. EPIDEMIOLOGY. Open only to graduate medical students. Lectures on principles and methods of epidemiological investigation. Analysis of data; methods of reaching conclusions; individual field work; collateral reading. Credits arranged. DR. CHESLEY, DR. MCDANIEL.

105f,w,s. VITAL STATISTICS. Application of statistical methods to morbidity and mortality figures; births and deaths; drawing conclusions; preparation of tables and graphs; measurement of effectiveness of health activities; calculation of expectancy; actual experience with State Board of Health. Prerequisites: 54 and Soc. 45. Credits arranged. DR. CHESLEY, MR. FEEZER.

106f,w,s. PUBLIC HEALTH ADMINISTRATION. Organization of state, municipal, and voluntary health activities; preparation of budgets; procedures in enforcing quarantine; in correcting unsanitary conditions; in controlling tuberculosis and venereal diseases; value of sanitary surveys, food inspections, etc. Prerequisite: 54 or 56. Credits arranged. DR. CHESLEY, DR. DIEHL.

108. PUBLIC HEALTH EXPERIENCE. This will consist of actual health work under supervision, in one or more of the approved public health organizations. The time, assignment, and credits will be arranged. Prerequisite: 104 or 106. DR. CHESLEY, DR. DIEHL.

200. RESEARCH. Opportunities will be offered by the University and by the various co-ordinated organizations for qualified students to pursue research work. Staff.

MEDICINE

Professors S. MARX WHITE, ARTHUR S. HAMILTON; Research Professor THOMAS B. HARTZELL; Associate Professors JOHN BUTLER, GEORGE E. FAHR, JAMES S. GILFILLAN, ERNEST M. HAMMES, HARRY G. IRVINE, ANGUS W. MORRISON, ERNEST T. F. RICHARDS, JOHN P. SCHNEIDER, HENRY L. ULRICH; Assistant Professors MOSES BARRON, ARCHIBALD H. BEARD, CHARLES D. FREEMAN, EDWIN L. GARDNER, ALEXANDER R. HALL, CHAUNCEY A. MCKINLAY, J. CHARNLEY MCKINLEY, ERNEST S. MARIETTE, HENRY E. MICHELSON, GEORGE M. OLSON, ROBERT I. RIZER, FREDERICK W. WITTICH, CHARLES B. WRIGHT; Lecturers HENRY WIREMAN COOK, ARTHUR A. SWEENEY; Instructors CHARLES R. DRAKE, EDWARD C. GAGER, EVERETT K. GEER, OLGA S. HANSEN, WILLIAM H. HENGSTLER, EDGAR T. HERRMANN, BRUCE W. JARVIS, FRANK L. JENNINGS, HENRY N. KLEIN, JOHN A. LEPAK, DONALD MCCARTHY, ARTHUR E. MARK, JOSEPH C. MICHAEL, R. EDWIN MORRIS, MORRIS N. NATHANSON, HENRY ODLAND, HARRY OERTING, THOMAS A. PEPPARD, HAROLD RYPINS, WILLIAM A. SAWATSKY, FREDERICK H. K. SCHAAF, DAVIS STERN, DALE D. TURNACLIFF, CARL W. WALDRON, SAMUEL A. WEISMAN, FRANK W. WHITMORE, ARTHUR A. WOHLRABE, LAURITZ

S. YLVISAKER, THOMAS ZISKIN; Assistants JACOB BENDES, HAROLD BOQUIST, DAVID E. ELLISON, HAROLD H. FESLER, HAROLD C. HABEIN, MAX H. HOFFMAN, CHARLES K. HOLMES, CHARLES HYMES, JOHN C. KOCH, RUDOLPH C. LOGEFEIL, LEO G. RIGLER, ADAM SMITH, ARCHIBALD W. WARD; Teaching Fellows LAWRENCE R. GOWAN, OWEN H. WANGENSTEEN, MACNIDER WETHERBY.

REQUIRED COURSES

Elementary Course for Nurses and Others

1. ELEMENTARY SYMPTOMATOLOGY. A discussion of certain common diseases, their causation and manifestations. A course for academic, home economic, nursing, and other students. Prerequisite: General Bacteriology 51 and Physiology 4. 11 lectures; 1 credit. DR. BARRON.

Courses for Medical Students

49w. PHYSICAL DIAGNOSIS. Lectures and demonstrations on general symptomatology and on methods of physical examination, diagnosis, and record. Prerequisites: Physiology of Circulation and Gross Anatomy. Fourth year. 33 hours. DR. SCHAAF and assistants.

50s. PHYSICAL DIAGNOSIS. Dispensary work in sections. Fourth year. 40 hours. DR. WRIGHT and assistants.

51su,w,52f. THE PRINCIPLES AND PRACTICE OF MEDICINE. Systematic lectures, exclusive of neurology and neurologic diagnosis, q.v.; illustrated, so far as possible, by clinical material. Prerequisites, all required work: anatomy, chemistry, physiology, and bacteriology, Pharmacology 104 and Medicine 49 and 50. Fifth year. 66 hours. DR. WHITE, DR. FAHR, DR. RICHARDS, DR. SCHNEIDER, DR. GARDNER, DR. RIZER, DR. WITTICH, DR. COOK, DR. PEPPARD.

53su,f,w. PHYSICAL DIAGNOSIS AND CASE-TAKING. Conducted, with sections of the class, in the following dispensary clinics: (1) cardiac and vascular diseases; (2) respiratory diseases and tuberculosis; (3) metabolic diseases; (4) gastro-intestinal diseases; (5) nervous diseases; (6) tuberculosis; (7) dermatology and syphilis; (8) stomatology. See also Courses 77 and 81. Fifth year. 99 hours. DR. BUTLER, DR. FAHR, DR. IRVINE, DR. MORRISON, DR. BEARD, DR. MICHELSON, DR. OLSON, DR. WITTICH, DR. WRIGHT, DR. DRAKE, DR. HANSEN, DR. SCHAAF, DR. WALDRON.

54su,f. CLINICAL CHEMISTRY AND MICROSCOPY. Methods of laboratory examination for diagnostic purposes. Fifth year. 66 hours. (Prerequisite: pathology and physiologic chemistry.) DR. NOBLE.

55su,f. PHYSICAL DIAGNOSIS. A course of lectures in elaboration of the practical work in the out-patient service. Fifth year. 11 hours. DR. SCHAAF.

56su,w. PRACTICAL THERAPY AND THERAPEUTIC TECHNIQUE. A study of special methods of therapeusis. Fifth year. 11 hours. DR. MCKINLAY.

57su-f,w-s. CLINIC IN MEDICINE. Conducted in the University Hospital. First clinical period for two quarters. 22 hours. DR. WHITE, DR. RIZER.

58su-f,w-s. CLINIC IN MEDICINE. At University Hospital. Second clinical period. 22 hours. DR. FAHR, DR. RICHARDS.

59su,f. SECTION CLINICS IN MEDICINE. Conducted in the Minneapolis General Hospital; a part of the course in required clinics. Fifth year. Division A. 17 hours. DR. ULRICH, DR. GARDNER, DR. LEPAK, DR. OERTING, DR. PEPPARD.

60f. MOUTH INFECTIONS. The typical infections of the oral cavity and their causal relations to disease. 8 hours. DR. HARTZELL.

62f. MEDICAL JURISPRUDENCE. Principles of law, rules of evidence, and duties of physicians in medico-legal cases. 16 hours. DR. SWEENEY.

63su-f,w-s. CLINIC IN MEDICINE. A study of cases and case histories in the University Hospital service. Advanced clinical period, two quarters. 22 hours. DR. BEARD, DR. RIZER.

65su,f,w,s. CLINICAL CLERKSHIP. The personal observation of patients in hospital; taking and recording of case histories and making of provisional diagnoses, and study of treatment. Intermediate clinical period. Eight weeks for each student. 200 hours. DR. WHITE and staff.

66s. CLINICAL MEDICINE. Lectures in College of Dentistry in co-operation with other departments of Medical School. More important problems in clinical medicine with special reference to conditions in which focal infections play a part. Relations between dentistry and medicine. DR. WHITE and clinical staffs.

67f,w. Same as 59 but at City and County Hospital, St. Paul, for Division B. DR. GILFILLAN, DR. HALL, DR. LEPAK, DR. OERTING.

ELECTIVE COURSES*

101. ASSISTANTSHIP IN THE DISPENSARY. In any of the out-patient services in medicine. Open to two students in medicine in each service and in each quarter. Prerequisite: Course 65. Staff.

103. CLINICS IN MEDICINE. Bedside studies at the City and County Hospital, St. Paul. Limited to ten students. DR. GILFILLAN, DR. HALL.

105. BEDSIDE CLINICS IN MEDICINE. Bedside studies at the Minneapolis General Hospital. DR. ULRICH.

* Electives in medicine are usually repeated each quarter. See quarterly programs.

106. ADVANCED PHYSICAL DIAGNOSIS. Minneapolis General Hospital. Limited to six students. DR. PEPPARD.

107. GRAPHIC RECORDING AND FUNCTIONAL DIAGNOSIS OF CARDIO-VASCULAR DISEASES. A study of the use of the polygraph and electrocardiograph. Limited to six students. DR. WHITE, DR. HANSEN.

108. STUDIES OF DISEASES OF THE CIRCULATION. Circulatory insufficiency, irregularity, organic diseases. Study of polygrams, electrocardiograms, vascular diseases, blood pressure, cardio-vascular medication. Limited to six senior and graduate students. DR. MORRIS.

109. PROBLEMS IN CARDIAC FUNCTION. Limited to six students. University Dispensary. DR. HANSEN.

110. CLINICAL STUDIES IN METABOLISM. Limited to six students. DR. MCKINLAY.

111. PROBLEMS IN ADVANCED MEDICAL DIAGNOSIS. Limited to four students. DR. ULRICH.

112. ADVANCED PHYSICAL DIAGNOSIS OF THE CHEST. Practical work on tuberculous patients. Limited to six students. DR. WITTICH and associates.

113. PHYSICAL DIAGNOSIS OF NORMAL CHEST AS RELATED TO REGIONAL ANATOMY. A study of the normal chest including various types in which the relationship of viscera to the surface is considered, and the signs elicited are given their significance. Models, cross sections, X-ray plates, fluoroscope, and the living subject are used. Not less than 10 students. DR. MYERS.

114. DIAGNOSIS AND TREATMENT OF DISEASES OF THE LUNGS. Points in the diagnosis of the more common diseases of the lungs demonstrated. Emphasis will be placed upon past history, symptoms, physical examination, and X-ray findings. Methods of treatment will be demonstrated and discussed. 5 to 10 students. Prerequisite: Med. 113. DR. MYERS.

115. THE RESPIRATORY ORGANS IN HEALTH AND DISEASE. Designed for students desiring training in preparation of scientific and clinical papers for publication. Each student selects a problem pertaining to some part of the respiratory tract, which he pursues independently or in collaboration with instructor. One or more quarters. Limited to 5 students. DR. MYERS.

116. PHYSICAL SIGNS IN PULMONARY TUBERCULOSIS. Tuberculosis Pavilion, City and County Hospital. 4 to 6 students. DR. GEER.

117. EXTERNSHIP IN MEDICINE. Extension of clerkship. 1 to 4 students. Prerequisite: Med. 65. Arranged. DR. WHITE and staff.

118. EXTERNSHIP AT MINNEAPOLIS GENERAL HOSPITAL. History-taking, physical examination, and laboratory diagnosis. Daily 9-12, 198 hours credit. DR. ULRICH, DR. PEPPARD, DR. SCHAAF, DR. RIGLER.

119. EXTERNSHIP IN NERVOUS AND MENTAL DISEASES. University Hospital. Prerequisite: Medicine 65. Arranged. DR. HAMILTON and staff.

140. TROPICAL MEDICINE. A course of lectures on the diseases prevalent in countries of sustained high atmospheric temperature; illustrated as far as practicable by clinical material and pathologic exhibits. Fifth- and sixth-year medical students. 11 hours credit. COL. RUTHERFORD.

DIVISION OF NERVOUS AND MENTAL DISEASES

REQUIRED COURSES

69f,w. NEUROLOGY AND NEUROLOGIC DIAGNOSIS. Methods of examination of the nervous system; lectures on the diseases of the nervous system. 33 hours. DR. HAMILTON, DR. HAMMES, DR. MORRISON.

70w. PSYCHIATRY. Methods of modern psychiatry; lectures on the various mental disorders. Sixth year. 11 hours. DR. HAMILTON.

71su,f,w,s. CLINICAL NEUROLOGY AND PSYCHIATRY. Section clinics in nervous and mental diseases at the University Hospital and the Minneapolis General Hospital, part of Division A, fifth-year required section clinics. 11 hours. DR. HAMILTON, DR. MORRISON, DR. JARVIS.

71x f,w. Same. Division B, fifth year. City and County Hospital. DR. HAMMES, DR. HENGSTLER, DR. WHITMORE.

75su,f,w,s. NERVOUS AND MENTAL DISEASES. The personal observation and study of cases in the University Dispensary; a part of required clinics. Fifth year. A part of Course 53. DR. MCKINLEY, DR. MICHAEL.

77su,f,w,s. PHYSICAL DIAGNOSIS AND CASE-TAKING. Sections of the class in neurology in the University Hospital. 8 hours, clerkship period. DR. HAMILTON and staff.

ELECTIVE COURSES

120. ORGANIC NERVOUS DISEASES. The chief diagnostic procedures employed in the study of nervous diseases. Limited to four students. Prerequisite: Course 69. DR. HAMILTON and staff.

121. SYPHILITIC NERVOUS AFFECTIONS. Referring particularly to dementia paralytica and tabes dorsalis. Limited to six students. DR. HAMMES.

122. REGIONAL DIAGNOSIS. A didactic and clinical conference on the regional diagnosis of lesions of the nervous system. Limited to four students. Prerequisite: Course 69. DR. MORRISON, DR. MCKINLEY.

123. ADVANCED NEUROPATHOLOGY. Individual gross and microscopic studies on existing preparations in neuropathology. Limited to two students. Prerequisite: Pathology 101 and 102. DR. MCKINLEY.

124. PATHOLOGY OF THE NERVOUS SYSTEM. The anatomy and pathology of the nervous system and their correlation with clinical signs and symptoms. Not less than 5 students. Same as Pathology 111. 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.

126. CLINICAL ASSISTANTSHIP, in nervous and mental diseases in the Out-Patient Department. Sixth year. Open to two students. DR. MICHAEL, DR. MCKINLEY.

DIVISION OF DERMATOLOGY

REQUIRED COURSES

79su,f,80f,w. COURSE IN DERMATOLOGY. Clinical lectures upon the common skin diseases and syphilis, including diagnosis and treatment. This course continues through two quarters. Dr. Butler giving the lectures to one group summer and fall, Dr. Irvine, fall and winter. Transfer from one group to another is not to be made. Fifth year. 22 hours. DR. BUTLER, DR. IRVINE.

81su,f,w. PHYSICAL DIAGNOSIS AND CASE-TAKING. Section of the class in dermatology and syphilis, in the Dispensary; part of Course 53. DR. BUTLER, DR. IRVINE, DR. MICHELSON, DR. OLSON.

ELECTIVE COURSES

127. ASSISTANTSHIP IN DERMATOLOGY, in the Out-Patient Department. Open to two students in each quarter. DR. BUTLER, DR. IRVINE, DR. MICHELSON, DR. OLSON.

128f,w,s,su. NIGHT CLINICS IN DERMATOLOGY AND SYPHILIS IN THE OUT-PATIENT DEPARTMENT. Open to four students in clerkship division in each quarter. DR. MICHELSON.

129. WARD CLINICS IN DERMATOLOGY. Conducted in City and County Hospital, St. Paul. Limited to six students. DR. FREEMAN.

OBSTETRICS AND GYNECOLOGY

Professor JENNINGS C. LITZENBERG; Associate Professors FRED L. ADAIR, JOHN L. ROTHROCK; Assistant Professors LEE W. BARRY, LEROY A. CALKINS, WILLIAM H. CONDIT, RAE T. LAVAKE, CLARENCE O. MALAND, JALMER H. SIMONS, FREDERICK J. SOUBA; Instructors JAMES F. HAMMOND, MANLEY H. HAYNES, E. MENDELSSOHN JONES, ALBERT G. SCHULZE, SAMUEL B. SOLHAUG, THURSTON W. WEUM, HERBERT M.

N. WYNNE; Assistants HARRY B. DORNBLASER, CLARENCE E. WILLCUTT; Teaching Fellows J. WARREN BELL, CLAUDE M. CLEVELAND, WILLIAM P. SADLER, ROY E. SWANSON.

Departmental Office, Institute of Anatomy

REQUIRED COURSES

1. OBSTETRIC NURSING. Lectures on obstetric nursing during pregnancy, labor, and the puerperium. DR. LITZENBERG, DR. ADAIR, DR. BARRY, DR. LAVAKE, DR. MALAND, DR. SIMONS, DR. SOUBA.

2. GYNECOLOGIC NURSING. Lectures on gynecologic nursing; preparation of patient for examination and operation; operating room technique and after care. DR. LITZENBERG, DR. ADAIR, DR. BARRY, DR. MALAND, DR. SIMONS, DR. HAYNES.

51su,f. OBSTETRICS. The physiology of pregnancy, labor, and the puerperium. Fifth-year medical students. 33 hours. DR. LITZENBERG, DR. ADAIR, DR. BARRY, DR. CONDIT.

52f,w. OBSTETRICS. The pathology of pregnancy, labor, and the puerperium. Prerequisite: Course 51. Fifth-year medical students. 33 hours. DR. LITZENBERG, DR. ADAIR, DR. BARRY, DR. CONDIT.

53s,f. OPERATIVE OBSTETRICS. A study of operative obstetrics. Prerequisites: Courses 51 and 52. 11 hours. DR. ADAIR, DR. LAVAKE.

54su,f. GYNECOLOGY. A study of diagnostic methods in diseases of women. Fifth-year medical students. 11 hours. DR. LITZENBERG, DR. BARRY, DR. CALKINS.

55w. GYNECOLOGY. A study of diseases of women. Prerequisite: Course 54. 22 hours. DR. LITZENBERG, DR. BARRY, DR. CONDIT, DR. WYNNE.

56su,w,57f. OBSTETRICS AND GYNECOLOGY. The pathology of pregnancy, labor, and the puerperium, and of diseases of women. Lectures, demonstrations, class clinics, and case analysis. Prerequisites: Courses 51, 52, 53, 54, 55. 44 hours. DR. LITZENBERG, DR. ADAIR, DR. BARRY, DR. CALKINS.

58su,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. 34 hours. Staff.

59s,f,w,su. CLINICS IN OBSTETRICS AND GYNECOLOGY. University Dispensary. Part of required section clinics, clerkship period. 17 hours. DR. BARRY, DR. LAVAKE, and associates.

60su,f,w,s. PARTURITION CLINICS. Sections of the class on call for parturition clinics at the Minneapolis General Hospital. Fifth year. DR. ADAIR and associates.

61su,f. CLINICS IN OBSTETRICS AND GYNECOLOGY. Conducted in the Minneapolis General Hospital; a part of the required section clinics. Elective in winter and spring quarters. Fifth year, Division A. 17 hours. DR. ADAIR and associates.

62f,w. Same as Course 61. Elective in spring and summer quarters. Fifth year. Division B, City and County Hospital, St. Paul. DR. BARRY, DR. HAMMOND, DR. JONES, DR. SCHULZE.

63f,w,s,su. CLINIC IN OBSTETRICS AND GYNECOLOGY. Minneapolis General Hospital Dispensary. Limited to two students. DR. LAVAKE, DR. MALAND, DR. SIMONS, DR. DORNBLASER, DR. WILLCUTT.

ELECTIVE COURSES*

101f,w,s,su. STUDENT INTERNSHIP. Part of a general student internship, including out-patient service in "The District," giving 88 hours' credit in obstetrics and gynecology. DR. LITZENBERG, DR. BARRY, DR. CALKINS, DR. CONDIT, DR. WEUM, DR. WYNNE.

104. GYNECOLOGIC CLINIC. Diagnosis and treatment of diseases of women. St. Paul Dispensary. Two students. DR. BARRY.

105. GYNECOLOGIC CLINIC. Diagnostic and operative clinic in diseases of women. City and County Hospital, St. Paul. DR. HAMMOND, DR. JONES.

106. OBSTETRIC CLINIC. The diagnosis and treatment of obstetric conditions. City and County Hospital, St. Paul. DR. BARRY, DR. SCHULZE.

108. CLINICS IN OBSTETRICS AND GYNECOLOGY. Minneapolis General Hospital. DR. ADAIR, DR. LAVAKE, DR. MALAND, DR. SIMONS, DR. SOUBA, DR. DORNBLASER, DR. WILLCUTT.

109. 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.

110. PRENATAL CLINICS. Antepartum care of pregnant women at the various prenatal stations: limited to one student at each station. DR. SIMONS, DR. MALAND.

111. ADVANCED PATHOLOGY OF THE FEMALE PELVIS. Gross and microscopic study of the pathological condition of the female generative organs. Prerequisites: general and special pathology. DR. ADAIR.

* Elective courses in this department are usually repeated each quarter. See quarterly programs.

112. PATHOLOGIC OBSTETRICS. Minneapolis General Hospital. Demonstration of abnormal obstetric cases and operative procedure. One clinic each week. Limited to six senior students. DR. ADAIR.

113. OPERATIVE GYNECOLOGY. Demonstrations of gynecological operations and post-operative treatment. Limited to six senior students. DR. ADAIR.

114. CLINIC IN OBSTETRICS AND GYNECOLOGY. Dispensary, Minneapolis General Hospital. Limited to two students. DR. LAVAKE, DR. MALAND, DR. SIMONS, DR. SOUBA, DR. DORNBLASER, DR. WILLCUTT.

115. ADVANCED CLERKSHIP IN OBSTETRICS AND GYNECOLOGY. Sixth year. Arranged. Staff. University Hospital.

116. GYNECOLOGIC CLINICS. Bedside clinics. St. Paul City and County Hospital. DR. HAMMOND, DR. JONES.

201. ADVANCED OBSTETRICS AND GYNECOLOGY. For graduate students only. Includes service in the University Hospital and Minneapolis General Hospital, affording opportunity for experience in diagnosis; care, treatment, and research. Required of first-year fellows. DR. LITZENBERG, DR. ADAIR, DR. BARRY, DR. CALKINS.

202. More advanced subjects in clinical and research aspects. Required of second-year fellows. DR. LITZENBERG and associates.

203. Still more advanced. Third-year fellows. DR. LITZENBERG and associates.

204. SEMINAR. A weekly conference for fellows and graduate students. Presentation and discussion of original work and reports upon current literature and history of obstetrics and gynecology. 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

Professor WILLIAM R. MURRAY; Associate Professors FRANK E. BURCH, HORACE NEWHART; Assistant Professors HOWARD S. CLARK, WILLIAM W. LEWIS, JOHN S. MACNIE, WILLIAM E. PATTERSON, FRED J. PRATT, JOHN A. PRATT; Instructors PAUL D. BERRISFORD, JOHN C. BROWN, WALTER E. CAMP, CHARLES E. CONNOR, ERLING W. HANSEN, ARTHUR L. KUSSKE, KENNETH A. PHELPS, G. ELMER STROUT; Assistants WILLIAM H. HOWARD, HAROLD J. ROTHSCHILD; Teaching Fellow HENRY O. RUUD.

Departmental Office, Millard Hall

REQUIRED COURSES

77su,w. OPHTHALMOLOGY. A course of lectures upon the diseases and disorders of the eye, and their corrective, medical, and surgical treatment. Sixth year. 22 hours. DR. MURRAY, DR. BURCH.

79f,s. OTOLOGY. Diseases and disorders of the ear; medical and surgical treatment. Sixth year. 11 hours. DR. NEWHART.

81f,s. RHINOLOGY AND LARYNGOLOGY. The diagnosis and treatment of diseases of the nose and throat. Sixth year. 17 hours. DR. MURRAY.

83su,f,w,s. CLINICS IN EYE, EAR, NOSE, AND THROAT. Diagnostic and operative procedures in the clinics in the University Hospital. Sections, clerkship period. 15 hours. DR. MURRAY, DR. CLARK.

85su,f,w,s. CLINIC IN DISEASES OF THE EYE. Study and treatment of cases in the Dispensary; part of required section clinics, clerkship period. 17 hours. DR. CLARK, DR. MACNIE, and assistants.

87su,f,w,s. CLINIC IN DISEASES OF THE EAR. Study and treatment of cases in the Dispensary; part of required section clinics, clerkship period. 17 hours. DR. NEWHART and assistants.

89su,f,w,s. CLINIC IN DISEASES OF THE NOSE AND THROAT. Study and treatment of cases in the Dispensary; part of required section clinics; clerkship period. 17 hours. DR. PATTERSON, DR. F. J. PRATT, and assistants.

ELECTIVE COURSES*

115. CLINIC IN DISEASES OF THE EYE. The examination of patients, diagnosis of disease conditions and supervised treatment. University Dispensary. DR. CLARK, DR. MACNIE, and assistants.

117. CLINICS IN DISEASES OF THE EAR. Studies in examination of cases, diagnosis, and supervised treatment. University Dispensary. DR. NEWHART and assistants.

119. CLINIC IN DISEASES OF THE NOSE AND THROAT. The examination of patients, diagnosis of disease conditions, and supervised treatment. University Dispensary. DR. PATTERSON, DR. F. J. PRATT, and assistants.

121. OPERATIVE CLINICS IN EYE, EAR, NOSE, AND THROAT. University Hospital. Limited to ten students. DR. MURRAY, DR. CLARK.

126. OPHTHALMOSCOPY. The principles and practice of this method of examination of the eye. DR. CLARK, DR. MACNIE.

127. CLINIC IN DISEASES OF THE EYE. City and County Hospital. DR. LEWIS.

* In general, these electives are repeated quarterly.

PEDIATRICS

Professor CLEMENS PIRQUET; Associate Professors JAMES T. CHRISTISON, WALTER R. RAMSEY, FREDERICK C. RODDA; Assistant Professors EDGAR J. HUENEKENS, NABOTH O. PEARCE, MAX SEHAM, CHESTER A. STEWART, ROOD TAYLOR; Instructors EDWARD D. ANDERSON, CECILE MORIARTY, LILLIAN L. NYE, W. RAY SHANNON, MILDRED R. ZIEGLER; Assistants WOODARD L. COLBY, HOWARD L. EDER, JOHN D. GEISSINGER, GEORGE K. HAGAMAN, GRIFFITH M JONES, GLENN R. MATCHAN, DANIEL F. NOONAN, EDWIN F. ROBB, J. MARTIN SANSBY, ALEXANDER STEWART, EUGENE F. WARNER; Teaching Fellows FRANK G. HEDENSTROM, MARY A. MCLOON, LAWRENCE F. RICHDORF.

Departmental Office, Millard Hall

REQUIRED COURSES

100su,f. PHYSICAL DIAGNOSIS IN CHILDREN. A study of special diagnostic methods and results, applied to pediatrics. Conducted in sections of class. Fifth year. 11 hours. DR. TAYLOR.

101su,f. DISEASES OF CHILDREN. Diseases peculiar to, or distinctive of, children, with particular emphasis upon their differences from adult type. Fifth year. 33 hours. DR. RODDA and others.

102f,w. DISEASES OF CHILDREN. A continuation of Course 101. Fifth year. 22 hours. DR. RODDA and others.

103su,f. CLINIC IN PEDIATRICS. Conducted at the Minneapolis General Hospital; a part of course in required clinics. Fifth year. Division A. Sections of class. 17 hours. DR. HUENEKENS and assistants.

103x f,w. Same, fifth year. Division B, St. Paul City and County Hospital. DR. CHRISTISON, DR. RAMSEY, and assistants.

104su,f. CLINICS IN CONTAGIOUS DISEASES. Conducted in the Minneapolis General Hospital; a part of course in required clinics. Sections of class. Fifth year. 17 hours. DR. HUENEKENS and assistants.

104x f,w. Same for Division B. Fifth year. City and County Hospital, St. Paul. DR. CHRISTISON, DR. RAMSEY, and assistants.

106f,w,s,su. OUT-PATIENT PEDIATRIC CLINIC. The practical study of the diseases of children in the Out-Patient Service. Sections of intermediate clinical division. 34 hours. DR. SEHAM and assistants.

107f,w,s,su. CLINICAL CLERKSHIP IN PEDIATRICS. The observation and study of patients in University Hospital; case histories; physical examinations and provisional diagnoses; treatment. Sections of intermediate division. Each student, four weeks. 34 hours. Staff.

ELECTIVE COURSES*

111. DISEASES OF THE NEW-BORN. The pathology and treatment of these disorders, with the presentation of illustrative cases. Limited to six students. DR. RODDA, and others.

112. CONTAGIOUS DISEASES. The advanced study of contagious diseases, including the practice of intubation and tracheotomy, with training upon the cadaver. DR. HUENEKENS.

113. PEDIATRIC CLINIC. Out-Patient Department. Limited to six students. DR. SEHAM.

114. COURSE IN INFANT-FEEDING. Conducted at the St. Paul Baby Welfare Clinic of the H. Amberst Wilder Charity. DR. RAMSEY.

115. THEORY AND PRACTICE OF INFANT-FEEDING. Including a study of diseases of the gastro-intestinal tract. Limited to six students. DR. HUENEKENS.

117. CLINICS IN PEDIATRICS. Conducted in the Out-Patient Service. DR. SEHAM.

119. CLINICS IN PEDIATRICS. Conducted at the University Hospital. DR. RODDA.

120. CLINICS IN PEDIATRICS. Conducted at Lymanhurst, Children's Department, Minneapolis General Hospital. DR. HUENEKENS.

121. CLINIC IN CONTAGIOUS DISEASES. Conducted at the City and County Hospital, St. Paul. Limited to ten students. DR. RAMSEY, DR. WARNER.

122. COURSE IN THE PATHOLOGY OF THE DISEASES OF CHILDREN. Given in conjunction with the Department of Pathology. (See Pathology 114.) DR. SHANNON.

DEPARTMENT OF SURGERY

Professors ARTHUR C. STRACHAUER, CHARLES H. MAYO, ARCHIBALD MACLAREN; Associate Professors ALEXANDER R. COLVIN, J. FRANK CORBETT, WARREN A. DENNIS, EMIL S. GEIST, ARTHUR A. LAW, WILLIAM LERCHE, ARTHUR T. MANN, CHARLES A. REED, HARRY P. RITCHIE, JOHN T. ROGERS, FRANKLIN R. WRIGHT; Assistant Professors ROBERT G. ALLISON, ANGUS L. CAMERON, CARL C. CHATTERTON, WALLACE COLE, LOUIS E. DAUGHERTY, JAMES A. JOHNSON, OSCAR OWRE, GILBERT J. THOMAS, ARCHA E. WILCOX, HARRY B. ZIMMERMAN; Instructors JOHN S. ABBOTT, GEORGE R. DUNN, WALTER A. FANSLER, PAUL W. GIESSLER, RALPH T. KNIGHT, WALTER J. KREMER, FRANK S. MCKINNEY, FREDERICK A. OLSON, EMIL C. ROBITSHEK, ROSCOE C. WEBB,

* Electives in pediatrics usually repeated each quarter. See Medical School quarterly programs.

ANTON G. WETHALL, ARTHUR A. ZIEROLD; Assistants ARTHUR F. BRATRUD, JAMES M. HAYES, LOUIS D. HUGHES, MINAS JOANNIDES, M. KELLER KNAUFF, ELLERY D. SIMPSON; Teaching Fellow LLOYD E. MCFARLANE.

Departmental Office, Millard Hall

REQUIRED COURSES

50f. BANDAGING. Instruction and practice. Fourth year. 11 hours. Prerequisite: Gross Anatomy. DR. DUNN, DR. ZIEROLD.

51su,f. PRINCIPLES OF SURGERY. A study of the various surgical inflammations and processes; pathology and treatment. Principles underlying general surgical procedures. Lectures and demonstrations. Fifth year. 33 hours. DR. CAMERON.

53f,w. GENERAL SURGERY. The diseases and injuries of tendons, fasciae, bursae, blood vessels, nerves, brain, and meninges. Lectures and demonstrations. Fifth year. 33 hours. DR. LAW.

55w-56s,su. REGIONAL SURGERY. The practical surgery of the anatomical regions of the body, head, neck, thorax, abdomen, and extremities. Lectures and demonstrations Fifth year. 44 hours. DR. STRACHAUER. DR. LERCHE, DR. RITCHIE, DR. JOHNSON.

58s. FRACTURES AND DISLOCATIONS. Lectures and demonstrations. Sixth year. 22 hours. DR. LAW, DR. DAUGHERTY, DR. WILCOX.

59su,w. DIAGNOSTIC CLINIC. A series of clinics upon the diagnosis of surgical conditions as presented in the Out-Patient Department. Fifth year. 11 hours to each division. DR. JOHNSON.

60su,f. DIAGNOSTIC CLINIC. Sections of fifth-year class, Division A, at Minneapolis General Hospital. Part of required clinics. 17 hours. DR. CORBETT, DR. WILCOX, and staff.

61f,w. Same as 60 for Division B; at the St. Paul City and County Hospital. DR. COLVIN, DR. DAUGHERTY, DR. ZIMMERMAN, DR. ABBOTT.

63f,w,s,su. CLINICAL CLERKSHIPS. The personal study of assigned patients, at the University Hospital; case histories, laboratory examinations, provisional diagnoses, with suggestions as to therapy; attendance at operations of such studied cases and observation of post-operative management. Practical instruction in anesthesia. 8 weeks; 120 hours. Staff.

65f,w,s,su. MINOR SURGICAL CLINICS. Sections daily in the Out-Patient Department; a part of required clinics. 17 hours. DR. JOHNSON and staff.

ORTHOPEDIA

70f,w,s,su. ORTHPODEDIC SURGERY. A course of clinical lectures, demonstrations, and operations conducted in each quarter, with divisions of the class, at the Hospital for Crippled and Deformed Children at Phalen Park. Clerkship period. 24 hours. DR. CHATTERTON, DR. COLE.

71f,w,s,su. ORTHOPEDIC CLINIC. A study of orthopedic disease and treatment in the Out-Patient Department; a part of required section clinics. 8 hours. DR. REED, DR. GIESSLER.

72f,s. ORTHOPEDIC SURGERY. A course of lectures covering orthopedic conditions in the adult, with lantern slides and demonstrations. 11 hours. DR. GEIST.

UROLOGY

73f,s. GENITO-URINARY DISEASES. The etiology, diagnosis, and treatment of this group of diseases. A course of lectures. Sixth year. 18 hours. DR. WRIGHT.

77f,w,s,su. GENITO-URINARY CLINIC. The observation, examination, and treatment of patients in the Out-Patient Department; a part of required section clinics. 18 hours. DR. THOMAS, DR. KREMER, DR. WETHALL, DR. HUGHES.

ELECTIVE COURSES*

67. CADAVER SURGERY. The technique and performance of the various standard operations upon the cadaver. DR. CAMERON.

101. MINOR SURGERY. Clinical course conducted in the Out-Patient Department. DR. JOHNSON, DR. BRATRUD, DR. HAYES, DR. MCKINNEY.

102. PROCTOLOGY. A clinical course conducted in the Out-Patient Department. DR. FANSLER.

103. OPERATIVE SURGERY ON ANIMALS. A study of surgical technique by cardinal operations upon animals. DR. CAMERON, DR. JOANNIDES.

104a,b,c, etc. DIAGNOSTIC AND OPERATIVE CLINICS. Conducted at the University Hospital. DR. STRACHAUER, DR. MACLAREN, DR. LAW, DR. RITCHIE, DR. CAMERON, DR. JOHNSON, DR. DUNN, DR. WEBB.

105a,b,c, etc. DIAGNOSTIC AND OPERATIVE CLINICS. Held at the Minneapolis General Hospital. DR. CORBETT, DR. WILCOX, DR. OLSON, DR. ROBITSHEK, DR. ZIEROLD.

106a,b,c, etc. DIAGNOSTIC AND OPERATIVE CLINICS. Held at the City and County Hospital. DR. COLVIN, DR. DAUGHERTY, DR. ZIMMERMAN, DR. ABBOTT.

* In general, electives in surgery are repeated quarterly.

107. EXTRACTION OF TEETH. Course conducted in the College of Dentistry. DR. GRIFFITH.

108. GENITO-URINARY CLINIC. Held at the University Hospital and Out-Patient Department. DR. THOMAS, DR. KREMER, DR. WETHALL, DR. HUGHES.

109. UROLOGIC CLINIC. A course including endoscopy and cystoscopy, at the Minneapolis General Hospital. DR. OWRE.

110. GENITO-URINARY CLINIC. Conducted at the Minneapolis General Hispital. DR. OWRE, DR. KREMER.

111. ORTHOPEDIC CLINIC. Conducted in the Out-Patient Department. DR. REED, DR. GIESSLER.

112. ADVANCED CLERKSHIP IN SURGERY. Sixth year; arranged. Staff.

114. UROLOGIC DIAGNOSIS AND CYSTOSCOPY. A course conducted at the University Hospital. Hours and credits arranged. DR. THOMAS.

215w,s. THE SURGERY OF THE KIDNEY. A review of the embryology, anatomy, and pathology. Diagnosis; cystoscopic study, including kidney function estimation and pyelography. Operative technique. Studies of special problems. DR. STRACHAUER.

216w-217s. THE SURGERY OF THE BRAIN AND SPINAL CORD. Operative technique. Studies of special problems. Prerequisites: Anatomy 103, Medicine 113. DR. STRACHAUER.

THE MEDICAL SCHOOL

HOSPITAL DEPARTMENT

LOUIS B. BALDWIN, Superintendent; LOUISE M. POWELL, Associate Professor of Nursing and Director, School of Nursing; Assistant Professors ROBERT G. ALLISON, BESSIE BAKER, KATHERINE E. DOUGHERTY, IRENE R. ENGLISH, WILLIAM A. GREY, MARION L. VANNIER; Instructors ESTHER ANDREASON, HELEN I. ERICKSON, CLARENCE HERMANN, RAYMOND E. JOHNSON, DOROTHY A. KURTZMAN, M. FRANCES MADIGAN, JANE G. MAHANEY, ELSIE W. MARTIN, LOUISE NEWCOMBE, OLENA ORDAHL, CLAYTON A. SWANSON, MARION A. TEBBETS, GERTRUDE I. THOMAS, BARBARA THOMPSON, IRENE C. WALSH; Assistants ADA M. BEERSTECHER, IONE CORLISS, AGNES FLEMING, RUTH HJERMSTAD, MARGARET E. JONES, BLANCHE M. PINKUS, JENNIE SCHEY, HARRIE M. SOLOMON, DANIEL E. ZISKIN.

DIVISION OF NURSING INSTRUCTION

PRINCIPLES OF NURSING

10f,w,s,su. HISTORY OF NURSING. A study of nursing history to cultivate an understanding and appreciation of nursing traditions and ideals, and of the people and influences that have brought the profession to its present status. 11 hours. MISS POWELL.

11f,w,s,su. NURSING ETHICS. This course deals with the present scope of nursing; the attitude of the nurse towards various problems, the patient, the physician, and other nurses. Hospital etiquette; the principles of self-government. 11 hours. MISS VANNIER.

12f,w,s,su. PERSONAL HYGIENE. A study of the conditions governing the health of the individual. Ideals and conceptions of health. Ethical and economic aspects of hygiene. Responsibility of the nurse in health preservation and disease prevention. 11 hours. MISS NEWCOMBE.

HOSPITAL ECONOMY

13f,w,s,su. A STUDY OF HOSPITALS. The general principles of hospital and household economy applied to the practice of nursing. A study of types of hospital buildings; their construction, heating, lighting, and plumbing. 11 hours.

14f,w,s,su. HOSPITAL DEPARTMENTS. The equipment and operation of laundry, linen, and serving rooms; general and special kitchens; wards and special departments; cost and care of hospital supplies; household chemicals. 11 hours. MRS. KURTZMAN.

PRACTICAL DIETETICS

15f,w,s,su. FOODSTUFFS. A course of practical exercises and lectures upon foods; their definition, classes, form; food values; food composition; energy values; caloric index; selection of dietaries; balanced rations; market conditions. 11 hours. MISS THOMAS.

17f,w,s,su. THE PREPARATION OF FOOD. Methods of cooking; effect on food values; percentages of loss; treatment of various classes of foods; of typical foods; enhancement of food values; mechanical methods of preparation; raw foods. 48 hours. MISS THOMAS.

PRACTICAL NURSING

Courses 21-37f,w,s,su consist of lectures, demonstrations, and practical exercises; a total of 80 hours. MISS THOMPSON.

21. THE ENVIRONMENT OF THE PATIENT. The care of the room or ward; of service room, bath, and lavatory; of the serving room; the linen room; the bed and bedding; the detail of bed-making.

23. THE ADMISSION AND GENERAL CARE OF THE PATIENT. The bed, bath, and toilet; the preparation of the patient for the night; the prevention of bedsores, stiffness, and cramping of muscles; care of mouth, teeth, and hair; special devices for comfort.

25. OBSERVATION OF THE PATIENT. How and what to observe; temperature, pulse, respiration; observation of feces, urine, sputum, and vomites.

27. THE EXAMINATION OF THE PATIENT. The preparation for routine examinations; methods of assisting examiner; the doctor's order book; the value of the bedside record; the detail and technique of record.

29. METHODS AND MECHANISMS OF TREATMENT. The preparation of solutions; the application of heat and cold; counter irritants; the use of enemata; the vaginal douche; catheterization; lavage; gavage; expression of stomach contents.

31. BATHS FOR THERAPEUTIC PURPOSES. The reduction of temperature; sedative baths; baths and packs to produce sweating; local baths; medicated baths.

33. THE PREPARATION OF PATIENTS FOR OPERATION. Details of preparation; the ether bed; post-operative care of patient.

35. MEDICINES. The medicine case; medicine trays; system of giving medicines; method of preparing and giving hypodermic injections; method of giving inhalations; method of giving drugs by inunction.

37. INFECTIOUS DISEASES. Precautions of care; details of disinfection; the care of typhoid fever case; venereal diseases; preparation of rooms for fumigation.

DIVISION OF HOSPITAL SOCIAL SERVICE

151f,w,s,su. THE PRINCIPLES AND PRACTICE OF HOSPITAL SOCIAL SERVICE. Includes history and development of the movement; principles underlying the work; functions; relationships to medical, social, and public health field. Lectures and supplementary field work. 3 credits. Hours arranged. MISS TEBBETS and assistants.

156f,w,s,su. SPECIAL FIELD WORK. Opportunities for practical work made available through Hospital Social Service Department for students in specialized fields. Includes lectures, social and medical; clinic observation and work with patients in their homes. Limited to groups of eight in a given field. 3 credits. Hours arranged. MISS TEBBETS and assistants.

DIVISION OF HOSPITAL DENTISTRY

41f,w,s. HOSPITAL PRACTICE. Practical hospital dentistry in the University hospitals, Dispensary, and Minneapolis General Hospital, in oral surgery, periodontia, and diagnosis, giving emphasis to the systemic relationship in oral disease and its treatment. For students of dentistry. DR. GREY, DR. HERMANN, DR. JOHNSON, DR. SWANSON, DR. ZISKIN.

42. HOSPITAL DENTISTRY FOR MEDICAL STUDENTS. Arrange hours and credit. DR. GREY.

60f,w,s. HOSPITAL DENTAL NURSE WORK. A course in practical assisting and hospital oral hygiene routine. MISS DOUGHERTY.

DIVISION OF ROENTGENOLOGY

79su,w. ROENTGENOLOGY. Lectures and plate-reading. Sixth-year medical students. 11 hours. DR. ALLISON.

80. PLATE-READING. Arrange hours and credit.

81. X-RAY TECHNIQUE. Arrange hours and credit.

82. X-RAY THERAPY. Arrange hours and credits.

EXTRA-DEPARTMENTAL INSTRUCTION

STUDENT INTERNSHIPS

Each of these courses lasts for two quarters and carries a credit value of 30 hours a week or a total of 660 hours. These hours are arbitrarily credited to the departments as follows: Medicine, 284 hours; Surgery, 220 hours; Obstetrics, 88 hours; Pediatrics, 66 hours; Ophthalmology and Oto-Laryngology, 22 hours. Registration for these courses is elective for the student intern division in the order of scholarship (subject to approval of the superintendents of the respective hospitals). The Medical School reserves the right to assign students to Courses 1, 2, and 3, if necessary in order to fill the places in the three hospitals most directly connected with the school.

1su,f,w,s. STUDENT INTERNSHIP at the City and County Hospital, St. Paul. 12 students. DR. COLVIN, supervisor.

2su,f,w,s. STUDENT INTERNSHIP at the Minneapolis General Hospital. 12 students. DR. ULRICH, supervisor.

3su,f,w,s. STUDENT INTERNSHIP at the University Hospital, State Hospital for Crippled and Deformed, and Hennepin County Tuberculosis Sanatorium. 6 students. DR. LITZENBERG, DR. CHATTERTON, DR. MARIETTE, supervisors.

4su,f,w,s. STUDENT INTERNSHIP at the Miller Hospital, St. Paul. 4 students. DR. COLE, supervisor.

5su,f,w,s. STUDENT INTERNSHIP at the Student Health Service. 1 student. DR. DIEHL, supervisor.

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

Professor HENRY H. RUTHERFORD, Lieutenant Colonel, Medical Corps, U.S.A.

Departmental Office, Millard Hall

1f,w,s. 1 BASIC. 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.

2s. 2 BASIC. MEDICAL TACTICS. A theoretic course in tactics, preparatory for training in camp. *For sophomores only.* 33 hours; 3 credits.

3w. 1 ADVANCED. 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.

4f. 2 ADVANCED. MEDICAL ADMINISTRATION. A theoretic and practical course in medico-military administration, with special reference to hospitals and hospitalization methods. *For seniors only.* 33 hours; 3 credits.

COURSES IN OTHER COLLEGES

DEPARTMENT OF ANIMAL BIOLOGY

Professors HENRY F. NACHTRIEB, HAL DOWNEY, WILLIAM A. RILEY, CHARLES P. SIGERFOOS; Associate Professor ELMER J. LUND.

(Contributing elective courses to the Medical School)

44f,s. ANIMAL PARASITES AND PARASITISM. An introductory course treating of the origin and biological significance of parasitism and of the structure, life history, and economic relations of parasites exclusive of the insects. DR. RILEY.

45w. RELATION OF INSECTS TO DISEASE. The causation and transmission of disease by insects and other arthropods. Life history, habits, and methods of control of homonoxious species. DR. RILEY.

107s. PROTOZOOLOGY. Lectures, reference, and laboratory work on the structure and life histories of Protozoa. Special reference is paid to the relations of the Protozoa to diseases of animals. DR. SIGERFOOS.

144f-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 animal. DR. RILEY.

149f-150w-151s. BLOOD OF VERTEBRATES. A comparative study of blood and blood-forming organs of vertebrates. A portion of time to be devoted to research. DR. DOWNEY.

153f-154w-155s. HEMATOLOGY. Primarily for medical students, but open to others with proper qualifications. Lectures and laboratory work on the blood and blood-forming organs of man and mammals. DR. DOWNEY.

181f-182w. EMBRYOLOGY. A survey of the principles of animal development and a detailed study of the development of the circulatory or urino-genital system of a vertebrate. Lectures, reference, and laboratory work. MR. NACHTRIEB.

183. GENETICS AND EUGENICS. Facts and theories of heredity and application to man. MR. NACHTRIEB.
See also Course 11 (Cytology), 17, 18, 19, 109, 110, 111.

THE SCHOOL OF CHEMISTRY

DEPARTMENT OF PHYSICAL CHEMISTRY

Associate Professor FRANK H. MACDOUGALL; Assistant Professor LAWRENCE M. HENDERSON.

(Required course in the Medical School)

143f,w. PHYSICAL CHEMISTRY. Designed chiefly for medical and biological students. Four credits. (Heretofore No. 40f,w.) Prerequisite: 32. MR. HENDERSON.

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

AGRICULTURAL BIOCHEMISTRY

Professors ROSS A. GORTNER, CLYDE H. BAILEY, LEROY S. PALMER; Assistant Professors CORNELIA KENNEDY, CLARENCE A. MORROW, JOHN J. WILLAMAN; Instructors ARTHUR K. ANDERSON.

(Contributing elective courses to the Medical School)

116w. ADVANCED ANIMAL NUTRITION. Lectures and assigned readings on recent developments in animal nutrition, covering the field of proteins, mineral metabolism, vitamines, and the relation of nutrition to disease. MR. PALMER, MISS 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. Three credits. MR. GORTNER.

207f. 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. Three credits. MR. WILLAMAN.

208w. PROTEINS. Lectures on the composition, structure, biochemical reactions, and functions of the protein and amino acids, with special emphasis upon those which are concerned in plant growth and metabolism, animal food, and industrial processes. Prerequisite: Course 111-112, or advanced organic chemistry. Three credits. MR. GORTNER.

The Bulletin *of the* University *of* Minnesota

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1924

JULY

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31	..	..	..	..	..	..

SEPTEMBER

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OCTOBER

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NOVEMBER

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DECEMBER

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1925

JANUARY

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FEBRUARY

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MARCH

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APRIL

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MAY

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JUNE

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JULY

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AUGUST

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SEPTEMBER

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OCTOBER

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NOVEMBER

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DECEMBER

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UNIVERSITY CALENDAR

1924-25

1924			
September	18	Thursday	Payment of fees closes, except for new students
September	18-20		Entrance examinations
September	22-26		Examinations for removal of conditions
			Physical examinations for all new students
			Registration period,* colleges of Science, Literature, and the Arts, Agriculture, Forestry, and Home Economics, and Education
September	25-26		Registration days* for all colleges not included above
September	26	Friday	Payment of fees for new students closes
September	29	Monday	Fall quarter begins, 8:30† a.m.
October	23	Thursday	Senate meeting, 4:30 p.m.
November	1	Saturday	Home Coming Day; classes dismissed the third and fourth hours
November	4	Tuesday	Election Day; a holiday
November	11	Tuesday	Armistice Day; a holiday
November	27	Thursday	Thanksgiving Day; a holiday
December	4	Thursday	State Day Convocation
December	18	Thursday	Commencement Convocation
			Senate meeting, 4:30 p.m.
December	20	Saturday	Fall quarter ends, Christmas vacation begins, 5:20 p.m.
1925			
January	5	Monday	Christmas vacation ends, winter quarter begins, 8:30† a.m.
February	12	Thursday	Lincoln's Birthday; a holiday
February	19	Thursday	Charter Day Convocation
			Senate meeting, 4:30 p.m.
March	21	Saturday	Winter quarter ends, spring vacation begins, 5:20 p.m.
March	30	Monday	Spring vacation ends, spring quarter begins, 8:30† a.m.

* Registration subsequent to the date specified will necessitate the approval of the college concerned.

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

April	10	Friday	Good Friday; a holiday
May	14	Thursday	Cap and Gown Day Convocation
May	21	Thursday	Senate meeting, 4:30 p.m.
May	30	Saturday	Memorial Day; a holiday
June	13	Saturday	Spring quarter closes, 5:20 p.m.
June	14	Sunday	Baccalaureate service
June	15	Monday	Fifty-third annual commencement
June	19-20		Summer Session first term begins, registration and payment of fees
June	22	Monday	Classes begin, 8:00 a.m.
July	4	Saturday	Independence Day; a holiday
August	1	Saturday	First term Summer Session closes
			Registration and payment of fees for second term closes
August	3	Monday	Second term classes begin
September	5	Saturday	Second term Summer Session closes

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 and peculiar circumstances shall justify the appropriate committee of the college concerned permitting registration at a later date.

THE MEDICAL SCHOOL

THE ADMINISTRATIVE BOARD

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

Elias P. Lyon, Ph.D., M.D., LL.D., Dean of the Medical School and Director of the Department of Physiology

Richard O. Beard, M.D., Secretary of the Administrative Board and Medical Faculty

Louis B. Baldwin, M.D., Superintendent of the University Hospital

Clarence M. Jackson, M.S., M.D., LL.D., Director of the Department of Anatomy

Winford P. Larson, M.D., Director of the Department of Bacteriology and Immunology

Harold S. Diehl, M.A., M.D., Director of University Health Service and of the Department of Preventive Medicine and Public Health

Elexious T. Bell, B.S., M.D., Director of the Department of Pathology

Arthur D. Hirschfelder, B.S., M.D., Director of the Department of Pharmacology

S. Marx White, B.S., M.D., F.A.C.S., Chief of Department of Medicine

Jennings C. Litzenberg, B.S., M.D., F.A.C.S., Chief of the Department of Obstetrics and Gynecology

William R. Murray, Ph.B., M.D., F.A.C.S., Chief of the Department of Ophthalmology and Oto-Laryngology

Frederic W. Schlutz, B.A., M.D., Chief of the Department of Pediatrics

Arthur, C. Straehauer, M.D., F.A.C.S., Chief of the Department of Surgery

Arthur S. Hamilton, B.S., M.D., Chief of the Division of Nervous and Mental Diseases, Member-elect Representing the Faculty

Arthur T. Henrici, M.D., Member-elect Representing the Faculty

COMMITTEES

STUDENT'S WORK COMMITTEE

F. H. Scott, Chairman and Sophomore Adviser

C. J. V. Pettibone, Secretary and Freshman Adviser

E. T. Bell, Junior Adviser

J. C. McKinley

The dean, ex officio

COMMITTEE ON HONORS STUDENTS

Richard E. Scammon, Chairman

A. L. Cameron

J. F. McClendon

The dean, ex officio

INTERNESHIP COMMITTEE

J. C. Litzenberg, Chairman

L. B. Baldwin

H. L. Ulrich

The dean, ex officio

FACULTY

For a complete list of the faculty see the bulletin of 1923-24.

GENERAL INFORMATION

This bulletin is supplemental to the Medical School announcement for the year 1923-24. For detailed information concerning admission, combined courses, marking system, clinical opportunities, fees, etc., the above named announcement should be consulted. The courses of study offered in the various departments in 1924-25 will be substantially as set forth in the bulletin for 1923-24. For minor changes and new courses students should consult the quarterly programs of elective courses.

CURRICULUM

The course of study for the third and fourth years (freshman and sophomore medical years) will remain as outlined in the bulletin of 1923-24.

For the fifth and sixth (junior and senior medical) years a new arrangement of subjects has been adopted which supersedes the plan of clinical training outlined on page 23 of the bulletin of 1923-24. Each of these classes will be divided into four sections of 28 students each.

Division A will begin junior work in the summer quarter succeeding their sophomore year. They will attend six quarters consecutively and may be candidates for the M.B. degree at the December commencement.

Division B will begin junior studies in the fall quarter following their sophomore year, will attend six quarters consecutively, and may be candidates for the M.B. degree at the March commencement.

Divisions C and D will begin junior studies in the fall after the sophomore year. Division C will take a vacation in the next succeeding summer and Division D in the next succeeding fall quarter. Both these divisions may be candidates for the M.B. degree at the June commencement.

Students who have successfully completed the work of the first two years of the medical course are given a choice of these divisions in the order of their scholarship ranking, 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.

The work of the junior year will consist of lectures, laboratory work, dispensary work in case-taking and physical diagnosis, section clinics, and elective courses.

The essential features of the senior year will be clerkships of thirteen weeks in Medicine, thirteen weeks in Surgery, six and a half weeks in Obstetrics and Gynecology, and six and a half weeks in Pediatrics. Clerks will have definite duties in the hospitals to which they are attached and their services will be continuous. Short vacations may be granted between quarters as the service may permit. To these clerkships will be added dispensary services in the various branches and lectures on the various specialties.

The approximate order of studies for the respective divisions of the junior and senior classes is given in the following table:

ARRANGEMENT OF JUNIOR AND SENIOR STUDIES

(Figures indicate hours per week.)

	Summer	Fall				Winter				Spring				Summer			Fall			Winter			Spring	
	A	A	B	C	D	A	B	C	D	A	B	C	D	A	B	D	A	B	C	B	C	D	C	D
Pharm. 105-106 (Pharmacology and Therapeutics)	2	2	2	2	2		2	2	2															
Pharm. 108 (Prescription-Writing)	1		1	1	1																			
P. M. and P. H. 55 (Hygiene)										3	3	3	3											
Path. 109 (Clinical Pathological Conference)										1				1	1	1	1	1	1	1	1	1	1	1
Med. 51, 52 (Principles and Practice of Medicine)	3	3	3	3	3		3	3	3															
Med. 53 (Physical Diagnosis and Case-Taking)	6	3	3	3	3		3	3	3		3	3	3											
Med. 54 (Clinical Chemistry and Microscopy)	6										6	6	6											
Med. 56 (Practical Therapy)										1	1	1	1											
Med. 63, 57, 58 (Clinic in Medicine)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Med. 60, 62 (Mouth Infections and Med. Jurisprudence)										2	2	2	2											
Med. 67 (Ancker, Clinic in Medicine)	1		1					1					1											
Med. 69 (Neurology and Neurologic Diagnosis)						3	3	3	3															
Med. 71 (Ancker, Clinical Neurology and Psychiatry)	1			1					1		1													
Med. 70 (Psychiatry)										1	1	1	1											
Med. 79 (Course in Dermatology)						2	2	2	2															
Surg. 51 (Principles of Surgery)		3	3	3	3																			
Surg. 53 (General Surgery)		3	3	3	3																			
Surg. 55-56 (Regional Surgery)						2	2	2	2	2	2	2	2											
Surg. 58 (Fractures and Dislocations)						2														2	2	2		
Surg. 59 (Diagnostic Clinic)	1	1	1	1	1		1	1	1															
Surg. 61 (Ancker, Diagnostic Clinic)	1		1					1					1											
Surg. 70 (Phalen, Orthopedic Surgery)		2			2		2					2												
Surg. 72 (Orthopedic Surgery)						1	1																1	1
Surg. 73 (Genito-Urinary Diseases)						1½														1½	1½	1½		
Hosp. 79 (Roentgenology)		1	1																				1	1
Obst. 51, 52 (Obstetrics)	3	3	3	3	3		3	3	3															
Obst. 53 (Operative Obstetrics)						2	2	2	2															
Obst. 54 (Gynecology)	1		1	1	1																			
Obst. 55 (Gynecology)						2	2	2	2															
Obst. 56, 57 (Obstetrics and Gynecology)														2	2	2	2	2	2		2	2		
Obst. 62 (Ancker, Clinics in Obstetrics and Gynecology)	1				1		1					1												
Ped. 101, 102 (Diseases of Children)						3	3	3	3	2	2	2	2											
Ped. 103 (Ancker, Clinic in Pediatrics)	1			1					1		1													
Ped. 104 (Ancker, Clinics in Contagious Diseases)	1				1		1					1												
Oph. and Otol. 77 (Ophthalmology)		2			2													2	2					
Oph. and Otol. 79 (Otology)					1												1	1	1					
Oph. and Otol. 81 (Rhinology and Laryngology)						1½														1½	1½	1½		
Med. 65 (Clinical Clerkship)																21	21			21			21	
Surg. 63 (Clinical Clerkship)														21				21			21			21
Obst. 58 } Clinical Clerkship }										21					21									
Ped. 107 } Clinical Clerkship }																			21			21		
Dispensary										6				9	9	6	9	9	6	6	9	9	9	9
Electives		6	6	6	3	6			3		6	6	6											
Total	30																							
Average			30				30				32				33			35			37			34

IRREGULAR STUDENTS

While the course of studies in the 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 many students will find it wise to extend their medical education over a longer period. 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 practical 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 graduates able to fill teaching positions or to carry the investigative spirit into their medical practice. The Committee on Honors Students will advise such students in the progress of their studies, and will assist ambitious students to lay out a program suitable to their needs. Petitions for reasonable substitutions in the required curriculum will be carefully considered.

HONORS STUDENTS

To the further end of developing independence and initiative in promising students the following regulations have been adopted:

A superior student, with the endorsement of the Committee on Honors Students, may petition the Administrative Board to readjust his curriculum. Such petition shall set forth the educational record and plans of such student, and shall name a major department in which the student desires to do intensive work, and some faculty member who is willing to act as adviser for such student.

Students whose petitions are approved shall be known as "Honors Students" and may pursue medical studies in such order and manner as they may determine, subject to the approval of their respective advisers. Each year a program of work, approved by the adviser, shall be made out and filed with the Committee on Honors Students.

Each department shall determine the minimum of practical work which honors students must perform before they may qualify for examination in such department.

To qualify for the M.B. degree honors students must fulfill the legal time requirements, and must pass general written and oral examinations in the several departments of the Medical School. The examinations in anatomy and physiologic chemistry (including physical chemistry) may be taken after not less than three quarters' registration in the Medical School; those in physiology and bacteriology after five quarters; those in public health, pathology, and pharmacology, after six quarters, and those in clinical departments after ten quarters' attendance. The examination in the major department shall be taken after not less than twelve quarters' attendance.

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

An honors student, with the approval of his adviser, shall have the option of fulfilling the requirements of any department except the major department by registering for, and passing examinations in, the required courses of said department.

As a result of the general work, the various examinations, and the research of an honors student and by vote of the Administrative Board 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 Board, on recommendation of the Committee on Honors Students, an honors student may be required to return to the regular curriculum.

SCHOLARSHIP RULES

The following revised rules supersede those printed on page 20 of the bulletin of 1923-24.

1. Any student who, at the end of any given quarter, receives mark E or F in more than 50 per cent of his registered work in that quarter, will be dropped for an indefinite period for poor scholarship; such percentage to be estimated upon a credit hour basis.

2. Students who secure less than 30 quarter honor points in the required courses of the third (freshman) year will be denied further registration in the Medical School.

3. Students who by the end of the fourth (sophomore) year have secured less than 70 quarter honor points, 60 of which were for the required courses, will be denied further registration in the Medical School.

4. Students must secure their Bachelor's degrees, i.e., they must complete the required and elective work of the first two years of the medical course with at least 90 honor points, together with the fulfillment of all requirements in the Arts College, before they can register for the senior medical year (clerkship). Students who had a Bachelor's degree before entering the Medical School, or who received such degree at the end of the freshman medical year, must likewise secure at least 90 honor points on the required and elective science subjects in the Medical School before they can register for the senior year.

Physical Diagnosis (Medicine 48, 49 50) and Bandaging (Surgery 50) are part of the sophomore medical year and must be completed before the B.S. degree is granted; but neither these courses nor any others in clinical subjects have credit value in the Arts College. Consequently they do not give honor points toward the B.S. degree.

5. Students must maintain an average grade of C in the work of each of the junior and senior years, such average to be computed on the clock hour basis.

6. Students dropped under any of the above rules will not be eligible to condition examinations nor to reinstatement, nor to take summer school courses, excepting upon recommendation of the Students' Work Committee and affirmative vote of the Administrative Board.

PHYSICAL DIAGNOSIS

The instruction in this branch has been revised and arranged in four courses as follows:

Med. 48f. Normal Physical Diagnosis. Lectures and laboratory. The students in sections repeat upon each other the standard procedure of physical examinations. Sophomore year; 44 hours.

Med. 49w. Physical Diagnosis. Lectures and demonstrations on general symptomatology and on methods of physical examination, diagnosis, and record. Sophomore year; 22 hours.

Med. 50s. Practical Work in Physical Diagnosis. Sophomores in sections are assigned to the hospital wards and dispensary where they have opportunity to examine selected cases, and these are demonstrated by instructors. 33 hours.

Med. 53su,f,w. Physical Diagnosis and Case-Taking. Junior students, working two in a room, write histories and make physical examination and provisional diagnosis on assigned dispensary patients under supervision of instructors. The patients are then referred to appropriate special clinics and students follow, so far as possible, the subsequent treatment of their respective patients. 44 hours.

PRACTICAL WORK FOR HOSPITAL DIETITIANS

A limited number of properly prepared persons can secure practical experience in hospital dietetics at the University Hospital. Accepted students receive maintenance for services rendered. The usual course is four months. A certificate of proficiency is issued by the hospital superintendent to qualified persons completing training at this institution. Inquiries concerning above described opportunities should be directed to the superintendent of the University Hospital.

OPPORTUNITIES FOR TRAINING IN MEDICAL SOCIAL WORK

A course in medical social work is conducted in the College of Science, Literature, and the Arts under the supervision of the Department of Sociology. A special circular on this course will be sent on request addressed to the registrar.

A limited number of persons properly qualified by previous study may obtain opportunities for practical experience in medical social work in the Social Service Division of the University Hospital. Accepted students will receive maintenance for services rendered. The course of practical training will vary in length with the ability and previous education of the applicants. A certificate of proficiency will be issued by the superintendent of the University Hospital to qualified persons who complete their practical training under this provision. Inquiry concerning the above described opportunities should be directed to the superintendent, University Hospital.

PRACTICAL EXPERIENCE IN X-RAY TECHNIQUE

One worker at a time may obtain practical experience in roentgenology in the University Hospital. Those interested should consult the hospital superintendent.

The Bulletin *of the* University *of* Minnesota

The School of Nursing Announcement for the Year 1924-1925

Vol. XXVII No. 29 July 1 1924

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UNIVERSITY CALENDAR
1924-25

1924			
September	18	Thursday	Payment of fees closes, except for new students
September	22-26		Examinations for removal of conditions Physical examinations for all new students Registration period,[2] colleges of Science, Literature, and the Arts, Agriculture, Forestry, and Home Economics, and Education
September	25-26		Registration days[2] for all colleges not included above
September	26	Friday	Payment of fees for new students closes
September	29	Monday	Fall quarter begins, 8:30[1] a.m.
October	23	Thursday	Senate meeting, 4:30 p.m.
November	1	Saturday	Home Coming Day; classes dismissed the third and fourth hours
November	4	Tuesday	Election Day; a holiday
November	11	Tuesday	Armistice Day; a holiday
November	27	Thursday	Thanksgiving Day; a holiday
December	17-20		State Day Convocation
December	4	Thursday	Final examination period
December	18	Thursday	Commencement Convocation Senate meeting, 4:30 p.m.
December	20	Saturday	Fall quarter ends, Christmas vacation begins, 5:20 p.m.
1925			
January	5	Monday	Christmas vacation ends, winter quarter begins, 8:30[1] a.m.
February	12	Thursday	Lincoln's Birthday; a holiday
February	19	Thursday	Charter Day Convocation Senate meeting, 4:30 p.m.
March	16-19		Final examination period
March	21	Saturday	Winter quarter ends, spring vacation begins, 5:20 p.m.
March	30	Monday	Spring vacation ends, spring quarter begins, 8:30[1] a.m.
April	10	Friday	Good Friday; a holiday
May	14	Thursday	Cap and Gown Day Convocation
May	21	Thursday	Senate meeting, 4:30 p.m.
May	30	Saturday	Memorial Day; a holiday

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

[2] Registration subsequent to the date specified will necessitate the approval of the college concerned.

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

June	10-13		Final examination period
June	13	Saturday	Spring quarter closes, 5:20 p.m.
June	14	Sunday	Baccalaureate service
June	15	Monday	Fifty-third annual commencement
June	19-20		Summer Session first term begins, registration and payment of fees
June	22	Monday	Classes begin, 8:00 a.m.
July	4	Saturday	Independence Day; a holiday
August	1	Saturday	First term Summer Session closes
			Registration and payment of fees for second term closes
August	3	Monday	Second term classes begin
September	5	Saturday	Second term Summer Session closes

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 and peculiar circumstances shall justify the appropriate committee of the college concerned permitting registration at a later date.

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

THE SCHOOL OF NURSING

Louise M. Powell, R.N., B.S., Director

From the date of its organization in 1909 to the year 1921, the School of Nursing of the University of Minnesota, the pioneer in the movement toward the university education of the nurse, had a slow, steady growth, the comparatively small capacity of its teaching hospital limiting its possibilities of practical instruction to a comparatively small body of students.

In the year 1921, overtures were made to the University by the Charles T. Miller Hospital, of St. Paul, with a capacity of 200 beds; by the Minneapolis General Hospital, with approximately 750 beds; and by the Northern Pacific Beneficial Association Hospital, with 200 beds, to entrust to the University the education of their students and to place their nursing services, together with that of the University Hospital, at the command of the school as the practical laboratories for the more complete and varied training of students in larger numbers. These overtures were accepted by the Board of Regents of the University of Minnesota and the greater School of Nursing was organized something over two years ago. Since that time its registration has materially increased and bids fair to grow greatly during the ensuing year.

A class is entered in fall and spring quarters. Students may be not less than eighteen years of age, but must evidence sufficient maturity. While the stated requirement for admission is a four-year high school course, or its equivalent in the required high school subjects, the school invites to its matriculation women of superior education and of large, earnest purpose.

The course of study in the School of Nursing covers a period of three years. The first two quarters are devoted to preliminary courses of instruction under special matriculation fees. These studies are conducted in the science departments of the Medical School, the School of Chemistry, the Department of Physical Education, the Department of Drawing and Descriptive Geometry in the College of Engineering, and the associated hospitals. All courses are conducted by members of the University faculty. Examinations are held at the close of each quarter and must be satisfactorily passed to permit of advancement.

In the second quarter of the preliminary period, students are admitted to one or another of the associated hospitals for practical training in nursing service.

Upon the successful completion of the preliminary course, and with due consideration of their general fitness, students are admitted to the full hospital services. In the succeeding two and one-half years a graded system of hospital education is conducted, during which the students serve in the various departments of nursing service afforded by the associated hospitals and in the University and General Hospital dispensaries.

Undergraduate courses of lectures, recitations, and demonstrations are given by members of the University faculty in each department, including the superintendents of, and instructors in, nursing in each of the associated

hospitals, who also have faculty rank. At the close of each quarter, examinations are held in both practical and theoretical work.

In the encouragement of a still higher measure of education for students of nursing, the University offers a combined course in the College of Science, Literature, and the Arts and the School of Nursing, covering a period of five years and leading to the joint degrees of bachelor of science and graduate in nursing. It is confidently expected that, within a near time, this combined course will become the principal feeder of the School of Nursing, giving its students, as it does, larger preparation for the higher fields of nursing service.

In co-operation with the Department of Preventive Medicine and Public Health the School of Nursing conducts courses in Public Health Nursing and, with the similar co-operation of the College of Education, courses in Nursing Education.

THE MEDICAL SCHOOL

The School of Nursing is under the control of the Medical School through its Administrative Board. The director of the school is responsible to the dean of the Medical School.

THE ADMINISTRATIVE BOARD

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

Elias P. Lyon, Ph.D., M.D., LL.D., Dean of the Medical School and Director of the Department of Physiology

Richard O. Beard, M.D., Secretary of the Administrative Board and Medical Faculty

Louis B. Baldwin, M.D., Superintendent of the University Hospital

Clarence M. Jackson, M.S., M.D., LL.D., Director of the Department of Anatomy

Arthur D. Hirschfelder, B.S., M.D., Director of the Department of Pharmacology

Elexious T. Bell, B.S., M.D., Director of the Department of Pathology

Winford P. Larson, M.D., Director of the Department of Bacteriology and Immunology

Arthur C. Strachauer, M.D., F.A.C.S., Chief of the Department of Surgery

S. Marx White, B.S., M.D., F.A.C.S., Chief of the Department of Medicine

Jennings C. Litzenberg, B.S., M.D., F.A.C.S., Chief of the Department of Obstetrics and Gynecology

Frederic W. Schlutz, B.A., M.D., Chief of the Department of Pediatrics

William R. Murray, Ph.B., M.D., F.A.C.S., Chief of the Department of Ophthalmology and Oto-Laryngology

Arthur S. Hamilton, B.S., M.D., Chief of the Division of Nervous and Mental Diseases, Member-elect Representing the Faculty

Arthur T. Henrici, M.D., Member-elect Representing the Faculty

Harold S. Diehl, M.A., M.D., Director of Students' Health Service and of the Department of Preventive Medicine and Public Health

THE SCHOOL OF NURSING

Louise M. Powell, R.N., B.S., Director of the School, Associate Professor of Nursing

CORPS OF OFFICERS AND INSTRUCTORS IN THE ASSOCIATED HOSPITALS*

Marion L. Vannier, R.N., Superintendent of Nurses (a) and Assistant Professor of Nursing

Bessie Baker, R.N., B.S., Superintendent of Nurses (b) and Assistant Professor of Nursing

Katherine E. Dougherty, R.N., Superintendent of Nurses (c) and Assistant Professor of Nursing

Olena Ordahl, R.N., Superintendent of Nurses (d) and Instructor in Nursing

* The following letters serve as index to the particular hospital in which the instructor serves: (a) The University Hospital; (b) The Charles T. Miller Hospital; (c) The Minneapolis General Hospital; (d) The Northern Pacific Beneficial Association Hospital.

Dorothy A. Kurtzman, R.N., Assistant Superintendent of Nurses (a) and Instructor in Nursing

Lana Babcock, R.N, Assistant Superintendent of Nurses (b)

Irene C. Walsh, R.N., Assistant Superintendent of Nurses (c) and Instructor in Nursing

Barbara A. Thompson, R.N., Instructor in Nursing (a)

M. Frances Madigan, R.N., B.S., Instructor in Nursing (c)

Helen Irene Erickson, R.N., Instructor in Nursing (c)

Corah V. Lund, R.N., B.A., Instructor in Nursing (d)

Gertrude I. Thomas, Instructor in Theory and Practice of Dietetics (a)

Elsie W. Martin, B.A., Instructor in Dietetics (b)

Marion Stewart, Instructor in Dietetics (d)

MEDICAL TEACHING STAFF

Fred L. Adair, B.S., M.A., M.D., F.A.C.S., Associate Professor of Obstetrics and Gynecology

Robert G. Allison, M.D., Assistant Professor of Roentgenology

Moses Barron, B.S., M.D., Assistant Professor of Medicine

Lee W. Barry, M.D., Ph.D., Assistant Professor of Obstetrics and Gynecology

Archibald H. Beard, B.A., M.D., F.A.C.S., Assistant Professor of Medicine

Richard O. Beard, M.D., Secretary of the Faculty and Associate Professor of Physiology

Frank E. Burch, M.D., F.A.C.S., Associate Professor of Ophthalmology and Oto-Laryngology

John Butler, M.D., Associate Professor of Dermatology

Angus L. Cameron, M.D., Ph.D., Assistant Professor of Surgery

James T. Christison, M.D., Associate Professor of Pediatrics, Emeritus

Howard C. Clark, B.S., M.D., F.A.C.S., Associate Professor of Ophthalmology and Oto-Laryngology

Harold S. Diehl, M.A., M.D., Director of Students' Health Service and Assistant Professor of Preventive Medicine and Public Health

Charles D. Freeman, M.D., Assistant Professor of Dermatology

James S. Gilfillan, M.D., Associate Professor of Medicine

William A. Grey, D.D.S., Assistant Professor of Oral Surgery; Research Assistant in Mouth Infections

Alexander R. Hall, M.D., C.M., M.R.C.S., L.R.C.P., Associate Professor of Medicine

Arthur S. Hamilton, B.S., M.D., Professor of Nervous and Mental Diseases, in charge of Division of Nervous and Mental Diseases

Ernest M. Hammes, M.D., Associate Professor of Nervous and Mental Diseases

Thomas B. Hartzell, D.D.M., M.D., Research Professor of Mouth Infections

Arthur D. Hirschfelder, B.S., M.D., Professor of Pharmacology and Director of the Department of Pharmacology

Edgar J. Huenekens, B.A., M.D., Assistant Professor of Pediatrics

Clarence M. Jackson, M.S., M.D., LL.D., Professor of Anatomy and Director of the Department of Anatomy

James A. Johnson, M.D., F.A.C.S., Assistant Professor of Surgery

William H. Kirchner, B.S., Professor of Drawing and Descriptive Geometry

May S. Kissock, B.A., Assistant Professor of Physical Education for Women

Winford P. Larson, M.D., Professor of Bacteriology and Immunology and Director of the Department of Bacteriology and Immunology

Jennings C. Litzenberg, B.S., M.D., F.A.C.S., Professor of Obstetrics and Gynecology and Chief of the Department of Obstetrics and Gynecology

Elias P. Lyon, Ph.D., M.D., LL.D., Dean of the Medical School, Professor of Physiology, and Director of the Department of Physiology

Chauncey A. McKinlay, B.A., M.D., Assistant Professor of Medicine

J. Charnley McKinley, M.D., Ph.D., Assistant Professor of Neurology

Arthur T. Mann, B.S., M.D., F.A.C.S., Associate Professor of Surgery

Henry E. Michelson, B.S., M.D., Assistant Professor of Dermatology and Syphilis

Angus W. Morrison, B.A., M.D., Assistant Professor of Nervous and Mental Diseases

William R. Murray, Ph.D., M.D., F.A.C.S., Professor of Ophthalmology and Oto-Laryngology and Chief of the Department of Ophthalmology and Oto-Laryngology

Jay A. Myers, Ph.D., M.D., Assistant Professor of Preventive Medicine and Public Health

J. Anna Norris, M.D., Professor of Physical Education for Women and Director of Health and Physical Education for Women

George M. Olson, M.D., Assistant Professor of Dermatology and Syphilis

Naboth O. Pearce, M.D., Assistant Professor of Pediatrics

Fred J. Pratt, Jr., M.D., Assistant Professor of Ophthalmology and Oto-Laryngology

Charles A. Reed, B.S., M.D., F.A.C.S., Associate Professor of Orthopedic Surgery

Ernest T. F. Richards, M.D., C.M., Associate Professor of Medicine

Harry P. Ritchie, Ph.B., M.D., F.A.C.S., Associate Professor of Surgery

Frederick C. Rodda, M.D., Associate Professor of Pediatrics

Frederic W. Schlutz, B.A., M.D., Professor of Pediatrics and Chief of the Department of Pediatrics

Max Seham, M.D., Assistant Professor of Pediatrics

Arthur C. Strachauer, M.D., F.A.C.S., Professor of Surgery and Chief of the Department of Surgery

Rood Taylor, M.D., Ph.D., Assistant Professor of Pediatrics

Marion A. Tebbets, B.A., Instructor in Social Service, Director of Division of Social Service

Gilbert J. Thomas, M.D., Assistant Professor of Urology

Margaret Warwick, B.S., M.D., Assistant Professor of Pathology

S. Marx White, B.S., M.D., F.A.C.S., Professor of Medicine and Chief of the Department of Medicine

Frederick W. Wittich, M.A., M.D., Assistant Professor of Medicine

Harry B. Zimmerman, M.D., F.A.C.S., Assistant Professor of Surgery

Edward D. Anderson, B.A., M.D., Instructor in Pediatrics

Hervey H. Barber, M.A., Instructor in Chemistry

Eula B. Butzerin, R.N., B.S., Director of Public Health Nursing Course and Instructor in Preventive Medicine and Public Health

Charles E. Connor, B.A., M.D., Instructor in Ophthalmology and Oto-Laryngology

George R. Dunn, Ph.B., M.D., Instructor in Surgery
Everett K. Geer, B.S., M.D., Instructor in Medicine
Paul W. Giessler, B.S., M.D., Instructor in Orthopedic Surgery
Beryl S. Green, B.A., Instructor in Bacteriology
Manley H. Haynes, B.S., Phm.D., M.D., Instructor in Obstetrics and Gynecology
Edgar T. Herrmann, B.S., M.D., Instructor in Medicine
Kano Ikeda, M.D., Instructor in Pathology
Frank L. Jennings, M.D., Instructor in Medicine
Helen M. Kepler, B.S., M.A., M.D., Instructor in Anatomy
Ralph T. Knight, B.A., M.D., Instructor in Surgery
Harry DeWitt Lees, M.B., Instructor in Preventive Medicine and Public Health
Ernest S. Mariette, B.S., M.D., Instructor in Medicine
Donald McCarthy, B.S., M.D., Instructor in Medicine
Joseph C. Michael, B.S., M.D., Instructor in Nervous and Mental Diseases
Cecile R. Moriarty, B.S., M.D., Instructor in Pediatrics
John F. Noble, M.D., Instructor in Pathology
Henry Odland, B.S., M.D., Instructor in Dermatology
Frederick A. Olson, M.S., M.D., Instructor in Surgery
William P. Shepard, B.S., M.D., Instructor in Preventive Medicine and Public Health
Roscoe C. Webb, B.A., M.D., F.A.C.S., Instructor in Surgery

ASSISTANTS

Laurence H. Cady, B.A., M.D., Assistant in Preventive Medicine and Public Health
Eva H. Burggren, R.N., Assistant in Nursing
Woodard L. Colby, B.S., M.D., Assistant in Pediatrics
Ione Corliss, R.N., Assistant in Nursing
Agnes Fleming, R.N., Assistant in Nursing
Hendrie W. Grant, M.D., M.S., Assistant in Ophthalmology and Oto-Laryngology
Jean C. Hawley, R.N., Assistant in Nursing
Ruth Hjermstad, R.N., Assistant in Nursing
Herman H. Jensen, B.A., M.S., Teaching Fellow in Pharmacology
Ada M. Olsen, R.N., Assistant in Nursing
Blanche M. Pinkus, R.N., Assistant in Nursing
Antoinette A. Proshek, R.N., Assistant in Nursing
Bertha E. Rich, R.N., B.A., Assistant in Nursing
Leo G. Rigler, B.S., M.D., Assistant in Medicine
Jennie Schey, R.N., Assistant in Nursing
Kenneth H. Sutherland, B.S., M.D., Assistant in Preventive Medicine and Public Health
Eugene F. Warner, M.D., Assistant in Pediatrics

LECTURERS GIVING VOLUNTARY SERVICE IN THE SCHOOL OF NURSING

John A. Evert, M.D.
F. E. B. Foley, M.D.
Alexander Josewich, M.D.
M. A. Shillington, M.D.

GENERAL INFORMATION

THE ASSOCIATED HOSPITALS

The ownership or control of teaching hospitals enables the University to offer the best opportunities of education alike in medicine and in nursing.

While the associated hospitals and the School of Nursing are interdependent, each serving the purposes of the others, the faculty looks upon the hospitals as teaching laboratories of the nurse in which her interests, together with those of the medical student body, are primary considerations.

By the recent association of several hospitals with the University, in the interests of nursing education, it is possible to give students the advantage of practical service with free patients, per diem patients, and private patients, and to add to the regular graded work experience in the care of contagious diseases, tuberculosis, and a large number of accident and emergency cases. It is possible in the central school of nursing, so achieved, to offer a practically unlimited registration.

UNIVERSITY RELATIONS

The School of Nursing has its teaching headquarters at the University, with offices in Millard Hall. This building is situated on the medical division of the new University campus, which includes within it both the hospital and laboratory buildings. These occupy the high bluffs overlooking the east bend of the Mississippi River.

The Elliot Memorial Building stands upon the bank of the river and commands a beautiful prospect. This building, provided principally by a gift from the estate of Dr. and Mrs. A. F. Elliot, is the first of the permanent hospital group. The service building connects with the west wing of the Elliot Memorial. The hospital has at present some two hundred beds, fifty of which are assigned to patients paying a per diem charge and the remainder to free patients.

The Charles T. Miller Hospital, one of the associated group of hospitals, situated in St. Paul, is a beautiful and thoroly modern building, erected within the past three years, housing fifty free patients and one hundred fifty private patients.

The Minneapolis General Hospital is supported by taxation and has some 750 beds, principally for the use of the indigent sick. It enters large numbers of accident and emergency cases and acute diseases. It also entrusts to the University the education of its nurses.

The Northern Pacific Beneficial Association opened in the fall of 1921 its new model hospital building situated within St. Paul in the midway district. It is the fourth member of the group. It cares for the sick among the employees and the families of employees of the railway system, the name of which it bears.

THE OUT-PATIENT DEPARTMENT SERVICE

The dispensary is the Out-Patient Department of the University Hospital and is directed by the superintendent, Dr. L. B. Baldwin. It is conveniently located in Millard Hall in the block adjoining the hospital. It is

manned by members of the faculty and clinical assistants, under a chief of staff. Its patients are assigned to medical, surgical, gynecological, obstetrical, children's, eye and ear, nose and throat, skin, genito-urinary, nervous and mental, and orthopedic clinics.

Students of the School of Nursing enjoy opportunities of clinical observation in the Out-Patient Department and are assigned, during their junior and senior years, to its nursing service.

The dispensary of the Minneapolis General Hospital is also available for study and training to the students of the school.

THE LIBRARIES

The medical libraries of the University contain 19,000 bound volumes, 45,200 unbound volumes, monographs, reprints, etc., and 276 current periodicals.

The general University Library also is open to students of all schools. The library catalogs a number of works selected with reference to the needs of students of the School of Nursing.

THE COURSE OF TRAINING

REQUIREMENTS FOR ADMISSION

Applications for admission to the School of Nursing should be made in writing to the director. Blanks will be furnished on request. Educational credentials should accompany the application. When a registration card is received, it should be forwarded to the director. All applicants must meet personally the enrolment committee of the school. Notices of enrolment meetings will be sent to each applicant. A class is entered at the opening of fall and spring quarters.

Applicants must state age and residence, and present credentials of graduation from a four-year high school of the first grade or its equivalent. While a high school diploma is a prerequisite to admission, preference will be given to women of superior preliminary training. Applicants must be not less than eighteen nor more than thirty-five years of age. Those of minimal age will be admitted only when they give assurance of sufficient maturity. They must submit satisfactory evidence to the committee of physical and mental fitness and good character, and will undergo a general physical examination by the school physicians. References are required, two of these to be from former high school teachers.

Information and application blanks may be had upon request, of Director of the School of Nursing, Millard Hall, University of Minnesota, Minneapolis.

REGISTRATION AND FEES

Upon acceptance of the candidate by the enrolment committee, registration is made at the office of the registrar of the University. Fees approximating $40 cover the preliminary course of instruction and are payable at the office of the University cashier. Students supply their own textbooks and stationery. Housing and board are provided on the campus or in the associated hospitals at no cost to the student.

No fees are charged during the remaining two and one-half years of the course. With admission to the hospitals, at the opening of the second quarter, students reside at the nurses' homes of the University or in the associated hospitals. Clothing, other than the hospital uniform dress, students provide for themselves, and in character and sufficiency of supply it must conform to the school regulations.

A vacation of two weeks is allotted, in succession, to each nurse in each year at her own living expense.

Graduates of other schools for nurses, in good standing, or matriculants of these schools, having the required entrance qualifications, will be admitted to the preliminary course of instruction upon the conditions of entrance cited above and upon payment of the prescribed fee. Upon successfully passing the examination in this course, they are granted a certificate of proficiency, which if they are matriculants of any other school is submitted to the superintendent in charge.

PLAN OF INSTRUCTION

The entire course of instruction in the School of Nursing covers a period of three years and, successfully pursued, conformably with the rules and regulations of the hospital service, leads to the degree of graduate in nursing conferred, upon recommendation of the faculty, by the Board of Regents of the University of Minnesota.

All matriculants are required to take the preliminary course of instruction and to pass examinations at its close. The faculty reserves the right to pass upon the general fitness of the student to enter the hospital services at the close of the preliminary period.

In the last half of the first year and the first half of the second year, the student is assigned to duty and receives instruction in the men's and women's medical and surgical wards of the associated hospitals. In the second half of the second year and throughout the third year, she is assigned to special duty in the obstetrical, gynecological, and children's wards, in the operating rooms, and in special departments of practice.

The practical work of each year is accompanied by courses of lectures and demonstrations conducted by members of the faculty. Examinations conclude each of these courses.

AFFILIATED SCHOOLS

Students from affiliated schools or from those of recognized standing and of general requirements equivalent to those of the University of Minnesota, who have completed two years of study and are graduates of such schools, will be admitted to the third year of the School of Nursing as affiliated students, so far as housing capacity will permit. Upon successful completion of the work of the third year they will receive a certificate.

This affiliated third year course is planned especially for those students whose training has been in schools allied to hospitals of exclusively surgical or other special character.

FIVE-YEAR COURSE IN ARTS AND NURSING LEADING TO THE DEGREES OF BACHELOR OF SCIENCE AND GRADUATE IN NURSING

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

The student is required to earn one hundred thirty-five credits and one hundred thirty-five honor points in courses which regularly carry credit in the College of Science, Literature, and the Arts. The satisfactory completion of the required professional work is accepted as the equivalent of the senior year in this college.

FIRST AND SECOND YEARS AND FIRST QUARTER OF THIRD YEAR

The following courses are required, and should be taken during the first two years and the first quarter of the third year:

	Credits
Animal Biology 1-2	10
Bacteriology 1	5
Bacteriology 101 (elective)	4
Chemistry 6-7-8	15
English Rhetoric A-B-C	15
Foreign Language	15
History 1-2 or	
History 2-3	10
History of Nursing 10	1
Home Economics 21	5
Human Anatomy 2	4
Human Physiology 4	5
Lettering 44	1
Nursing Ethics 11	1
Psychology 1-2-3	9
Rhetoric 18-19	6
Sociology 1	5

THIRD YEAR—WINTER QUARTER

The theoretical and practical work of this quarter includes metrology, pharmacology, hospital economics, personal hygiene, and nursing practice; with general work in the wards for a portion of each day under supervision.

THIRD AND FOURTH YEARS

In the succeeding spring and summer quarters of this year and in the four quarters of the fourth year the student is assigned to graded services and to lecture and recitation courses in the associated hospitals.

FIFTH YEAR

During the final year the first two quarters are devoted to advanted nursing in hospital and dispensary service. The last two quarters are taken in class and field or practice work in a course which the student elects

either in public health nursing or in nursing education. Schedules of these courses will be found in the bulletin of the School of Nursing and the bulletin of Public Health Nursing. Either election must include courses carrying twenty-five credits in the College of Science, Literature, and the Arts, and must be approved by the assistant dean for the Senior College.

COURSE IN PUBLIC HEALTH NURSING

The course in Public Health Nursing is given under the direction of the Department of Preventive Medicine and Public Health, in co-operation with the School of Nursing. It covers a period of nine months, or a full academic year, divided into three quarters. The satisfactory completion of the nine-month course, or the minimum of forty-five credits, in certain prescribed subjects, is necessary to secure the certificate in public health nursing.

Students may take the course, however, in one, two, or three parts. This is possible under the quarter system, in which each period of three months is a unit. One or more quarters in any given year being taken, students may return to complete the work at a later date. A student may enter the course at the beginning of the fall, winter, spring, or summer quarter, altho by far the most satisfactory course is obtained by entering in the fall.

Of the full nine-month period, two quarters, or six months, will be devoted to theoretical studies, with some additional field work. The third quarter, or three months, is devoted entirely to supervised work in the following fields: visiting nursing, infant welfare nursing, school nursing, county nursing, and the tuberculosis sanatorium. The field work is carefully planned and supervised, University credit being given for it as for the theoretical studies.

The quarterly tuition fee is $25. A health fee of $2 a quarter, a Shevlin Hall fee of $1 per quarter, and a deposit fee of $5* are required in addition. Living conditions and expenses for the academic year are similar to those of any other student group, the minimum amount being estimated at $456, the average at $678, and a liberal allowance at $925.

Requests for further information may be addressed to the director of the Public Health Nursing course, Millard Hall, University of Minnesota.

COURSE IN NURSING EDUCATION

A course in Nursing Education is given by the School of Nursing with the co-operation of the College of Education and the College of Science, Literature, and the Arts, for those students in the combined Arts and Nursing course who elect it. Registered nurses who have the necessary entrance requirements may be admitted to this course.

* The following charges are made against the general deposit for each student in addition to such charges as may be incurred for lockers, library penalties, laboratory breakage, etc.:

Minnesota Daily	$0.50 a quarter
Post-office box	0.20 a quarter
University Address Book	0.35

Special courses in the School of Nursing will be arranged as required. The following courses are offered:

COURSES

Educ. 55f,w,s. Elementary Educational Psychology. A survey of fundamental facts of human behavior involved in educational activities. Three credits.

Educ. 1f,w,s. Brief Course in History of Education. Current school problems and educational theories in the light of their history. Emphasis upon secondary education and those aspects of education of most immediate concern to high school teachers. Three credits.

Educ. 114w. Philosophy of Education. A discussion of philosophically formulated ideals of education with an attempt to reach a positive philosophy of educational values. Three credits.

S.L.A. 64. Vocational Psychology. Methods of judging vocational interests and aptitudes, psychological analysis of learning or the acquisition of skill, transfer of training, motives and incentives. Intended for students especially interested in vocational and industrial education and training.

Educ. 11f,w,s. Technique of Teaching. Types of classroom exercises; preparation of teaching plans; hygiene of instruction; methods of treating individual differences; classroom management; the professional ethics of teaching; supervised study; marking systems, etc.; observation of high school work. Three credits.

Educ. 11f,w,su. 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.

S.L.A. 1. Use of Books and Libraries. Introductory study of reference books and library methods as applied to individual study and research. Lectures, examination of reference material, and problems in its use.

S.L.A. 41-42-43. A General Course in Public Speaking. Fundamentals of effective speaking; breathing, voice production, enunciation, and action; delivery of extracts from the works of well-known writers and speakers; principles underlying speech-making applied in both oral and written compositions. Each section is limited to twenty-five.

Educ. 42. Fundamental Educational Theories Relating to Instruction in the Elementary School. A study of current educational concepts as related to problems of the elementary school.

Sch. of Nurs. Teaching Practice. Experience in teaching, under supervision, in the classes of the School of Nursing, upon subjects included in the education of nursing students.

PRELIMINARY COURSES OF INSTRUCTION

SCIENTIFIC COURSES

ANATOMY

2f,w,s,su. Elementary Anatomy. The general properties and development of tissue cells; the development of the human embryo. The description and demonstration of the osseous, muscular, nervous, circulatory, respiratory, excretory, and reproductive systems. Forty-four hours. Dr. Kepler.

PHYSIOLOGY

4f,w,s,su. Elementary Physiology. Functional properties of tissue cells; the material bases of the body; the nutritive media; the physiology of nerve and muscle; of the nervous system; the vascular mechanism; respiration, digestion, excretion, and metabolism. Eighty-eight hours. Dr. Lyon, Dr. R. O. Beard.

CHEMISTRY

18f,w,s,su. Elementary Chemistry for Nurses. A brief study of chemical and physical changes; elements and compounds; the fundamental laws of chemistry; the qualitative and quantitative composition of foods, air, and water. Sixty hours. Mr. Barber.

PHARMACOLOGY

1f,w,s,su. Elementary Pharmacology. A study of the history, uses, classification and preparation of drugs; definition of descriptive terms; systems of weights and measures; methods of administration, principles of dosage, etc. Forty-four hours. Mr. Jensen.

14f,s. Metrology. Systems of weights and measures; equivalents; solutions; dosage. Eleven hours. Miss Erickson.

BACTERIOLOGY

1f,w,s,su. Elementary Bacteriology. The principles and technique of general bacteriology. Studies in the morphologic and biologic characters of the common bacteria. Preparation of culture media. Disinfectants and disinfection. Bacteriology of water and food products. Sixty-six hours. Dr. Larson, Mrs. Green.

PRACTICAL COURSES

ELEMENTARY PHYSICAL TRAINING

1f-2w-3s. A course of physical exercises for the personal development of the student, especially directed to the training of the nurse in the adaptation of her movements to the best results in her practical work. Thirty-three hours. Dr. Norris, Miss Kissock.

LETTERING

44f,w,s,su. Exercises in Lettering. For training the nurse in the making of records and the charting of clinical observations; the accurate forming of letters in plain, single stroke types and special clinical characters. Eleven hours.

PRINCIPLES OF NURSING

10f,w,s,su. History of Nursing. A study of nursing history to cultivate an understanding and appreciation of nursing traditions and ideals, and of the people and influences that have brought the profession to its present status. Eleven hours. Miss Baker.

11f,w,s,su. Nursing Ethics. This course deals with the present scope of nursing; the attitude of the nurse towards various problems, the patient, the physician, and other nurses. Hospital etiquette; the principles of self-government. Eleven hours. Miss Vannier.

12f,w,s,su. Personal Hygiene. A study of the conditions governing the health of the individual. Ideals and conceptions of health. Ethical and economic aspects of hygiene. Responsibility of the nurse in health preservation and disease prevention. Eleven hours.

HOSPITAL ECONOMICS

13f,w,s,su. A Study of Hospitals and Hospital Departments. The general principles of hospital and household economics. Hospital buildings; construction, heating, lighting, and plumbing. Equipment and operation of service rooms, kitchens, special departments. Hospital supplies; household chemicals. Eleven hours. Mrs. Kurtzman.

PRACTICAL DIETETICS

15f,w,s,su. Foodstuffs. A course of practical exercises and lectures upon foods; their definition, classes, forms; food values; food composition; energy values; caloric index; selection of dietaries; balanced rations; market conditions. Eleven hours. Miss Thomas.

17f,w,s,su. The Preparation of Food. Methods of cooking; effect on food values; percentages of loss; treatment of various classes of foods; of typical foods; enhancement of food values; mechanical methods of preparation; raw foods. Forty-eight hours.

PRINCIPLES AND PRACTICE OF NURSING

21-27f,w,s,su. Courses of lectures, demonstrations, and practical exercises. Eighty hours.

21. The Environment of the Patient. The care of room, ward, service room, bath, lavatory, serving room, linen room, bed and bedding, detail of bed-making.

22. Admission and General Care of the Patient. The bed, bath, and toilet; preparation of the patient for the night; prevention of bedsores, stiffness, and cramping of muscles; care of mouth, teeth, and hair; special devices for comfort.

23. Observation and Examination of the Patient. How and what to observe; temperature, pulse, respiration; feces, urine, sputum. Preparation of patient for routine examination; methods of assisting examiner; the doctor's order book; value of bedside records; detail and technique of record.

24. Methods and Mechanisms of Treatment. Preparation of solutions; application of heat and cold; counter irritants; enemata; vaginal

douche; catheterization; lavage, gavage, gastric expression. Baths; reduction of temperature; sedative baths; baths and packs to produce sweating; local baths; medicated baths.

25. The Preparation of Patients for Operation. Details of preparation; the ether bed; post-operative care of patient.
26. Medicines. The medicine case; medicine trays; system of giving medicines; method of preparing and giving hypodermic injections; method of giving inhalations; methods of giving drugs by inunction.
27. Infectious Diseases. Precautions of care; details of disinfection; care of typhoid fever cases; venereal diseases.

UNDERGRADUATE COURSES

Students who have successfully completed the preliminary courses of the first six months are regularly entered in the hospital service. In addition to their hospital duties, which employ fifty-six hours each week, they will attend courses of lectures, demonstrations, and recitations upon subjects in general medicine and surgery and in special branches of practice related to their professional work.

ELEMENTS OF PATHOLOGY

28. The Principles of Pathology. Deviations from the normal in the more common diseases. A brief consideration of the normal and pathologic blood and excretions of the body. Eighteen hours.

SURGICAL NURSING

29. Surgical Technique. Principles of sterilization; inflammation; wounds; necessity for asepsis, and how obtained; dressings. Pre-operative and post-operative care of patients. Eight hours.
30. The Care of Surgical Cases. Anesthesia and anesthetics. Surgical emergencies; complications and infections. Special surgical conditions. Thirty hours.
31. Bandaging. Demonstrations and practical exercises in the uses and methods of application of bandages of all forms. Ten hours.

MEDICAL NURSING

32. Diseases of Circulatory System and Blood. Respiratory system; gastro-intestinal tract and accessory digestive glands. Disorders of metabolism. Medical emergencies.
33. General Nursing Care. Diet, drugs, rest. Observation of symptoms. Recording intake and output of fluids. Isolation and prevention of infection.
34. Infectious and Contagious Diseases. Typhoid fever. Typhus. Dysentery. Hookworm. Malaria. Yellow fever. Tetanus and rabies.
35. General Nursing Care. Protection of nurse and public. Health regulations. Care of room and patient.

Courses Nos. 32 to 35 cover 32 hours.

TUBERCULOSIS

36. Study of Tuberculosis. Cause, prevalence, prevention, curability. Classification; localization. Emergencies. Treatment in home and sanatorium. Care of tuberculosis; prevention of infection; treatment of emergencies; hemoptysis. Fresh air treatment; out-of-door sleeping. Dietary, rest, exercise. Ten hours.

THE DIETETIC MANAGEMENT OF DISEASE

37. The Dietary of Disease. The conditions of digestion, absorption, assimilation, and metabolism in disease; the influence of age, sex, and previous nutrition; the relation of food and water supply to functional inactivity, tissue loss, and elimination.
38. The Dietetic Management in Special Diseases. The dietary of continued fevers; gastro-intestinal disorders; respiratory disorders; disorders of nutrition; renal diseases, cardiac disorders, and diabetes.

Courses 37 and 38 cover a period of ten hours.

GYNECOLOGY

39. Gynecological Nursing. A study of terms and definitions bearing upon the nursing of pelvic diseases; preparation of gynecological patients for examination and for operation; general care of gynecological cases; special modes of treatment. Eight hours.

NURSING OF INFANTS AND CHILDREN

40. The Normal Child. Conditions of growth and development; breast feeding; artificial feeding; mixed feeding; preparation of foods in laboratory; general care and nursing. Psychology of childhood. Social aspects of children's diseases.
41. Diseases of Digestive Tract. Disorders of respiratory system. Diseases of circulatory system; of genito-urinary tract. Nervous disorders. Constitutional diseases. Syphilis; gonorrhoea.
42. Contagious Diseases. Diphtheria; scarlet fever; smallpox; chicken-pox; whooping-cough; measles; mumps; meningitis; poliomyelitis.

Courses Nos. 40 to 42 cover a period of thirty-eight hours.

MASSAGE

43. Demonstrations and Class Practice in the general manipulation of the body tissues and in those general movements which have the value of passive exercise for the sick or convalescent. Fifteen hours.

OBSTETRICS

44. Obstetrical Nursing. Lectures and demonstrations of the anatomy and physiology of the female pelvis; the physiology of pregnancy; its accidents; the physiology of parturition; the nursing of labor; complications; post-partum hemorrhage, puerperal fever; puerperal convulsions, puerperal insanity. Twenty-four hours.

PREVENTIVE MEDICINE

45. Elementary Preventive Medicine. A descriptive course tracing the development and growth of public health with special reference to the past

fifty years and a consideration of the various phases of preventive medicine in the present day. Twelve hours.

DISEASES OF THE SKIN

46. The Nursing Care of the Skin. A course upon methods of treatment of disorders of the skin in general occurrence. Twelve hours.

NERVOUS AND MENTAL DISEASES

47. The Nursing of Nervous and Mental Conditions. Insanity; its common forms and symptoms; principles of care of insane patients. Epilepsy; its manifestations and care. Neurasthenia, hysteria; their recognition and distinctive features; their nursing; their rest cure. Fifteen hours.

DISEASES OF THE EYE, EAR, NOSE, AND THROAT

48. The Eye, Ear, Nose, and Throat. Anatomy and physiology. General and local care; use of applications, douches, etc. Recognition and care of foreign bodies. Prevention and treatment of ophthalmia neonatorum. Pre-operative and post-operative care. Twelve hours.

SPECIAL THERAPEUTICS

49. Special Methods of Treatment. Special forms of therapy, requiring the services of the nurse. The X-ray in the diagnosis and treatment of disease. The use of vaccines and sera. Oral hygiene. Six hours.

SOCIAL RELATIONS

50. Professional Problems. Social and civic status of nurses. Professional ethics and etiquette. Nursing education; legislation; organizations. Eight hours.

SPECIAL TOPICS

Arrangements will be made, from time to time, for formal lectures upon special topics, to be delivered by available lecturers of large institutional and educational experience, to which the student of the training schools of the Twin Cities will be invited.

The Bulletin *of the* University *of* Minnesota

Announcement of Courses in Public Health Nursing 1924-1925

Vol. XXVII No. 30 July 5 1924

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

Accepted for mailing at special rate of postage provided for in section 1103, Act of October 3, 1917, authorized July 12, 1918

1924

JULY

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1925

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UNIVERSITY CALENDAR

1924-25

1924			
September	18	Thursday	Payment of fees closes, except for new students
September	22-26		Examinations for removal of conditions Physical examinations for all new students Registration period,[2] colleges of Science, Literature, and the Arts, Agriculture, Forestry, and Home Economics, and Education
September	25-26		Registration days[2] for all colleges not included above
September	26	Friday	Payment of fees for new students closes
September	29	Monday	Fall quarter begins, 8:30[1] a.m.
October	23	Thursday	Senate meeting, 4:30 p.m.
November	1	Saturday	Home Coming Day; classes dismissed the third and fourth hours
November	4	Tuesday	Election Day; a holiday
November	11	Tuesday	Armistice Day; a holiday
November	27	Thursday	Thanksgiving Day; a holiday
December	17-20		State Day Convocation
December	4	Thursday	Final examination period
December	18	Thursday	Commencement Convocation Senate meeting, 4:30 p.m.
December	20	Saturday	Fall quarter ends, Christmas vacation begins, 5:20 p.m.
1925			
January	5	Monday	Christmas vacation ends, winter quarter begins, 8:30[1] a.m.
February	12	Thursday	Lincoln's Birthday; a holiday
February	19	Thursday	Charter Day Convocation Senate meeting, 4:30 p.m.
March	16-19		Final examination period
March	21	Saturday	Winter quarter ends, spring vacation begins, 5:20 p.m.
March	30	Monday	Spring vacation ends, spring quarter begins, 8:30[1] a.m.
April	10	Friday	Good Friday; a holiday
May	14	Thursday	Cap and Gown Day Convocation
May	21	Thursday	Senate meeting, 4:30 p.m.
May	30	Saturday	Memorial Day; a holiday

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

[2] Registration subsequent to the date specified will necessitate the approval of the college concerned.

June	10-13		Final examination period
June	13	Saturday	Spring quarter closes, 5:20 p.m.
June	14	Sunday	Baccalaureate service
June	15	Monday	Fifty-third annual commencement
June	19-20		Summer Session first term begins, registration and payment of fees
June	22	Monday	Classes begin, 8:00 a.m.
July	4	Saturday	Independence Day; a holiday
August	1	Saturday	First term Summer Session closes Registration and payment of fees for second term closes
August	3	Monday	Second term classes begin
September	5	Saturday	Second term Summer Session closes

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 and peculiar circumstances shall justify the appropriate committee of the college concerned permitting registration at a later date.

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

ANNOUNCEMENT

COURSE IN PUBLIC HEALTH NURSING

The course in Public Health Nursing is given under the direction of the Department of Preventive Medicine and Public Health, in co-operation with the School of Nursing. It covers a period of nine months, or a full academic year, divided into three quarters. The satisfactory completion of the nine-month course or the minimum of forty-five credits in certain prescribed subjects, is necessary to secure the certificate in public health nursing.

Students should register for theory in the fall quarter. Field work is available four times a year, beginning in October, January, April, or July.

Of the full nine-month period, two quarters, or six months, are devoted to theoretical studies, with some additional field work. The third quarter, or three months, is devoted entirely to supervised work in the following fields: visiting nursing, infant welfare nursing, school nursing, and county nursing. The field work is carefully planned and supervised, University credit being given for it as for the theoretical studies.

Requests for further information may be addressed to the Director of the Course in Public Health Nursing, Millard Hall, University of Minnesota.

THE MEDICAL SCHOOL

THE ADMINISTRATIVE BOARD

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

Elias P. Lyon, Ph.D., M.D., LL.D., Dean of the Medical School and Director of the Department of Physiology

Richard O. Beard, M.D., Secretary of the Administrative Board and Medical Faculty

Louis B. Baldwin, M.D., Superintendent of the University Hospitals

Clarence M. Jackson, M.S., M.D., LL.D., Director of the Department of Anatomy

Arthur D. Hirschfelder, B.S., M.D., Director of the Department of Pharmacology

Elexious T. Bell, B.S., M.D., Director of the Department of Pathology

Winford P. Larson, M.D., Director of the Department of Bacteriology and Immunology

Arthur C. Strachauer, M.D., F.A.C.S., Chief of the Department of Surgery

S. Marx White, B.S., M.D., F.A.C.S., Chief of the Department of Medicine

Jennings C. Litzenberg, B.S., M.D., F.A.C.S., Chief of the Department of Obstetrics and Gynecology

Frederic W. Schlutz, B.A., M.D., Chief of Department of Pediatrics

William R. Murray, Ph.B., M.D., F.A.C.S., Chief of the Department of Ophthalmology and Oto-Laryngology

Arthur S. Hamilton, B.S., M.D., Chief of the Division of Nervous and Mental Diseases, Member-elect Representing the Faculty

Harold S. Diehl, M.A., M.D., Director of Students' Health Service and of the Department of Preventive Medicine and Public Health

Arthur T. Henrici, M.D., Member-elect Representing the Faculty

MEMBERS OF THE COMMITTEE ON PUBLIC HEALTH NURSING

Harold S. Diehl, M.A., M.D., Director of Students' Health Service and of the Department of Preventive Medicine and Public Health

Louise M. Powell R.N., B.S., Director of School of Nursing and Associate Professor of Nursing

Eula B. Butzerin, R.N., B.S., Instructor in Preventive Medicine and Public Health and Director of the Course in Public Health Nursing

Richard Olding Beard, M.D., Secretary of the Faculty and Associate Professor of Physiology

FACULTY STAFF

Fred L. Adair, B.S., M.D., M.A., F.A.C.S., Associate Professor of Obstetrics and Gynecology

[1]Luther L. Bernard, Ph.D., Professor of Sociology

Alma Binzel, M.A., Assistant Professor of Home Economics

Ruth E. Boynton, B.S., M.D., Instructor in Preventive Medicine and Public Health and Director, Division of Child Hygiene, State Board of Health

Frank J. Bruno, B.A., B.D., Professorial Lecturer in Social and Civic Work

Eula B. Butzerin, R.N., B.S., Instructor in Preventive Medicine and Public Health and Director of the Course in Public Health Nursing

Walter E. Camp, M.A., M.D., Assistant Professor of Ophthalmology and Oto-Laryngology

F. Stuart Chapin, Ph.D., Professor of Sociology, Chairman of the Department of Sociology, and Director of the Training Course for Social and Civic Workers

Albert J. Chesley, M.D., Associate Professor of Preventive Medicine and Public Health and Executive Secretary of the State Board of Health

Harold S. Diehl, M.A., M.D., Director of Students' Health Service and of the Department of Preventive Medicine and Public Health

Richard M. Elliott, Ph.D., Associate Professor of Psychology and Chairman of the Department of Psychology

Alice A. Fuller, B.A., R.N., Instructor in Preventive Medicine and Public Health and Supervisor, Visiting Nurse Association, Minneapolis

Arthur S. Hamilton, B.S., M.D., Professor of Nervous and Mental Diseases and Chief of Division of Nervous and Mental Diseases

Alma C. Haupt, B.A., R.N., Instructor in Preventive Medicine and Public Health and Superintendent, Visiting Nurse Association, Minneapolis

William Hodson, B.A., LL.B., Lecturer in Sociology

Edgar J. Huenekens, B.A., M.D., Assistant Professor of Pediatrics

Harry G. Irvine, M.D., Associate Professor of Dermatology and Syphilis and Director of Division of Venereal Diseases, Minnesota State Board of Health

Harry deWitt Lees, M.B., Instructor in Preventive Medicine and Public Health and Acting Assistant Director of Students' Health Service

Ernest S. Mariette, B.S., M.D., Assistant Professor of Medicine and Superintendent of Glen Lake Tuberculosis Sanatorium

Joseph C. Michael, B.S., M.D., Instructor in Nervous and Mental Diseases

Henry E. Michelson, B.S., M.D., Assistant Professor of Dermatology and Syphilis

Angus W. Morrison, B.A., M.D., Associate Professor of Nervous and Mental Diseases

Mildred D. Mudgett, Ph.D., Assistant Professor of Sociology and Supervisor of Field Practice Work

Jay A. Myers, Ph.D., M.D., Assistant Professor of Preventive Medicine and Public Health

[1]Absent on leave, winter and spring quarters.

Frederick C. Rodda, M.D., Associate Professor of Pediatrics

Max Seham, M.D., Assistant Professor of Pediatrics

Marion A. Tebbets, B.A., Instructor in Social Service and Director of Hospital Social Service

SPECIAL LECTURERS AND FIELD SUPERVISORS

Agnes Alexander, R.N., Field Worker, Division of Child Hygiene, State Board of Health

Esther Andreasen, R.N., Assistant Superintendent of Nurses, Glen Lake Sanatorium

May Bryne, B.S., Director of Special Classes, Board of Education, Minneapolis

Edgar W. Everts, Director of Physical and Health Education, Department of Education, State of Minnesota

Dorothy W. Graves, B.S., R.N., Instructor, Infant Department, Infant Welfare Society

F. E. Harrington, B.S., M.D., LL.D., Commissioner of Health, and Director of School Hygiene, City of Minneapolis

Cora T. Helgesen, R.N., Supervisor of School Nurses, Board of Education, Minneapolis

Heide Henriksen, R.N., Supervisor of Home Visitors, Twin City Rapid Transit Company

Hortense Hilbert, B.A., R.N., Educational Agent, State Board of Health

Ruth Houlton, B.A., R.N., Superintendent of Public Health Nursing, Division of Child Hygiene, State Board of Health

Selma Lindblad, R.N., Supervisor of School Nurses, Board of Education, St. Paul

Sue Naysmith, R.N., Superintendent of Nurses, Glen Lake Sanatorium

Helen Chesley Peck, R.N., Executive Secretary, Infant Welfare Society, Minneapolis

Marie Sargeant, R.N., Supervisor of Nurses in Rural Hennepin County

Elizabeth Sprague, R.N., Head Nurse, Division of Public Health, Minneapolis

Nettie Strate, Supervisor Health Instruction, Board of Education, Minneapolis

Mabel Ulrich, M.D., Lecturer in Social Hygiene

Elizabeth Yerxa, B.A., Case Supervisor, Children's Bureau, State Board of Control

Eleanor Zuppann, R.N., B.S., Assistant Superintendent of Visiting Nurse Association and Supervisor of Instruction

REGULATIONS

CANDIDATES FOR ADMISSION

I. Students eligible to the course in Public Health Nursing are of two groups:
   a. Qualified graduate nurses.
   b. Senior students referred by recognized schools of nursing willing to accept one or more quarters of the course in public health nursing as a contribution to the work of the final year.

II. Qualifications for enrolment of graduate nurses:
   a. Nurse registration.
   b. Eligibility to nurse membership in the National Organization for Public Health Nursing.
   c. Graduation from a four-year accredited high school course.

III. If high school credentials meet college entrance requirements, credit may be applied toward a Bachelor degree. More and more is the demand being made for women who are qualified to direct and to administer public health nursing activities.

FEES AND EXPENSES

Tuition fee (per quarter)	$20.00
Health fee (per quarter)	2.00
Shevlin Hall (per quarter)	1.00
General deposit*	5.00

Living conditions and expenses for the academic year are similar to those of any other student group, the minimum amount (including tuition) being estimated at $456; the average, $678; and the maximum, $925. For further information communicate with Mrs. Mary Staples, Shevlin Hall.

Loan scholarships are sometimes available for students who elect to remain two or more years to complete work toward a degree. The selection of students is made on the basis of scholarship, endeavor, and definite objective of service.

* The following charges are made against the general deposit for each student in addition to such charges as may be incurred for lockers, library penalties, laboratory breakage, etc.:

Minnesota Daily (per quarter)	$0.50
Post-office box (per quarter)	0.20
University Address Book	0.35

PUBLIC HEALTH NURSING

COURSES OF STUDY

FALL QUARTER

1. General Psychology. An introductory survey of psychology; its material, fundamental laws, applications, and relations to other sciences. Two lectures, one recitation a week. 36 hours; 3 credits. Mr. Elliott and others.

1 (Soc.). Introduction to Sociology. A study of the origin and development of human societies. Various agencies which have determined the type of human life; social organizations, institutions, and progress; bearing of sociology upon other social sciences and arts. 60 hours; 5 credits. Mr. Bernard.

40. Child-Training. Applications of modern science, especially child psychology, in training and educating children. Emphasis placed on the conservation of the child as an obligation of the home and the nation through training for parenthood. 36 hours; 3 credits. Miss Binzel.

53. Elements of Preventive Medicine. Susceptibility, resistance and immunity to disease; methods of spread and prevention of communicable and degenerative diseases; importance of heredity and environment; protection of food, water, and milk. 36 hours; 3 credits. Dr. Diehl.

62. Principles of Public Health Nursing. Development, principles, technique of public health nursing; methods of co-operative endeavor with social agencies; health teaching as an essential factor in promotion of individual, family and community well-being. Special fields are presented. 36 hours; 3 credits. Miss Butzerin.

WINTER QUARTER

2. General Psychology. A continuation of 1f. 36 hours; 3 credits. Mr. Elliott and others.

52 (Soc.). Elementary Social Case Work. The methods of case work as applied to the treatment of the socially inadequate. 36 hours; 3 credits. Mr. Bruno.

58. Maternal and Child Hygiene. Maternal welfare program; importance of breast feeding; origin and conduct, infant welfare clinics in cities and rural communities; consideration of child of pre-school and school age as to malnutrition, fatigue, physical defects, cardiac and nervous disorders. 18 hours; 1½ credits. Dr. Adair, Dr. Huenekens, Dr. Boynton, and others.

59. Social Hygiene. Relation to public health. Sex development at age of twelve; adolescence; sex incorrigibility. Methods of education in schools. Responsibility of public health nurse. Prevention and control of venereal disease; clinics; follow-up system. 12 hours; 1 credit.

60. The Tuberculosis Problem. History of tuberculosis movement and campaign in the United States. Early diagnosis and sanatorium treatment. Tuberculosis in children. The psychology of tuberculosis; supervision of returned sanatoria patients. State program for the eradication of tuberculosis; legislation. 12 hours; 1 credit. Dr. Myers.

60 (Soc.). Child Welfare. Study of social obligations to the child; development of the child-saving movement in the United States; infant and child mortality; recreation, education; courts, institutions, societies, and other public efforts for the child. 36 hours; 3 credits. Mr. Hodson.

61. Mental Hygiene. History of movement; factors underlying mental disease; diagnosis of feeble-mindedness and border-line cases; institutional treatment; insanity and its relation to social work and to the institution; the importance of psychiatric nursing. 12 hours; 1 credit. Dr. Hamilton and others.

70. Medical Social Service. A course designed to bring out the relation of social and medical work, emphasizing medical social problems most commonly found among certain types of cases. Lectures and field work. Hours and credits arranged. Miss Tebbets.

90 (Soc.). Elementary Field Work. Designed to give first hand knowledge of the conditions out of which dependency develops by field work with a social service agency. 72 hours; 2 credits. Mrs. Mudgett.

FIELD WORK

63f,w,s,su. Field Practice in Visiting Nursing. Lectures, demonstrations, supervision, and field practice in bedside care of general and maternity patients; communicable disease, tuberculosis and mental cases with special emphasis upon recognition of social problems, co-operation with social agencies and accurate record-keeping. 176 hours; 5 credits. Miss Haupt, Miss Zuppann.

64f,w,s,su. Field Practice in Infant Welfare Nursing. Supervised practice in teaching the value of breast feeding; of determining the eligibility for clinic; of keeping complete records. Practice in the conduct of infant welfare and pre-school age clinics with necessary follow-up visits. Prerequisites: 62 and 58. 132 hours; 3 credits. Miss Butzerin, Miss Peck.

65f,w,s. Field Practice in School Nursing. Routine inspections with the school nurse; assistance at medical examinations; general sanitary inspections; home visits; visits to special classes as sight-saving, defective speech and hearing, subnormal, open-air, and tuberculosis schools. 80 hours; 2 credits. Miss Butzerin.

66f,w,s,su. Field Practice in County Nursing. Student nurse observes and assists nurse on rounds in county, in routine physical inspection of school children, home calls, health talks and classes in home nursing, organizing, advertising, and conducting of the rural clinic. 80 hours; 2 credits. Miss Butzerin.

67f,w,s,su. Field Practice in a County Tuberculosis Sanatorium. A two-week affiliation in tuberculosis nursing is arranged for the students who have not already had previous experience. This is required in addition to the regular nine months' course. Dr. Mariette.

NOTE.—The total number of field credits required, including Elementary Field Work 90, is 16. The two credits not included in the above tabulation are arranged for in making out individual programs.

The Bulletin *of the* University *of* Minnesota

The College of Dentistry

Announcement for the Years 1924-1926

Vol. XXVII No. 33 July 14 1924

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

Accepted for mailing at special rate of postage provided for in section 1103. Act of October 3, 1917, authorized July 12, 1918

1924

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AUGUST

Su	Mo	Tu	W	Th	Fr	Sa
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3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
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31	..	..	..	..	..	..

SEPTEMBER

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14	15	16	17	18	19	20
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OCTOBER

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12	13	14	15	16	17	18
19	20	21	22	23	24	25
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NOVEMBER

Su	Mo	Tu	W	Th	Fr	Sa
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DECEMBER

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28	29	30	31	..	..	..
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1925

JANUARY

Su	Mo	Tu	W	Th	Fr	Sa
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FEBRUARY

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MARCH

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APRIL

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MAY

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JUNE

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JULY

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AUGUST

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SEPTEMBER

Su	Mo	Tu	W	Th	Fr	Sa
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OCTOBER

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18	19	20	21	22	23	24
25	26	27	28	29	30	31
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NOVEMBER

Su	Mo	Tu	W	Th	Fr	Sa
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15	16	17	18	19	20	21
22	23	24	25	26	27	28
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DECEMBER

Su	Mo	Tu	W	Th	Fr	Sa
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13	14	15	16	17	18	19
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27	28	29	30	31	..	..
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UNIVERSITY CALENDAR

1924-25

1924			
September	18	Thursday	Payment of fees closes, except for new students
September	18-20		Entrance examinations
September	22-26		Examinations for removal of conditions
			Physical examinations for all new students
			Registration period,[2] colleges of Science, Literature, and the Arts, Agriculture, Forestry, and Home Economics, and Education
September	22	Monday	First semester evening extension classes begin[3]
September	25-26		Registration days[2] for all colleges not included above
September	26	Friday	Payment of fees for new students closes
September	29	Monday	Fall quarter begins, 8:30[1] a.m.
October	23	Thursday	Senate meeting, 4:30 p.m.
November	1	Saturday	Home Coming Day; classes dismissed the third and fourth hours
November	4	Tuesday	Election Day; a holiday
November	11	Tuesday	Armistice Day; a holiday
November	27	Thursday	Thanksgiving Day; a holiday
December	17-20		State Day Convocation
December	4	Thursday	Final examination period
December	18	Thursday	Commencement Convocation
			Senate meeting, 4:30 p.m.
December	20	Saturday	Fall quarter ends, Christmas vacation begins, 5:20 p.m.
1925			
January	5	Monday	Christmas vacation ends, winter quarter begins, 8:30[1] a.m.
January	30	Friday	First semester evening extension classes close
February	2	Monday	Second semester evening extension classes begin[3]
February	12	Thursday	Lincoln's Birthday; a holiday
February	19	Thursday	Charter Day Convocation
			Senate meeting, 4:30 p.m.
March	16-19		Final examination period
March	21	Saturday	Winter quarter ends, spring vacation begins, 5:20 p.m.

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

[2] Registration subsequent to the date specified will necessitate the approval of the college concerned. See also penalty fees for late registration, page 11.

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

March	30	Monday	Spring vacation ends, spring quarter begins, 8:30[1] a.m.
April	10	Friday	Good Friday; a holiday
May	14	Thursday	Cap and Gown Day Convocation
May	21	Thursday	Senate meeting, 4:30 p.m.
May	29	Friday	Second semester evening extension classes close
May	30	Saturday	Memorial Day; a holiday
June	10-13		Final examination period
June	13	Saturday	Spring quarter closes, 5:20 p.m.
June	14	Sunday	Baccalaureate service
June	15	Monday	Fifty-third annual commencement
June	19-20		Summer Session first term begins, registration and payment of fees
June	22	Monday	Classes begin, 8:00 a.m.
July	4	Saturday	Independence Day; a holiday
August	1	Saturday	First term Summer Session closes Registration and payment of fees for second term closes
August	3	Monday	Second term classes begin
September	5	Saturday	Second term Summer Session closes

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 and peculiar circumstances shall justify the appropriate committee of the college concerned permitting registration at a later date.

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

THE COLLEGE OF DENTISTRY

FACULTY

ADMINISTRATION

Lotus Delta Coffman, Ph.D., LL.D., President
William Watts Folwell, LL.D., President Emeritus
Alfred Owre, D.M.D., M.D., C.M., B.A., Dean of the College of Dentistry, Professor of the Practice of Dentistry, and Chairman of the Department of Dentistry

ANATOMY

Clarence M. Jackson, M.S., M.D., LL.D., Professor of Anatomy
Thomas G. Lee, B.S., M.D., Professor of Comparative Anatomy
Andrew T. Rasmussen, Ph.D., Associate Professor of Neurology
Shirley P. Miller, Ph.D., Instructor in Anatomy
Walter P. Covell, B.S., Teaching Fellow in Anatomy
Everett Rowles, B.A., Teaching Fellow in Anatomy
Gordon H. Scott, B.A., Teaching Fellow in Anatomy

BACTERIOLOGY AND IMMUNOLOGY

Winford P. Larson, M.D., Professor of Bacteriology and Immunology
Robert G. Green, M.A., M.D., Assistant Professor of Bacteriology and Immunology
Arthur T. Henrici, M.D., Associate Professor of Bacteriology and Immunology
Beryl S. Green, M.A., Instructor in Bacteriology and Immunology
Madeleine Guillemin, M.A., Instructor in Bacteriology and Immunology

CHEMISTRY

[1]Paul H. M.-P. Brinton, Ph.D., Professor of Analytical Chemistry
William H. Hunter, Ph.D., Professor of Chemistry
Lee I. Smith, Ph.D., Assistant Professor of Organic Chemistry
Landon A. Sarver, M.A., Instructor in Chemistry
Arthur E. Stoppel, Ch.E., Ph.D., Instructor in Chemistry

DENTISTRY

Alfred Owre, D.M.D., M.D., C.M., B.A., Dean of the College of Dentistry, Professor of the Practice of Dentistry, and Chairman of the Department of Dentistry
Peter J. Brekhus, B.A., D.D.S., Professor of Crown and Bridge Work and Oral Diagnosis and Chairman of the Division of Oral Diagnosis
Archibald B. Butter, D.D.S., Assistant Professor of Operative Dentistry
Oscar Cooperman, D.D.S., Assistant Professor of Prosthetic Dentistry and Oral Anatomy
Norman J. Cox, B.S., D.M.D., Associate Professor of Operative Dentistry

[1] Absent on leave, 1924-25.

George M. Damon, D.D.S., Professor of Prosthetic Dentistry and Oral Anatomy and Chairman of the Division of Oral Anatomy

Rudolph W. Delton, D.D.S., Assistant Professor of Prosthetic Dentistry and Orthodontia

George D. Estes, D.D.S., Assistant Professor of Operative Dentistry

Carl O. Flagstad, D.D.S., Associate Professor of Prosthetic Dentistry and Orthodontia

Jay M. Freeburg, D.D.S., Assistant Professor of Operative Dentistry

Henry S. Godfrey, D.M.D., Professor of Operative Dentistry

Robert O. Green, D.D.S., Professor of Operative Dentistry

Charles A. Griffith, D.D.S., Professor of Oral Surgery and Chairman of the Division of Oral Surgery

Lee A. Harker, D.D.S., Assistant Professor of Oral Anatomy and Prosthetic Dentistry

Raymond R. Henry, D.D.S., Assistant Professor of Operative Dentistry

Clarence E. Hermann, D.D.S., Assistant Professor of Oral Surgery

Houghton Holliday, B.A., D.D.S., Assistant Professor of Oral Surgery and Oral Diagnosis

Ray R. Knight, B.A., M.D., Professor of Oral Roentgenology and Physical Diagnosis

William F. Lasby, B.A., D.D.S., Professor of Prosthetic Dentistry and Orthodontia, Chairman of the Division of Prosthetic Dentistry, and Superintendent of the Clinic

Harry C. Lawton, D.D.S., Associate Professor of Prosthetic Dentistry and Orthodontia

Harold J. Leonard, B.A., D.D.S., Associate Professor of Oral Hygiene and Pathology, Chairman of the Division of Oral Hygiene and Pathology, and Superintendent of the School for Dental Nurses

Joseph M. Little, D.D.S., Associate Professor of Operative Dentistry

Everett E. MacGibbon, D.D.S., Associate Professor of Oral Surgery

Herman A. Maves, D.D.S., Professor of Oral Surgery

Richard S. Maybury, D.D.S., Associate Professor of Operative Dentistry

George A. Montelius, D.D.S., Assistant Professor of Oral Diagnosis

William C. Naegeli, D.D.S., Assistant Professor of Operative Dentistry

Herbert C. Nelson, D.D.S., Associate Professor of Crown and Bridge Work

Carl F. Otto, D.D.S., Associate Professor of Crown and Bridge Work

Alfred A. Pagenkoph, D.D.S., Professor of Crown and Bridge Work

Paul S. Parker, D.D.S., Assistant Professor of Operative Dentistry

Mark O. Pattridge, D.D.S., Associate Professor of Operative Dentistry

Carl H. Petri, D.D.S., Assistant Professor of Prosthetic Dentistry and Oral Anatomy

George W. Reynolds, D.D.S., Professor of Crown and Bridge Work

William A. Roll, D.D.S., Associate Professor of Crown and Bridge Work

Arthur T. Rowe, D.D.S., Assistant Professor of Prosthetic Dentistry

Charles E. Rudolph, D.D.S., Associate Professor of Prosthetic Dentistry, Oral Anatomy, and Orthodontia

Joseph F. Shellman, D.D.S., Associate Professor of Operative Dentistry

Louis W. Thom, D.D.S., Assistant Professor of Operative Dentistry
William D. Vehe, D.D.S., Associate Professor of Crown and Bridge Work and Operative Dentistry
Carl W. Waldron, M.D., D.D.S., L.D.S., F.A.C.S., Associate Professor of Oral Hygiene and Pathology and Oral Surgery
James M. Walls, D.M.D., Professor of Operative Dentistry and Chairman of the Division of Operative Dentistry
Oscar A. Weiss, D.M.D., Professor of Prosthetic Dentistry and Orthodontia and Chairman of the Division of Orthodontia
Amos S. Wells, B.A., D.D.S., Professor of Crown and Bridge Work and Chairman of the Division of Crown and Bridge Work
Lehman Wendell, B.S., D.D.S., Assistant Professor of Orthodontia and Prosthetic Dentistry
Charles A. Wiethoff, D.D.S., Professor of Oral Surgery
Daniel E. Ziskin, D.D.S., Assistant Professor of Oral Surgery
Joseph O. Baker, D.D.S., Instructor in Orthodontia
Harold G. Heckler, D.D.S., Instructor in Prosthetic Dentistry
Roy M. Jernall, D.D.S., Instructor in Prosthetic Dentistry
Arthur F. Johnson, D.D.S., Instructor in Prosthetic Dentistry
Raymond E. Johnson, D.D.S., Instructor in Oral Hygiene and Pathology
Raymond H. Lundquist, D.D.S., Instructor in Crown and Bridge Work
Lester C. McCarthy, D.D.S., Instructor in Crown and Bridge Work
Earl A. Nelson, D.D.S., Instructor in Crown and Bridge Work
Earl W. Nelson, D.D.S., Instructor in Oral Surgery
Carl R. Oman, D.D.S., Instructor in Operative Dentistry
John F. Sprafka, D.D.S., Instructor in Operative Dentistry
Fred C. Thiers, D.D.S., Instructor in Operative Dentistry
A. L. Thomas, D.D.S., Instructor in Orthodontia
Cora L. Ueland, M.A., Instructor in Oral Hygiene and Pathology and Supervisor of the School for Dental Nurses
Reuben A. Ulvestad, D.D.S., Instructor in Prosthetic Dentistry
Andrew J. Weiss, Instructor in Prosthetic Dentistry
F. Denton White, D.D.S., Instructor in Oral Hygiene and Pathology
Harry A. Young, D.D.S., Instructor in Prosthetic Dentistry

LECTURERS

George E. Fahr, B.S., M.D., Associate Professor of Medicine
Boyd S. Gardner, D.D.S., Associate Professor of Dental Surgery, Mayo Foundation
Edwin L. Gardner, B.S., M.D., Assistant Professor of Medicine
Arthur S. Hamilton, B.S., M.D., Professor of Nervous and Mental Diseases, in charge of Division of Nervous and Mental Diseases
Jennings C. Litzenberg, B.S., M.D., F.A.C.S., Professor of Obstetrics and Gynecology and Chief of the Department of Obstetrics and Gynecology
William R. Murray, Ph.B., M.D., F.A.C.S., Professor of Ophthalmology and Oto-Laryngology and Chief of the Department of Ophthalmology and Oto-Laryngology
Robert I. Rizer, M.D., F.A.C.S., Assistant Professor of Medicine
David F. Swenson, B.S., Professor of Philosophy

S. Marx White, B.S., M.D., F.A.C.S., Professor of Medicine and Chief of the Department of Medicine
Olga S. Hansen, B.S., M.D., Instructor in Medicine
Walter V. McGilvra, Student Assistant in Anesthesia

METALLOGRAPHY

Oscar E. Harder, Ph.D., Professor of Metallography
Ralph L. Dowdell, Met.E., M.S., Instructor in Metallography
Ludwig J. Weber, B.S., Ch.E., Instructor in Metallography

MILITARY SCIENCE AND TACTICS

Frederick R. Wunderlich, Major, Dental Corps, U.S.A., Assistant Professor of Military Science and Tactics

PATHOLOGY

Elexious T. Bell, B.S., M.D., Professor of Pathology
Benjamin J. Clawson, B.S., M.D., Ph.D., Assistant Professor of Pathology
James S. McCartney, Jr., B.A., M.D., Assistant Professor of Pathology
William A. O'Brien, M.D., Instructor in Pathology
Oscar B. Bergman, B.S., Teaching Fellow in Pathology
Glenn W. Tuttle, B.S., Teaching Fellow in Pathology

PHARMACOLOGY

Arthur D. Hirschfelder, B.S., M.D., Professor of Pharmacology
Edgar D. Brown, Phm.D., M.D., Associate Professor of Pharmacology
Herman Jensen, B.A., M.S., Instructor in Pharmacology
Raymond L. Gregory, M.A., Teaching Fellow in Pharmacology

PHYSIOLOGY

Elias P. Lyon, Ph.D., M.D., LL.D., Professor of Physiology
Richard O. Beard, M.D., Associate Professor of Physiology
Esther M. Greisheimer, Ph.D., M.D., Assistant Professor of Physiology
Jesse F. McClendon, Ph.D., Professor of Physiology
Chauncey J. V. Pettibone, Ph.D., Associate Professor of Physiologic Chemistry
Frederick H. Scott, Ph.D., M.B., D.Sc., Professor of Physiology
Grace Medes, Ph.D., Instructor in Physiology
William W. Swanson, B.A., B.S., Instructor in Physiologic Chemistry
Gertrude I. Thomas, Instructor in Dietetics
Abigail Knowlton, B.S., Assistant in Physiology
Milo M. Loucks, B.S., Teaching Fellow in Physiology
Redding H. Rufe, B.S., Assistant in Physiology
Alice Rupp, B.A., Teaching Fellow in Physiology
Maurice Visscher, B.A., Assistant in Physiology

SURGERY

Arthur C. Strachauer, M.D., F.A.C.S., Professor of Surgery
Angus L. Cameron, B.A., M.S., M.D., Ph.D., Assistant Professor of Surgery

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Rodney M. West, B.A., Registrar, University of Minnesota, Secretary of the Faculty, College of Dentistry, University of Minnesota

GENERAL INFORMATION

COURSES OFFERED

Five-year course.—The College of Dentistry unites with the College of Science, Literature, and the Arts in offering a five-year course consisting of one year in Arts and four years in Dentistry, leading to the degree of doctor of dental surgery.

Seven-year course.—The College of Dentistry unites with the College of Science, Literature, and the Arts in offering a seven-year course consisting of three years in Arts and four years in Dentistry, leading to the degrees of bachelor of arts and doctor of dental surgery, which are conferred at the close of the final year in the College of Dentistry.

Combined course in Medicine and Dentistry.—A combined course leading to the degree of bachelor of medicine and doctor of dental surgery is being considered by the dental and medical faculties. At the present time no statement can be made as to the time required to secure both degrees. Students contemplating such a course are advised to complete the admission requirements for the Medical School and the first two years of medical science in that school. Further information may be obtained from the Administrative Board of the Medical School and the dental faculty.

REQUIREMENTS FOR ADMISSION

On account of the limited capacity of the college not more than ninety freshmen can be admitted. Application for admission should be in the examiner's office not later than July 15. Residents of Minnesota will be given prior consideration for vacancies existing at the date of their application. All applications must be accompanied by a ten-dollar preliminary fee, which will be credited toward the first quarter's tuition, or returned if the applicant is not accepted.

Applicants for admission must present one year of collegiate work (45 quarter or 30 semester credits) in science, literature, and the arts, completed at this or some other recognized college or university. High school physics or its equivalent must be completed by candidates before admission to the dental course proper.

The minimum requirements for admission include nine quarter (six semester) credits each in English (rhetoric), biology, and chemistry, (including general and qualitative); six quarter (four semester credits in either shop practice or technical drawing; and enough additional credits to make a total of at least forty-five quarter (thirty semester) credits. Electives may be selected from any of the above subjects or in the following: modern language, mathematics, history, or physics.

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

	Credits
English A-B-C	15
Animal Biology 5-6-7	12
Chemistry 4-5, 11	12
Mechanical Engineering 11-12-13 or Drawing and Descriptive Geometry 41-42-43	6
Total	45

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

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

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

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

ADMISSION TO ADVANCED STANDING

Students from other dental colleges whose standards are fully equivalent to those of this institution, may be received into advanced classes provided vacancies occur. Such students must make formal application on the blank provided, and must submit credentials covering pre-dental and dental studies. Such credentials must show that the student had the required pre-dental subjects and has maintained the standard of scholarship required of students of this college.

As a rule notebooks and other evidences of laboratory work must be presented. The amount of credit to be granted a student from another school is decided by the heads of the respective departments in conference with the Student Work Committee. Subject credit, but not legal time credit, may be given for studies pursued other than in dental schools.

Students desiring advanced standing at the University of Minnesota should have a transcript of their record sent to the University examiner by the registrar of the college previously attended.

Students from foreign dental schools (not including Canadian schools) who are not graduates, will not be given credit in any course, except after examination.

REQUIREMENTS FOR GRADUATION

A candidate for the degree of doctor of dental surgery must be twenty-one years of age, of good moral character, and, after satisfying all the requirements for admission to the college, must have complied with all the rules and regulations of the college and obtained regular credit for all subjects of the entire course.

BRITISH RECOGNITION

On the recommendation of the Board of Examiners in Dental Surgery, the Council of the Royal College of Surgeons, in London, has added the College of Dentistry of the University of Minnesota to the list of dental schools recognized by the college. This recognition implies that the Royal College of Surgeons will exempt graduates in dental surgery of the University of Minnesota from the preliminary science examination for the license in dental surgery, and they will be admitted to the first and second professional examinations on producing the required certificates of study.

SUMMER SESSION

A summer session of six or eleven weeks is offered in the departments of Anatomy, Bacteriology, Chemistry, Dentistry, Pathology, and Physiology. For detailed statements, see Summer Session bulletin.

FEES

Tuition fee (per quarter):	
Residents of Minnesota	$60.00
Nonresidents	70.00
Clock hour tuition fee (unclassed students, auditors, and others carrying less than full work):	
Residents of Minnesota	2.50
Nonresidents	3.00
Deposit* (first quarter only)	10.00
Military deposit (required of all students taking military drill)	10.00
Health fee (per quarter)	2.00
Minnesota Union or Shevlin Hall (per quarter)	1.00
Special fees:	
Examination for removal of conditions	1.00
Examinations for credit (after the first quarter in residence)	5.00
Special examinations	5.00
Laboratory deposit (required of students registered for courses in chemistry)	5.00

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

* The following charges are made against the general deposit for each student in addition to such charges as may be incurred for lockers, library penalties, laboratory breakage, etc.:

Minnesota Daily (per quarter)	$0.50
Post-office box (per quarter)	.20
University Address Book	.35

COURSES OF STUDY 1924-26

UNDERGRADUATE WORK

	Fall Quarter		Winter Quarter		Spring Quarter		Total	
FRESHMAN YEAR	Crs.	Hrs.	Crs.	Hrs.	Crs.	Hrs.	Crs.	Hrs.
Anatomy, Gross	5	99	5	99	5	99	15	297
Anatomy, Oral	3	77	3	77	3	77	9	231
Chemistry, Organic	4	99	4	99	..	..	8	198
Chemistry, Quantitative	..	..	..	..	3	88	3	88
Prosthesis	3	77	3	77	3	77	9	231
	15 =	352	15 =	352	14 =	341	44 =	1045
SOPHOMORE YEAR								
Anatomy, Hist. & Emb.	..	..	6	132	..	..	6	132
Bacteriology	5	99	..	..	3	44	8	143
Chemistry, Physiologic	4	66	..	..	..	..	4	66
Crown and Bridge Work	..	..	..	..	3	99	3	99
Operative Dentistry	2½	82½	2½	82½	1	33	6	198
Orthodontia	..	..	..	..	3	99	3	99
Physiology	..	..	4	66	4	66	8	132
Prosthesis	3	99	3	99	..	..	6	198
	14½ =	346½	15½ =	379½	14 =	341	44 =	1067
JUNIOR YEAR								
Crown and Bridge Work	2	66	2	66	2	66	6	198
Diagnosis, Oral	..	..	1	11	..	..	1	11
Hygiene, Gen. and Oral	2	22	..	..	..	..	2	22
Metallography	..	..	..	..	2	33	2	33
Operative Dentistry	4	110	4	110	4	110	12	330
Pathology, Gen. & Sp.	9	165	..	..	..	..	9	165
Pathology, Oral	..	..	..	..	3	33	3	33
Periodontia	..	..	1	33	..	..	1	33
Pharmacology	..	..	5	66	..	..	5	66
Prosthesis	1	11	3	77	3	77	7	165
Surgery, Oral	..	..	2	22	1	33	3	55
Surgery, Principles of	..	..	..	..	2	22	2	22
	18 =	374	18 =	385	17 =	374	53 =	1133
SENIOR YEAR								
Crown and Bridge Work	3	77	4	110	5	143	12	330
Diagnosis, Gen. & Oral	1	11	1	33	..	..	2	44
Operative Dentistry	5	143	5	143	5	143	15	429
Orthodontia	2	44	2	44	2	44	6	132
Periodontia	1	33	..	..	..	..	1	33
Prosthesis	2	66	2	66	2	66	6	198
Surgery, Oral	3	55	2	22	1	11	6	88
Thesis and Seminar	..	..	1	11	2	22	3	33
	17 =	429	17 =	429	17 =	429	51 =	1287

DESCRIPTION OF COURSES

EXPLANATIONS

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

ANATOMY

9f-10w. Systemic Anatomy. Lectures and recitations on the gross morphology of the various systems of the body. Laboratory work upon human and mammalian material. Special emphasis laid upon human osteology. 9 hours a week. 10 credits. Offered to freshmen. Prerequisite: Animal Biology 1-2. Dr. Jackson, Mr. Miller, and assistants.

11s. Anatomy of the Head and Neck. Dissection of the human head and neck, with lectures and recitations. 9 hours a week. 5 credits. Offered to freshmen. Prerequisites: Animal Biology 1-2, Anatomy 9-10. Mr. Miller and assistants.

14w. Histology and Embryology. Minute structure and development of the tissues and organs of the body, with special emphasis upon the teeth and digestive tract. Lectures, recitations, and laboratory work. 12 hours a week. 6 credits. Offered to sophomores. Prerequisites: Animal Biology 1-2, Anatomy 9-10, 11. Dr. Jackson, Dr. Lee, and assistants.

BACTERIOLOGY AND IMMUNOLOGY

51f,w,s,su. General Bacteriology. Preparation of culture media; morphology of bacteria; methods of staining and identification; anaerobic bacteria; principles of sterilization and disinfection; examination of air, water, milk; relations of bacteria to industries. 99 hours. 51f, special division for dental students. 5 credits. Offered to sophomores. Prerequisites: 10 credits in chemistry, 10 credits in biology. Dr. Henrici and assistants.

102s. Special Bacteriology. General consideration of the mouth flora; bacteriology of the stomatitides, dental caries, alveolar abscess and pyorrhea; systemic infections secondary to bacterial diseases of the mouth and teeth. 44 hours. 3 credits. Offered to sophomores. Prerequisite: Bacteriology 51. Dr. Henrici and assistants.

CHEMISTRY

28s. Quantitative Analysis. A short introductory course covering the general principles and methods of quantitative analysis both gravimetric and volumetric. Typical problems will be assigned and attention given to proper laboratory practice. 88 hours. 3 credits. Offered to freshmen. Prerequisite: Chemistry 11. Mr. Brinton, Mr. Sarver, Mr. Stoppel.

31f-32w. Elementary Organic Chemistry. This course will include a discussion of important compounds of the aliphatic and of the aromatic series, and the preparation of typical substances. 198 hours. 8 credits. Offered to freshmen. Prerequisite: Chemistry 11. Mr. Hunter, Mr. Smith.

DENTISTRY

NOTE.—Courses numbered from 11 to 20 are freshman courses.
Those from 21 to 30 are sophomore courses.
Those from 31 to 40 are junior courses.
Those from 41 to 50 are senior courses.

DIVISION OF CROWN AND BRIDGE WORK

23s. Crown and Bridge Work. A technic course. Lectures, demonstrations, and laboratory work including all the more important forms of crowns and bridges. 99 hours. 3 credits. Prerequisite: Oral Anatomy 11-12-13. Dr. Wells, Dr. Reynolds, Dr. Lundquist, Dr. McCarthy, Dr. E. A. Nelson.

31f-32w.† Crown and Bridge Work. A technic course. Lectures, demonstrations, and laboratory work including all the more important forms of crowns and bridges. 132 hours. 4 credits. Prerequisite: Crown and Bridge 23. Dr. Wells, Dr. Reynolds, Dr. Lundquist, Dr. McCarthy, Dr. E. A. Nelson.

33s. Crown and Bridge Work. A clinical course covering the simpler forms of crowns and bridges. 66 hours. 2 credits. Prerequisite: Crown and Bridge 23. Dr. Wells, Dr. Brekhus, Dr. Pagenkoph, Dr. H. C. Nelson, Dr. Otto, Dr. Roll.

41f-42w-43s.† Crown and Bridge Work. A course of 33 lectures and 297 clinical hours, covering the entire field of crown and bridge work. 12 credits. Prerequisite: Crown and Bridge 31-32, 33. Dr. Wells, Dr. Brekhus, Dr. Pagenkoph, Dr. H. C. Nelson, Dr. Otto, Dr. Roll.

DIVISION OF ORAL ANATOMY

11f-12w-13s. Oral Anatomy. Lectures and recitations on anatomy and nomenclature of teeth, and such laboratory work as drawing, dissecting, modeling, and carving of the teeth. Special attention given the physiological function of tooth form and its practical application. 33 lecture and recitation hours, 198 laboratory hours. 9 credits. Dr. Damon, Dr. Rudolph, Dr. Cooperman, Dr. Harker, Dr. Petri, Dr. R. E. Johnson.

DIVISION OF ORAL DIAGNOSIS

32w. Oral Diagnosis. A consideration of the methods in oral diagnosis with special emphasis on the application of the X-ray. 11 hours. 1 credit. Dr. Brekhus, Dr. Knight, Dr. Waldron, Dr. Holliday, Dr. Montelius.

41f-42w.† Oral Diagnosis. A study of patients entering the clinic to determine the conditions of the teeth and surrounding tissues and advise

medical measures; and a study of selected cases from a medical point of view, aiming to correlate the condition of the teeth with the patient's state of health. 11 lectures hours, 33 clinical hours. 2 credits. Prerequisite: Oral Diagnosis 32. Dr. Brekhus, Dr. Knight, Dr. Waldron, Dr. Holliday, Dr. Montelius.

DIVISION OF OPERATIVE DENTISTRY

21f-22w-23s.† Operative Dentistry. A course of lectures, recitations, demonstrations, and laboratory work. 198 hours. 6 credits. Prerequisite: Oral Anatomy 11-12-13. Dr. R. O. Green, Dr. Butter, Dr. Thom, Dr. Sprafka.

31f-32w-33s.† Operative Dentistry. A course of 33 lecture and recitation hours and 297 clinical hours. 12 credits. Prerequisites: Operative Dentistry 21-22-23, Histology and Embryology 14. Dr. Walls, Dr. Shellman, Dr. Cox, Dr. Butter, Dr. Estes, Dr. Naegeli, Dr. Parker, Dr. Thom, Dr. Sprafka, Dr. Thiers.

41f-42w-43s.† Operative Dentistry. A course of 33 lecture and recitation hours and 396 clinical hours. 15 credits. Prerequisite: Operative Dentistry 31-32-33. Dr. Walls, Dr. Godfrey, Dr. Green, Dr. Little, Dr. Maybury, Dr. Pattridge, Dr. Shellman, Dr. Vehe, Dr. Freeburg, Dr. Henry, Dr. Parker.

DIVISION OF ORTHODONTIA

23s. Orthodontia. A course of lectures, recitations, and laboratory work in the making of regulating appliances. 99 hours. 3 credits. Dr. Lawton, Dr. Delton, Dr. Wendell.

41f-42w-43s.† Orthodontia. A course of lectures, recitations, and clinical work. Every student is required to treat at least one case of irregularity of the teeth. 33 lecture and recitation hours and 99 clinical hours. 6 credits. Prerequisites: Orthodontia 23, Operative Dentistry 31-32-33. Dr. O. A. Weiss, Dr. Lasby, Dr. Flagstad, Dr. Rudolph, Dr. Baker, Dr. Thomas.

DIVISION OF ORAL HYGIENE AND PATHOLOGY

31f. Oral Hygiene. Lectures and recitations on general and oral hygiene. 22 hours. 2 credits. Prerequisite: bacteriology. Dr. Leonard.

33s. Oral Pathology. Lectures and recitations on the special pathology of the teeth and other oral tissues. 33 hours. 3 credits. Prerequisites: bacteriology and pathology. Dr. Leonard.

32w,s. Periodontia. An intensive demonstration and practice course in the causes, treatment, and prevention of gingivitis and dental periclasia and in the prevention of dental caries. Special attention is paid to diagnosis and to systemic complications. 33 hours. 1 credit. Prerequisite: Operative Dentistry 31. Dr. Leonard, Dr. Waldron, Dr. R. E. Johnson.

41f,s. Periodontia. A continuation of Course 32. 33 hours. 1 credit. Prerequisite: Periodontia 32. Dr. Leonard, Dr. Waldron, Dr. R. E. Johnson.

DIVISION OF ORAL SURGERY

32w-33s.† Oral Surgery. Principles underlying general surgical procedure; development and application of anesthesia chiefly as applied to face, mouth, and jaws. General considerations in the extraction of teeth, and the removal of foci of infection. 22 lecture and recitation hours and 33 clinical hours. 5 credits. Prerequisite: Pathology 33. Dr. Griffith, Dr. Maves, Dr. Wiethoff, Dr. MacGibbon, Dr. Waldron, Dr. Hermann, Dr. Holliday, Dr. Ziskin, Dr. E. W. Nelson.

41f-42w-43s.† Oral Surgery. A course of lectures, recitations, and demonstrations covering the diagnosis, treatment, and dental relationship of diseases and conditions of the mouth, jaws, throat, eyes, ears, nose, and face. 33 lecture and recitation hours. 3 credits. Prerequisite: Oral Surgery 32-33. Dr. Waldron.

44f-45w.† Oral Surgery. Diagnosis and treatment of surgical diseases of the face, mouth, and jaws. Practice in local and general anesthesia. Consideration of types of patients and complications. 22 lecture and recitation hours and 33 clinical hours. 3 credits. Dr. Griffith, Dr. Maves, Dr. Waldron, and assistants.

DIVISION OF PROSTHETIC DENTISTRY

11f-12w-13s. Prosthetic Dentistry. A course of lectures, recitations, and laboratory work covering the use of impression materials and the different processes of plate work. 33 lectures and recitation hours, 198 laboratory hours. 9 credits. Dr. Damon, Dr. Rudolph, Dr. Cooperman, Dr. Harker, Dr. Petri, Dr. Heckler, Dr. A. F. Johnson.

21f-22w. Prosthetic Dentistry. A course of lectures, recitations, and laboratory work covering the principles of metallic dentures. 198 hours. 6 credits. Prerequisite: Prosthetic Dentistry 11-12-13. Dr. Lawton, Dr. Delton, Dr. Wendell.

31f-32w-33s.† Prosthetic Dentistry. A course of lectures and recitations covering the subject of prosthetic dentistry in preparation for clinical work. 33 hours. 1 credit. Prerequisite: Prosthetic Dentistry 21-22. Dr. O. A. Weiss.

35w-36s.† Prosthetic Dentistry. Clinical practice in denture work. 132 hours. 6 credits. Prerequisite: Prosthetic Dentistry 21-22. Dr. Lasby, Dr. Flagstad, Dr. Rowe, Dr. Jernall, Dr. Ulvestad, Dr. Young.

41f-42w-43s.† Prosthetic Dentistry. A course of clinical work in prosthesis, cleft palate, and facial restorations. 198 hours. 6 credits. Prerequisites: Prosthetic Dentistry 31-32-33 and 35-36. Dr. Lasby, Dr. O. A. Weiss, Dr. Flagstad, Dr. Rowe, Dr. Jernall, Dr. Ulvestad, Mr. A. J. Weiss, Dr. Young.

THESIS AND SEMINAR

42w-43s.† A thesis, seminar, and lecture course in the theory and practice of medicine and dentistry, applied economics, jurisprudence, psychology, ethics, etc. 33 hours. 3 credits. Dr. Owre, Dr. Hamilton, Dr. Litzenberg, Dr. Murray, Mr. Swenson, Dr. S. Marx White, Dr. Fahr, Dr. Boyd S. Gardner, Dr. E. L. Gardner, Dr. Rizer, Dr. Hansen.

METALLOGRAPHY

159s. Dental Metallography. Lectures, recitations, and demonstrations, taking up the most important metals with special reference to those used in dentistry and the study of dental alloys from the standpoint of metallography. 33 hours. 2 credits. Prerequisite: Quantitative Chemistry. Offered to juniors. Mr. Harder, Mr. Dowdell, Mr. Weber.

MILITARY SCIENCE AND TACTICS

BASIC COURSE

A Basic Course in Military Science and Tactics is offered in each of the first two years of the Dental College. Thirty-three hours of didactic work supplemented by such practical exercises and drill as may be required to meet the standard required of all physically fit male students enrolled in the University.

ADVANCED COURSE

The Advanced Course is offered in the junior and senior years to such students as have satisfactorily completed the Basic Course and have been selected by the professor of military science and tactics and the dean of the Dental College. A satisfactory completion of the Advanced Course is a requisite for graduation for all students who elect this course unless relieved by proper authority. All Advanced Course students are required to attend one summer camp. They will receive the pay of an enlisted man of the seventh grade for the period of the camp and commutation of rations throughout the two academic years of their Advanced Course and one vacation intervening. All students who satisfactorily complete the Advanced Course will be recommended for a commission as first lieutenant, Dental Section, Reserve Officers Corps.

Elements of Military Science. This course covers such instruction in citizenship, government, history, and organization of the military establishment as will awaken the student to an appreciation of his responsibilities and fit him to continue in the Advanced Course if he so elects. Lectures and conferences. 33 hours.

Tactics. This course will cover so much of medical department tactics in the field, and related subjects as may be properly considered in the allotted time. Lectures, conferences, and exercises. 33 hours.

Hygiene and Sanitation. This entire course will be devoted to a consideration of application of the rules of hygiene and sanitation in the army under varying conditions. Lectures. 33 hours.

Hospitalization and Medical Department Administration. The entire time allotted will be devoted to the organization and administration of hospitals, clinics, offices, etc., and to a consideration of public health measures. Lectures and exercises. 33 hours.

PATHOLOGY

4f. General and Special Pathology. Circulatory disturbances, metabolic changes in cells and tissues, pigment deposits, inflammations and tumors. Pathology of selected diseases, tumors, and lesions with reference to those affecting mouth and dental structures. Exercises in gross and microscopic diagnosis. 165 hours. 9 credits. Offered to juniors. Prerequisites: Gross Anatomy, Histology. Dr. Clawson and assistants.

PHARMACOLOGY

4w. Pharmacology. The history, origin, nature, pharmacal preparations, and use of drugs, including the discussion of their physiologic, pharmacologic, and therapeutic actions. 44 hours. 4 credits. Offered to juniors. Dr. Brown.

6w. Experimental Pharmacology. Laboratory exercises upon the chemical composition and mode of action of typical drugs upon man and animals, primarily for students in dentistry. One exercise per week. 22 hours. 1 credit. Offered to juniors. Dr. Hirschfelder, Dr. Brown, Mr. Jensen.

PHYSIOLOGY

57f,su. Physiologic Chemistry. An intermediate course. The components of the animal body; foods, digestion, the excreta, and metabolism. 66 hours. 4 credits. Offered to sophomores. Prerequisites: Biology 1, 2 or 5, 6, 7; Chemistry 1, 2, 3 or 4, 5. Dr. Pettibone and assistants.

58w,su-59s,su. Physiology. An intermediate course in the physiology of muscle, nerve, blood, circulation, digestion, the nervous system and special senses; respiration, metabolism, nutrition, and excretion. 132 hours. 8 credits. Offered to sophomores. Prerequisites: Biology 1, 2 or 5, 6, 7; Chemistry 1, 2, 3 or 4, 5. Dr. Lyon, Dr. Scott, Dr. Greisheimer, and assistants.

SURGERY

52s. Principles of Surgery. A study of the various surgical inflammations and processes; pathology and treatment. Principles underlying general surgical procedure as applied in dental practice. 22 hours. 2 credits. Offered to juniors. Dr. Cameron.

GRADUATE WORK

Graduate work and opportunities for research are open in certain fields of dentistry to properly qualified students.

The qualifications for admission to graduate work in this field are a baccalaureate degree from an acceptable college or university, and the dental degree from this or any other approved university. Such qualified students desiring graduate work will pursue courses of study in accordance with the regulations of the Graduate School. They may elect majors and minors for the graduate degree from the graduate courses in anatomy,

embryology, histology, neurology, pathology, bacteriology, chemistry physiology, and physiologic chemistry. The material for investigation along dental lines in these various subjects is available from the dental clinic, the medical dispensary, the University Hospital, and the Mayo Clinic, at Rochester, Minnesota, through the Mayo Foundation for Medical Education and Research. The Mayo Foundation offers several fellowships in dentistry similar to fellowships in other specialties on the foundation.

No special bulletin is issued for this work. The interested student will find the general conditions and the courses in the above fields set forth in the bulletin on graduate work in medicine.

DENTAL NURSES COURSE

A course for dental nurses consisting of two years' work requiring for admission, graduation from an accredited high school, and leading to the degree of graduate dental nurse.

PRACTITIONERS' COURSE

In order to enlarge its educational field and to fill a want that has found expression among practitioners, the College of Dentistry through the General Extension Division offers from time to time a series of courses in crown and bridge work, oral diagnosis, operative dentistry, orthodontia, prosthetic dentistry, periodontia, oral hygiene, oral surgery, and similar subjects. These courses are confined to graduate dentists.

There is also an opportunity for a dentist to come into the College of Dentistry for selected courses at any time of the year by registering through the General Extension Division. The courses which may be taken in the manner suggested, and the limitations as to time and enrolment, are as follows:

1. Crown and Bridge Work. Registration is open at all times. Extension students limited to three at a time.

2. Oral Diagnosis. A two weeks' course beginning the second and fourth Mondays of each month. Extension students limited to three at a time.

3. Operative Dentistry. The course covers a period of two weeks, and is conducted by the senior operative staff.

4. Orthodontia. The course may be started at any time.

5. Prosthetic Dentistry. A two weeks' course beginning the first Monday of each month. Extension students limited to three at a time.

6. Periodontia. The course starts at the beginning of each month of the winter and spring quarters. Classes are held on Monday, Wednesday, and Friday, from 9:30 a.m. to 12 m. for one month. Extension students limited to four at a time.

7. Oral Surgery. Courses begin the second and fourth Mondays of each month for two weeks. Extension students limited to two at a time.

All work in dentistry to be done through the General Extension Division should be arranged for in advance by correspondence, or by personal interview.

The Bulletin *of the* University *of* Minnesota

The School for Dental Nurses

Announcement for the Years 1924-1926

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1924

JULY

Su	Mo	Tu	W	Th	Fr	Sa
..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..
..	..	..	..	..	..	..

AUGUST

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17	18	19	20	21	22	23
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31	..	..	..	..	..	..

SEPTEMBER

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OCTOBER

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NOVEMBER

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DECEMBER

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1925

JANUARY

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FEBRUARY

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MARCH

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APRIL

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MAY

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JUNE

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JULY

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AUGUST

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SEPTEMBER

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OCTOBER

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25	26	27	28	29	30	31
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NOVEMBER

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DECEMBER

Su	Mo	Tu	W	Th	Fr	Sa
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UNIVERSITY CALENDAR
1924-25

1924			
September	18	Thursday	Payment of fees closes, except for new students
September	18-20		Entrance examinations
September	22	Monday	First semester evening extension classes begin[3]
September	22-26		Examinations for removal of conditions Physical examinations for all new students Registration period,[2] colleges of Science, Literature, and the Arts, Agriculture, Forestry, and Home Economics, and Education
September	25-26		Registration days[2] for all colleges not included above
September	26	Friday	Payment of fees for new students closes
September	29	Monday	Fall quarter begins, 8:30[1] a.m.
October	23	Thursday	Senate meeting, 4:30 p.m.
November	1	Saturday	Home Coming Day; classes dismissed the third and fourth hours
November	4	Tuesday	Election Day; a holiday
November	11	Tuesday	Armistice Day; a holiday
November	27	Thursday	Thanksgiving Day; a holiday
December	17-20		State Day Convocation
December	4	Thursday	Final examination period
December	18	Thursday	Commencement Convocation Senate meeting, 4:30 p.m.
December	20	Saturday	Fall quarter ends, Christmas vacation begins, 5:20 p.m.
1925			
January	5	Monday	Christmas vacation ends, winter quarter begins, 8:30[1] a.m.
January	30	Friday	First semester evening extension classes close
February	2	Monday	Second semester evening extension classes begin[3]
February	12	Thursday	Lincoln's Birthday; a holiday
February	19	Thursday	Charter Day Convocation Senate meeting, 4:30 p.m.

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

[2] Registration subsequent to the date specified will necessitate the approval of the college concerned. See also penalty fees for late registration, page 10.

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

March	16-19		Final examination period
March	21	Saturday	Winter quarter ends, spring vacation begins, 5:20 p.m.
March	30	Monday	Spring vacation ends, spring quarter begins, 8:30[1] a.m.
April	10	Friday	Good Friday; a holiday
May	14	Thursday	Cap and Gown Day Convocation
May	21	Thursday	Senate meeting, 4:30 p.m.
May	29	Friday	Second semester evening extension classes close
May	30	Saturday	Memorial Day; a holiday
June	10-13		Final examination period
June	13	Saturday	Spring quarter closes, 5:20 p.m.
June	14	Sunday	Baccalaureate service
June	15	Monday	Fifty-third annual commencement
June	19-20		Summer Session first term begins, registration and payment of fees
June	22	Monday	Classes begin, 8:00 a.m.
July	4	Saturday	Independence Day; a holiday
August	1	Saturday	First term Summer Session closes
			Registration and payment of fees for second term closes
August	3	Monday	Second term classes begin
September	5	Saturday	Second term Summer Session closes

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 and peculiar circumstances shall justify the appropriate committee of the college concerned permitting registration at a later date.

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

AN ACT TO PROVIDE FOR THE LICENSING OF DENTAL NURSES AND PROVIDING THE DUTIES AND RIGHTS OF DENTAL NURSES.

Be it enacted by the Legislature of the State of Minnesota:

Section 1. *Who may become dental nurse.*—Any woman of good moral character, having a high school education and being 20 years of age or over, who is a graduate of a training school for dental nurses requiring a course of not less than two academic years, and approved by the board of dental examiners, or who is a graduate of a training school for nurses and has received at least three (3) months' clinical training in dental hygiene in any approved training school for dental nurses, may upon payment of ten ($10) dollars be examined by said board on the subjects considered essential by it for a dental nurse. Such examinations may, in the discretion of the board, be conducted by a part of the members of the board. If the applicant in the opinion of the board, successfully passes said examination, she shall be registered and licensed as a dental nurse. Any woman of good moral character and 20 years of age or more, who before June 1, 1919, shall register her name with the state board of dental examiners, may upon showing three (3) years' actual experience in the office of a licensed dentist, and upon complying with such requirements and passing such examinations as the board of dental examiners shall require, be licensed as a dental nurse.

Sec. 2. *Employment of and practice by dental nurses.*—Any licensed dentist, public institution or school authorities may employ such licensed dental nurse. Such dental nurse may remove lime deposits, accretions and stains from the exposed surface of the teeth, and administer gas and ether anesthesia, as applied to dentistry, but shall not perform any other operation on the teeth or tissues of the mouth. She may operate in the office of any licensed dentist or in any public institution, or in the schools, under the general direction or supervision of a licensed dentist. The board of dental examiners may suspend or revoke, with power to reinstate, the license of any licensed dentist who shall permit any dental nurse operating under his supervision, to perform any operation other than that permitted under the provisions of this section, and it may also suspend or revoke, with power of reinstatement, the license of any dental nurse violating the provisions of this act, the procedure to be followed in the case of such suspension, revocation, or reinstatement, shall be the same as that prescribed by law in the case of suspension, revocation or reinstatement of a licensed dentist.

Sec. 3. *Payments to be made to Board of Dental Examiners.*—Before the first of May in each year, every licensed dental nurse shall pay to the board of dental examiners a license fee of one ($1) dollar and in default of such payment, the board may upon hearing and upon twenty (20) days' notice revoke the license of the nurse in default; but the payment of such

fee on or before the time of hearing, with such additional sum not exceeding five ($5) dollars, as may be fixed by the board, shall excuse any default. The board may collect such fee by suit.

Sec. 4. *Licensing of dental nurses authorized by another state.*—Any female dental nurse or dental hygienist duly licensed to practice as such in another state having and maintaining an equal standard of laws regulating the practice of dental nurses with this state, and who is of good moral character and is desirous of moving to this state, and deposits in person with the board of dental examiners a certificate from the examining board of the state in which she is licensed, certifying to the fact of her being licensed and that she is of good moral character and professional attainments, may upon the payment of a fee of twenty ($20) dollars, at the discretion of the board, be granted a license to practice in this state without further examination. As to any person so applying and who has been licensed in a state not maintaining an equal standard of laws within this state, the board may license such person upon the payment of the fee above provided for, furnishing the same evidence as to licensing, good moral character, and professional attainments, and passing such further examinations as the board of dental examiners shall deem necessary.

Sec. 5. This act shall take effect from and after its passage.

Approved April 15, 1919.

SCHOOL FOR DENTAL NURSES

FACULTY*

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

William Watts Folwell, LL.D., President Emeritus

Alfred Owre, D.M.D., M.D., C.M., B.A., Dean of the College of Dentistry, Professor of the Practice of Dentistry, Chairman of the Department of Dentistry

Harold J. Leonard, B.A., D.D.S., Associate Professor of Oral Hygiene and Pathology, Chairman of the Division of Oral Hygiene and Pathology and Superintendent for Dental Nurses

Anne Dudley Blitz, M.A., Dean of Women

Edward E. Nicholson, M.A., Dean of Student Affairs

Richard O. Beard, M.D., Associate Professor of Physiology

Peter J. Brekhus, B.A., D.D.S., Professor of Crown and Bridge Work and Oral Diagnosis and Chairman of the Division of Oral Diagnosis

F. Stuart Chapin, Ph.D., Professor of Sociology and Chairman of the Department of Sociology

Alice M. Child, M.A., Assistant Professor of Home Economics

George M. Damon, D.D.S., Professor of Prosthetic Dentistry and Oral Anatomy and Chairman of the Division of Oral Anatomy

Harold S. Diehl, M.A., M.D., Assistant Professor of Preventive Medicine and Public Health, Director of the University Health Service and of the Department of Preventive Medicine and Public Health

George W. Dowrie, Ph.D., Professor of Economics and Dean of the School of Business

Richard M. Elliott, Ph.D., Associate Professor of Psychology and Chairman of the Department of Psychology

Esther Greisheimer, Ph.D., M.D., Assistant Professor of Physiology

Charles A. Griffith, D.D.S., Professor of Oral Surgery and Chairman of the Division of Oral Surgery

Lee A. Harker, D.D.S., Assistant Professor of Oral Anatomy

Houghton Holliday, B.A., D.D.S., Assistant Professor of Oral Diagnosis and Oral Surgery

Clarence M. Jackson, M.S., M.D., Professor of Anatomy and Director of the Department of Anatomy

Winford P. Larson, M.D., Professor of Bacteriology and Immunology and Director of the Department of Bacteriology and Immunology

William F. Lasby, B.A., D.D.S., Professor of Prosthetic Dentistry and Orthodontia and Superintendent of the Infirmary

Elias P. Lyon, Ph.D., M.D., Professor of Physiology and Director of the Department of Physiology

Wylle B. McNeal, B.S., M.A., Professor of Home Economics and Chief of the Division of Home Economics

*In this roster the head of the department in which instruction is given is listed as well as the actual teacher of the course, since in each case the content and arrangement of the course is worked out in co-operation with the head.

J. Anna Norris, M.D., Professor of Physical Education for Women and Director of Health and Physical Education for Women

Frank M. Rarig, M.A., Associate Professor of Public Speaking

M. Cannon Sneed, Ph.D., Associate Professor of Chemistry and Head of the Division of General and Inorganic Chemistry

Joseph M. Thomas, Ph.D., Professor of English and Chairman of the Department of English

Carl W. Waldron, M.D., D.D.S., L.D.S., Associate Professor of Oral Hygiene and Pathology and of Oral Surgery

Amos S. Wells, B.A., D.D.S., Professor of Crown and Bridge Work, and Chairman of the Division of Crown and Bridge Work

Daniel E. Ziskin, D.D.S., Assistant Professor of Oral Surgery

Ruth E. Boynton, B.A., M.D., Instructor in Preventive Medicine and Public Health

Hally J. Fisher, R.N., Instructor in Preventive Medicine and Public Health

Beryl S. Green, M.A., Instructor in Bacteriology and Immunology

Raymond E. Johnson, D.D.S., Instructor in Oral Hygiene and Pathology

Raymond H. Lundquist, D.D.S., Instructor in Crown and Bridge Work

Lillian Mayer, B.A., M.D., Instructor in Preventive Medicine and Public Health

Shirley P. Miller, Ph.D., Instructor in Anatomy

Cora L. Ueland, M.A., Instructor in Oral Hygiene and Pathology and Supervisor of School for Dental Nurses

F. Denton White, D.D.S., Instructor in Oral Hygiene and Pathology

Mildred Coddon, Teaching Fellow in Business

Walter V. McGilvra, Teaching Fellow in Oral Surgery

GENERAL INFORMATION

Purpose.—The School for Dental Nurses has been established primarily to fill the need for workers in the public schools, hospitals, mercantile and industrial institutions and dental offices to do dental prophylaxis work and to teach the hygiene of the mouth—in other words to do preventive dental work which has not been possible in the organization of dentistry up to the present and which is recognized to be one of the great physical needs of the times. As thoro a background of scientific and cultural subjects as is possible in the time of the course is included to give students that professional education and point of view without which they would be mere technicians and quite unsafe to turn loose on the public in the semi-independent capacity which the nature of their work will demand. The course includes training in all branches of dental office assisting and should make graduates easily adaptable to the general and special needs of the private dental offices should that be the field of work selected.

The course requires two years of thirty-three weeks each and leads to the degree of graduate dental nurse (G.D.N.). The incorporation of this work in the University makes it possible to give all the subjects of the curriculum in the appropriate departments of the University, thus assuring a university contact to the student and instruction under the best auspices.

The first year's work deals mostly with preliminary science courses and dental technic and corresponds to some extent with the year course given at other schools. The second year is designed to prepare the student particularly for work in the public schools and clinics where the worker must be largely on her own responsibility and must be able to take an active part in oral hygiene work with the public.

Time and place.—The course of study in the School for Dental Nurses for the school year 1924-25 will begin September 29, 1924. Registration days are the two days preceding. The work is done in the various University buildings housing the respective departments excepting that done in the hospitals and schools of the Twin Cities in the second year. The fall quarter is the only time at which beginning students will be admitted. Rules for the guidance of students are printed in a separate booklet.

Registration.—Applicants for admission may obtain credential blanks from the office of the registrar or from the superintendent of the school, Dr. Harold J. Leonard, College of Dentistry, University of Minnesota. These should be filled out and sent by the principal or superintendent of the high school or preparatory school to the registrar's office.

All applications should be filed before August 15 at which time a committee will pass upon the candidates whose credentials are satisfactory, choosing the twenty-five best prepared to enter upon the career of dental nursing as shown by their credentials. Those not included in the best twenty-five will be placed upon the waiting list to be notified in order of merit of any vacancy existing in the class. In case twenty-five have not applied by August

15 all properly accredited applicants will be included and the class filled as applications come in. Notification of acceptance or rejection will not be sent before August 15 but applicants will be informed whether their credentials are satisfactory as they come in. On receipt of notice of acceptance a preliminary fee of ten ($10) dollars must be sent as a guaranty of the candidate's intention to enter and in order that a place may be held. This will be applied on the first quarter's tuition fee and is not refundable.

For further information in regard to registration and to the general requirements for admission to the University, application may be made for the bulletin of general information.

Requirements for admission.—The School for Dental Nurses requires for admission graduation from an approved high school or other preparatory school on the accredited list.

Typewriting credit or ability to demonstrate a fair proficiency on the typewriter is also an entrance requirement. Students without this requirement will need to get it outside of the University before beginning of the spring quarter of the freshman year. High school chemistry is also an entrance requirement beginning with the fall of 1924. Students without this requirement can arrange to take a heavier course (see departmental statement in chemistry, page 13) and make up the deficiency by the end of the winter quarter. Preference will be given to women of superior preliminary training. Applicants must be not less than eighteen nor more than thirty-five years of age. They must be able to pass a satisfactory general physical examination by the school physician. The beginning class is limited to twenty-five students.

The following fees are required.

Preliminary fee (to be applied on tuition fee of first quarter)	$10.00
Tuition fee (per quarter)	25.00
*Deposit (first quarter only)	5.00
Health fee (per quarter)	2.00
Shevlin Hall (per quarter)	1.00
Special fees:	
Examination for removal of conditions	1.00
Examination for credit (after first six weeks in residence)	5.00
Special examinations	5.00
Chemistry deposit	5.00

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

* The following charges are made against the general deposit for each student in addition to such charges as may be incurred for lockers, library penalities, laboratory breakage, etc.

Minnesota Daily, per quarter	$0.50
Post-office box, per quarter	0.20
University Address Book	0.35

Part-time fees.—Students not registered for the full course will be charged tuition at the rate of $2 per credit.

Advanced standing.—Graduates of approved training schools for nurses who are also graduates of accredited high schools will be admitted for advanced standing in the School for Dental Nurses, and should be able to complete the remainder of the work required for the degree of graduate dental nurse in one college year. Graduate nurses will be given permission to enter the school for one quarter's work to qualify them according to the law to take the state board examination for a license to practice dental nursing. Such students will not be candidates for the degree of graduate dental nurse and will be given university credit only in so far as it would apply if sufficient work to qualify for the degree were taken later.

Instruments.—The University will furnish the larger pieces of equipment needed for the work in the clinic and laboratories but the students must furnish their own aprons, operating instruments, and tools. These instruments and tools will be needed at the beginning of the freshman year. They will cost approximately forty dollars. Some few textbooks also will be required.

PRIZES

Alpha Gamma Gamma prize in dental nursing.—The active chapter of Alpha Gamma Gamma Sorority offeres an annual prize of ten dollars ($10) in gold to that student graduating from the School for Dental Nurses who has maintained the highest scholastic average and who has completed her entire course at the University of Minnesota.

The Louise C. Ball prize.—Annually Louise C. Ball, B.A., D.D.S., who founded the courses in oral hygiene in New York City, July 10, 1916, at Columbia University, will give a prize of forty dollars in gold to the student in the graduating class writing the best essay on "Preventive Dentistry."

COURSE OF STUDY, YEAR 1924-25

FRESHMAN YEAR

Number	Subject	Department	Fall Quarter Hours*	Fall Quarter Credits†	Winter Quarter Hours	Winter Quarter Credits	Spring Quarter Hours	Spring Quarter Credits	Total Hours	Total Credits	Prerequisites	Teacher
3f	Elementary Anatomy	Anatomy	33	3					33	3	None	Mr. Miller
4f-5w	General Inorganic Chemistry	Chemistry	77	4	77	4			154	8	H.S. Chemistry	Ar. by Mr. Sneed
1f-2w-3s	Prophylaxis	Dentistry	99	3	99	3	99	3	297	9	None	Miss Ueland
1f-2w-3s	Oral Anatomy	Dentistry	44	2	44	2	44	2	132	6	None	Dr. Harker
1f-3s	Dental Assisting	Dentistry	22	1			33	1	55	2	None	Miss Ueland
95Nf-96Ns	Office Practice	Business	33	2			33	2	66	4	Typewriting	Miss Coddon
1f-2w-3s	Elem. Physical Training	Physical Education	33	0	33	0	33	0	99	0	None	Ar. by Dr. Norris
4f	Preliminary Hygiene	Physical Education	11	0					11	0	None	Dr. Norris
6s	Principles of Dentistry	Dentistry	22	1					22	1	None	Ar. by Dr. Leonard
4f,w,s,su	Elementary Physiology	Physiology			88	5			88	5	Chem. 4 Anat. 3	Dr. Greisheimer
2w-3s	Surgical Assisting	Dentistry			33	1	44	1½	77	2½	None	Ar. by Dr. Holliday
2w	Dental Laboratory	Dentistry			33	1	33	1	66	2	None	Dr. Lundquist
2w	Dental Roentgenology	Dentistry					33	1½	33	1½	None	Dr. Holliday
1f,w,s,su	Elementary Bacteriology	Bacteriology					66	4	66	4	None	Mrs. Green
		Total	374	16	407	16	418	16	1199	48		

SENIOR YEAR

Number	Subject	Department	Fall Quarter Hours*	Fall Quarter Credits†	Winter Quarter Hours	Winter Quarter Credits	Spring Quarter Hours	Spring Quarter Credits	Total Hours	Total Credits	Prerequisites	Teacher
4f,w,s 5f,w,s 6f,w,s	Composition for Technical Students	English	33	3	33	3	33	3	99	9	None	Ar. by Mr. Thomas
4f-5w-6s	Prophylaxis	Dentistry	66	2	66	2	66	2	198	6	Proph. 1-2-3	Miss Ueland
1f-2w	General Psychology	Psychology	33	3	33	3			66	6	None	Ar. by Mr. Elliott
1f	Oral Pathology	Dentistry	33	3					33	3	Phys.4&Bact.1	Dr. Leonard
25s	Food and Nutrition	Home Economics	55	3					55	3	Chem. 5	Miss Child
32f	Oral Hygiene	Dentistry	22	2					22	2	Phys.4&Bact.1	Dr. Leonard
1f,w,s	Introduction to Sociology	Sociology			55	5			55	5	None	Ar. by Mr. Chapin
7w	Oral Hygiene Education	Dentistry			11	1			11	1	None	Miss Ueland
32w,s-41f,s	Periodontia Technic	Dentistry			33	1	33	1	66	2	Proph. 1-2-3	Dr. Leonard
41s	Public Speaking	English					33	3	33	3	Rhet. 4-5	Ar. by Mr. Rarig
9s	Thesis and Seminar	Dentistry					22	2	22	2	None	Dr. Owre
52f,w,s	Health Care of the Family	Hygiene					55	3	55	3	Phys.4&Bact.1	Miss Fisher
4s	Anesthetics	Dentistry					33	1	33	1	Phys. 4	Mr. McGilvra
		Total	242	16	231	15	275	15	748	46		

* Hours mean actual hour periods spent in class.

† A credit means approximately three hours a week for a quarter. This may be three hours of laboratory or clinic work without time spent in outside preparation or one hour in recitation requiring approximately two hours of outside preparation.

DESCRIPTION OF COURSES

ANATOMY

3. Elementary Anatomy. A brief survey of human gross anatomy including a brief introduction to histology, followed by a more detailed study of the anatomy of the oral region. Recitations and demonstrations. Three hours a week for one quarter. Mr. Miller.

BACTERIOLOGY AND IMMUNOLOGY

1f,w,s,su. Elementary Bacteriology. The principles and technic of general bacteriology. Studies of the morphologic and biologic characters of the common bacteria. Preparation of culture media. Disinfectants and disinfection. Bacteriology of water and food products. Six hours a week for one quarter. Mrs. Green.

BUSINESS

95Nf. Office Practice. A study of the most approved practices relative to the conduct of an office; appliances, accounts, records, correspondence, filing systems. Three hours a week for one quarter. Miss Coddon.

96Ns. Office Practice. A continuation of Course 95Nf.

CHEMISTRY

4f-5w. General Inorganic Chemistry. A study of general laws of chemistry and of non-metals and their compounds with a brief introduction to organic and biological chemistry. Seven hours a week for two quarters. Arranged by Mr. Sneed and staff.

14f-15w. General Inorganic Chemistry. A course similar to the foregoing for those who have not had high school chemistry. Nine hours a week for two quarters. Arranged by Mr. Sneed and staff.

DENTISTRY

ORAL ANATOMY

1f-2w-3s. Oral Anatomy. A course of lectures and recitations on the anatomy and nomenclature of the teeth and such laboratory work as drawing, dissection, modeling, and carving of the teeth. Special attention is given to the physiological function of tooth form and its practical application. Four hours a week for three quarters. Dr. Harker.

CROWN AND BRIDGE

2w. Dental Laboratory. A technic course in the manipulation of investments, waxes, metals, and porcelain including simple bridge construction as used in the dental office laboratory. Three hours a week for two quarters. Dr. Lundquist.

ORAL DIAGNOSIS

2w. Dental Roentgenology. Lectures, demonstrations, readings, and quizzes in the elements of dental roentgenology. Training in the operation of X-ray equipment and in producing and reading X-ray films. One lecture hour; two practice hours a week for one quarter. Dr. Holliday and assistants.

ORAL HYGIENE AND PATHOLOGY

31f. Oral Hygiene. Lectures and recitations on general and oral hygiene. Such subjects as communicable diseases, skin diseases, and orthopedics are included. Two hours a week for one quarter. Dr. Leonard.

1f. Oral Pathology. A somewhat abbreviated course on the special pathology of the teeth and other oral tissues, including the systemic manifestations of oral disease. The course is introduced by a brief study of general pathology. Three hours a week for one quarter. Dr. Leonard,

1f-2w-3s. Prophylaxis. Theory and practice in the technic and application of dental prophylaxis and oral hygiene. The work is introduced by practice on manikins after which it is done in the dental infirmary. Nine hours a week throughout the year. Miss Ueland.

4f-5w-6s. Prophylaxis. A continuation of Prophylaxis 1-2-3 in the public schools and hospitals of the Twin Cities. In this course particular attention is paid to physical defects both outside and in the oral cavity which may be prevented or corrected. Six hours a week throughout the year. Dr. Ziskin, Miss Ueland, Dr. White.

7w. Oral Hygiene Education. A recitation course in the preparation and delivery of talks on oral hygiene for various groups and occasions. One hour a week for a quarter. Miss Ueland.

32w,s. Periodontia Technic. An intensive demonstration and practice course in the causes, treatment, and prevention of gingivitis and dental periclasia, and in the prevention of dental caries. Special attention is paid to diagnosis and to systemic complications. Three hours a week for one quarter. Dr. Leonard, Dr. Waldron, Dr. Johnson.

41f,s. Periodontia. A continuation of Periodontia 32.

ORAL SURGERY

2w-3s. Surgical Assisting. Lectures and practice in assisting in oral surgical operations. Three hours a week for two quarters. Dr. Holliday, and members of the Oral Surgery staff.

4s. Anesthetics. Lectures and practice in administering general anesthetics. Three hours a week for a quarter. Mr. McGilvra.

THESIS AND SEMINAR, MISCELLANEOUS LECTURES, ETC.

9s. Thesis and Seminar. A conference course in the theory and practice of dentistry, including such subjects as ethics, jurisprudence, economics, etc. Two hours a week for one quarter. Dr. Owre.

6s. Principles of Dentistry. A course of lectures on the principles of operative dentistry, crown and bridge, prosthetics, and orthodontia by which an understanding and appreciation may be gained of the problems

involved in each subject. Two hours a week for one quarter. Arranged by Dr. Leonard.

1f-3s. Dental Assisting. A course of lectures, demonstrations, and practice in assisting the dentist at the chair. A study of dental equipment, instruments, and drugs is included. Three hours a week for the fall quarter, six hours a week for the spring quarter. Arranged by Miss Ueland.

ENGLISH

4f,w,s,-5f,w,s,-6f,w,s. Composition for Technical Students. A beginning course in the study of the fundamental principles of composition; training in the art of writing; the principles of structure, and analysis of specimens of good prose. Three hours a week throughout the year. Arranged by Mr. Thomas and staff.

41s. Public Speaking. Fundamentals of effective speaking; breathing, voice production, enunciation, and action; delivery of extracts from the works of well-known writers and speakers; principles underlying speech-making applied in both oral and written compositions. Three hours a week for one quarter. Arranged by Mr. Rarig and staff.

HOME ECONOMICS

25s. Food and Nutrition. Chemical composition and physiological significance of foodstuffs. Principles of cookery underlying the preparation of foods: planning and preparation of normal and special diets. Five hours a week for one quarter. Miss Child.

PHYSICAL EDUCATION FOR WOMEN

1f-2w-3s. Elementary Physical Training. Lighter forms of gymnastics, apparatus work, orthopedic exercise, folk dancing, indoor and out door games. Individual health consultations. Arranged by Dr. Norris and staff.

4s. Preliminary Hygiene. One lecture a week. The most essential aspects of the care of personal health. Dr. Norris.

PHYSIOLOGY

4f,w,s,su. Elementary Physiology. The functional properties of tissue-cells; the material bases of the body; the nutritive media; the physiology of nerve and muscle; of the nervous system; the vascular mechanism; respiration, digestion, excretion, and metabolism. Eight hours a week for one quarter. Dr. Beard, Dr. Greisheimer.

PREVENTIVE MEDICINE AND PUBLIC HEALTH

52f,w,s. Health Care of the Family. First aid; communicable diseases; their transmission and prevention; hygiene of infancy, maidenhood,

maturity. The care of the sick room; observation and care of the patient. Elementary symptomatology. Five hours a week for one quarter. Dr. Boynton, Dr. Mayer, Miss Fisher.

PSYCHOLOGY

1f-2w. General Psychology. An introductory survey of psychology; its material, fundamental laws, applications, and relations to other sciences. Two lectures, one recitation per week for two quarters. Arranged by Mr. Elliott and staff.

SOCIOLOGY AND SOCIAL WORK

1f,w,s. Introduction to Sociology. A study of the origin and development of human societies; various agencies which have determined the type of social life; social organization, institutions, and progress; bearing of sociology upon other social sciences and arts. Five hours a week for one quarter. Arranged by Mr. Chapin and staff.

The Bulletin *of the* University *of* Minnesota

The School of Mines

Announcement for the Year 1924-1925

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

1924

JULY

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OCTOBER

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1925

JANUARY

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MAY

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JULY

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19	20	21	22	23	24	25
26	27	28	29	30	31	..
..	..	..	..	..	..	..

AUGUST

Su	Mo	Tu	W	Th	Fr	Sa
..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	..	..	..	..	..

SEPTEMBER

Su	Mo	Tu	W	Th	Fr	Sa
..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	..	..	..
..	..	..	..	..	..	..

OCTOBER

Su	Mo	Tu	W	Th	Fr	Sa
..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
..	..	..	..	..	..	..

NOVEMBER

Su	Mo	Tu	W	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	..	..	..	..	..
..	..	..	..	..	..	..

DECEMBER

Su	Mo	Tu	W	Th	Fr	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..
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UNIVERSITY CALENDAR
1924-25

1924			
September	18	Thursday	Payment of fees closes, except for new students
September	18-20		Entrance examinations
September	22	Monday	Seniors, School of Mines, report for completion of field work
September	22-26		Examinations for removal of conditions and entrance examinations
			Physical examinations for all new students
September	24	Wednesday	Juniors, School of Mines, report for completion of field work
September	25-26		Registration days
September	26	Friday	Payment of fees for new students closes
September	29	Monday	Fall quarter begins, 8:30[1] a.m.
October	23	Thursday	Senate meeting, 4:30 p.m.
November	1	Saturday	Home Coming Day; classes dismissed the third and fourth hours
November	4	Tuesday	Election Day; a holiday
November	11	Tuesday	Armistice Day; a holiday
November	27	Thursday	Thanksgiving Day; a holiday
December	4	Thursday	State Day Convocation
December	17-20		Final examination period
December	18	Thursday	Commencement Convocation
December	18	Thursday	Senate meeting, 4:30 p.m.
December	20	Saturday	Fall quarter ends, Christmas vacation begins, 5:20 p.m.
1925			
January	5	Monday	Christmas vacation ends, winter quarter begins, 8:30[1] a.m.
February	12	Thursday	Lincoln's Birthday; a holiday
February	19	Thursday	Charter Day Convocation
February	19	Thursday	Senate meeting, 4:30 p.m.
March	16-19		Final examination period
March	21	Saturday	Winter quarter ends, spring vacation begins, 5:20 p.m.
March	30	Monday	Spring vacation ends, spring quarter begins, 8:30[1] a.m.
April	10	Friday	Good Friday; a holiday
May	14	Thursday	Cap and Gown Day Convocation

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

May	21	Thursday	Senate meeting, 4:30 p.m.
May	30	Saturday	Memorial Day; a holiday
June	10-13		Final examination period
June	13	Saturday	Spring quarter closes, 5:20 p.m.
June	14	Sunday	Baccalaureate service
June	15	Monday	Fifty-third annual commencement
June	19-20		Summer Session first term begins, registration and payment of fees
June	22	Monday	Classes begin, 8:00 a.m.
July	4	Saturday	Independence Day; a holiday
August	1	Saturday	First term Summer Session closes
			Registration and payment of fees for second term closes
August	3	Monday	Second term classes begin
September	5	Saturday	Second term Summer Session closes

Program of Supplementary Examinations

Tuesday	Sept. 23	9-12 a.m.	Physics
		2-5 p.m.	Chemistry, experimental engineering
Wednesday	Sept. 24	9-12 a.m.	Mathematics and mechanics
		2-5 p.m.	Drawing and descriptive geometry
Thursday	Sept. 25	9-12 a.m.	Metallurgical subjects
		2-5 p.m.	Electric power
Friday	Sept. 26	9-12 a.m.	Geology and mineralogy
		2-5 p.m.	Mining and mining engineering subjects

GENERAL INFORMATION

The School of Mines was established by the Board of Regents in 1888, upon recommendation of the general faculty of the University. The buildings and laboratories of the school are located on the main campus of the University. The mining districts of Minnesota are within a few hours, by rail, of Minneapolis. The heartiest co-operation exists between the various mine managements and the school, so that the mining properties are at all times open to parties from the school for observation and study trips. Practical surveying, geological field work, and underground work are carried on in one or more of the districts. Students in the School of Mines have, therefore, all the advantages afforded by a large university combined with ample opportunity for field observation and experience.

The School of Mines occupies the new building provided by the Legislature of 1913. In the basement are the assay and electrometallurgical laboratories, together with machinery room, instrument room, balance room, furnace rooms, and necessary storerooms. On the first floor are the administrative offices, the offices and lecture rooms of the departments of Metallurgy and Mine Plant and Mechanics. On the second floor are the offices, lecture rooms, and drafting rooms of the Department of Mining, the ore-dressing laboratory, and the library of the school. On the third floor are the offices, laboratories, and lecture rooms of the Department of Metallography, Department of Mining Engineering, junior drafting room, darkrooms, blue printing room, and offices and computing rooms for the branch of the experiment station serving the tax commission.

DEGREES

In the School of Mines there are three regular courses of study, viz., Mining Engineering, Mining Engineering specializing in Geology, and Metallurgy, leading to the degree of engineer of mines (E.M.), engineer of mines in geology (E.M. [Geology]), and metallurgical engineer (Met. E.) respectively.

The degree of metallurgical engineer may be conferred upon a candidate who received the degree of engineer of mines in four years, and vice versa, provided such candidate completes an additional year's work at the school and presents a suitable thesis.

Students in the College of Science, Literature, and the Arts, in the College of Engineering and Architecture, and in the School of Chemistry, who contemplate taking a degree in this school after completing their course, are recommended to select their electives with reference to as full a preparation as possible for the technical work of the course they propose to enter.

CLASSIFICATION OF SUBJECTS

The work falls under the following subdivisions, supplemented by thoro courses in mathematics, mechanics, surveying, physics, chemistry, and the necessary theory and practice of structural, mechanical, and electrical engineering.

(a) *Geology*—to determine the location of the ore. (b) *Mineralogy*—to determine its nature. (c) *Assaying*—to determine whether or not it has value for treatment. (d) *Mining engineering*—to furnish material for treatment. (e) *Mine plant*—to provide the physical equipment for mining and treating the ore. (f) *Ore-testing*—to determine best methods of treatment. (g) *Ore-dressing*—to furnish products for metallurgical treatment. (h) *Metallurgy*—to smelt and refine ores and ore-dressing products; reduction to metals. (i) *Metallography*—to study metals and their alloys.

EXPERIMENT STATION

The School of Mines Experiment Station was established in 1911 and is maintained to promote the development of the mining and mineral resources of the state; to assay specimens of ores, rocks, clays, and minerals; to make such assays free of charge for private parties subject to such regulations as the Board of Regents may deem necessary; to make mining and metallurgical experiments in the treatment of such substances and in the utilization of mining and metallurgical by-products; to investigate methods of mining and the use of explosives; to undertake such other mining and metallurgical problems as may seem desirable; to make all ore estimates for the tax commission, and to do such other work along the lines above outlined as may be requested by other state departments. Co-operation has been effected with the United States Bureau of Mines, the United States Geological Survey, the Minnesota Geological Survey, and the School of Chemistry.

The experiment station is prepared to assist citizens interested in these lines of work, and to assay specimens of ore, rocks, clays, and minerals found within the state, free of charge.

In submitting samples the sender must state the exact location in which each sample was found, giving all possible additional information. This information, together with results of any test or analysis, will be on file and available to the public at the office of the station. Citizens desiring free assay privileges must agree to give accredited representatives of the School of Mines Experiment Station and of the Geological Survey access to the property should they desire to visit the same for purposes of examination and geological study.

Correspondence will receive prompt attention, but consultations generally prove more satisfactory.

Each sample should be numbered for identification and bear the name and address of the sender. All shipments must be delivered to the Minnesota School of Mines, charges prepaid. Shipping tags will be furnished upon request.

Address all communications to William R. Appleby, Director, Minnesota School of Mines Experiment Station, the University of Minnesota, Minneapolis, Minnesota.

ADMISSION

The courses leading to the degrees of engineer of mines, engineer of mines (in geology), and metallurgical engineer may be completed in four years.

Freshmen will be divided into two sections as follows:

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

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

Details as to admission and entrance requirements, description of subjects accepted for admission, and list of fees and expenses will be found in the bulletin of general information, which will be sent to any address upon application to the registrar, the University of Minnesota, Minneapolis.

UNCLASSED STUDENTS

No unclassed students will be admitted to the School of Mines.

ADMISSION TO ADVANCED STANDING

Students who desire to obtain advanced standing must present their applications and certificates to the department concerned, obtain a written statement from the department, showing the exact credit allowed, and present this to the Enrolment Committee of the School of Mines.

FEES

Tuition fees (per quarter)	
Residents of Minnesota	$30.00
Nonresidents	40.00
Deposit (first quarter only)	5.00*
Military deposit (required of all students taking drill)	10.00
Minnesota Union (per quarter)	1.00
Health fee	2.00
Special fees	
Examination for removal of condition	1.00
Examinations for credit (after the first six weeks in residence)	5.00
Special examinations	5.00
Chemistry deposit	5.00

Penalty Fees

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

GRADUATION

Students completing courses of study to the satisfaction of the faculty are entitled to receive the appropriate degrees. Any person may undergo, at suitable times, examination in any subject. If such person pass in all

* The following charges are made against the general deposit for each student in addition to such charges as may be incurred for lockers, library penalties, laboratory breakage, etc.:

Minnesota Daily (per quarter)	$0.50
Post-office (per quarter)	.20
University Address Book	.35

the studies and exercises of a course, he is entitled to the appropriate degree, provided that at least the full year be spent at the University before such degree shall be granted, and provided the examination in every case be held before a committee of the faculty appointed for that purpose.

Seniors must be in regular attendance at all classes until after the final examination for the third quarter. Irregular attendance will debar a student from entering all final examinations.

THESIS

The thesis work is intended to bring in review and connect the work in mining and metallurgy, geology and mineralogy, mechanical and electrical engineering, mathematics and mechanics.

It has been found that this purpose is most satisfactorily accomplished by assigning to each student a project, embracing the prospecting, development, and equipment of a group of mining claims, for candidates for the degree of engineer of mines; the investigation of a problem in mining geology, for candidates for the degree of engineer of mines (in geology); and the investigation of a metallurgical problem, for candidates for the degree of metallurgical engineer.

As much latitude as possible will be allowed the student in the choice of type of deposit and location. He must select a suitable project during the summer preceding the senior year. Outlines are furnished setting forth the lines of investigation necessary to obtain the required data. The junior field work affords ample opportunity therefor.

Prior to the reopening of field work at the School of Mines, Monday, September 22, 1924, each student is required to submit to the department concerned an outline embodying the principal features of the project, together with the topographic map and a sufficient number of photographs to represent clearly the locality. Unless this outline is submitted when due and is accepted by the department, final registration for the first semester, senior year, will not be permitted.

Students may, if they so desire, take a reasonable number of samples on which to make assays and hand laboratory tests during the ore-testing laboratory work given in the first semester, senior year.

All preliminary work must be done and final work on the project must be under way by December 1. On April 7 the text of the thesis must be completed and submitted for final approval. Completed work (typewritten and bound) together with all tracings and one set of clear blue prints therefrom must be in and accepted not later than April 27. Theses will not be accepted or examined after these dates. Unless the above conditions are complied with no student can expect to graduate with his class.

These theses shall become the property of the school.

SPECIAL NOTES

Students failing to receive a quarter mark of 75 per cent in any subject shall have the privilege of a supplementary examination before the opening of the following year.

Each student must obtain from the registrar his average in all subjects and present himself for supplementary examinations, according to the program on page 4.

Failure of the registrar to notify a student of deficiencies will not be accepted as a reason for neglecting to report for necessary supplementary examinations. Students failing to report for supplementary examinations will be compelled to take work over in class as in case of failues.

Students failing to pass supplementary examinations will become members of the succeeding class and must register for those subjects in which they have failed. They may take in addition other subjects not more than one year in advance of their class, with the exception of mining, mining engineering, and metallurgical courses, based upon requirements of the various courses and daily program. They may also take certain electives in other colleges provided suitable arrangements can be made.

Students failing to receive a quarter mark of 65 per cent in any subject shall not be allowed to pursue any dependent subject except by permission of the faculty. A student may be permitted to take the dependent subject conditionally for six weeks, at the end of which time he must have a passing grade in the subject if he is to continue it for the remainder of the quarter.

The faculty may exclude students from attending classes in any subject upon recommendation of the department concerned.

All students must report in time to make suitable arrangements with departments concerned in case of conflicts in program.

Students failing to present themselves for final examination for any quarter will be given zero on the examinations.

Students whose absences in any quarter exceed 20 per cent of the scheduled class hours will not be permitted to take examinations without special permission of the faculty.

Sophomores and juniors who, at the end of the winter quarter, are deficient in 10 hours or more of any subject, or who, at the end of the spring quarter examination period for sophomores and juniors are deficient in any subject of the preceding year will not be eligible to take the spring field trip unless declared eligible by a special vote of the faculty. Sophomores who are deficient in one or more quarters of surveying will not be eligible for the sophomore field trip unless recommended for the trip by the Department of Mining Engineering and declared eligible by the faculty.

All subjects elected in other colleges become part of the School of Mines curriculum. All students are required to receive credits in these subjects before graduation.

During the academic year students will be held responsible for the receipt of official communications sent to them through the University post-office. During the summer vacation they will be held responsible for the receipt of such communications sent to the home address given on registration blank for the preceding academic year, unless formal notification of their correct address is filed with the registrar and the dean.

COURSES OF STUDY

UNIFORM CURRICULUM TO END OF SOPHOMORE YEAR

The courses leading to the degrees of engineer of mines, engineer of mines (in geology), and metallurgical engineer are uniform for the first two years.

Freshmen will be divided into two sections as follows:

a. Those entering with credits in advanced algebra and solid geometry.

b. Those entering without credits in advanced algebra and solid geometry.

Subjects with the prefix a are to be taken by freshmen in section a; those with the prefix b are to be taken by freshmen in section b; and those without prefix are to be taken by students of both sections.

FRESHMAN YEAR

First Quarter

Chemistry 4f or 14f,* General Inorganic, 6 or 9†
Drawing 11f, Engineering Drawing, 10
a. Mathematics 2f, Algebra, 6
b. Mathematics 1f, Algebra and Solid Geometry, 6
Geology 1f, General, 4
Military Science 1, Basic Course, R.O.T.C., 3

Second Quarter

Chemistry 5w or 15w, General Inorganic, 6 or 9, Chem. 4f or 14f
Drawing 12w, Engineering Drawing, 8, Draw. 11f
Mathematics 4w, Trigonometry, 6
Metallurgy 1w, Assaying, 4, Chem. 4f or 14f, Geol. 23f
Metallurgy 2w, Assaying Laboratory, 8, Chem. 4f or 14f, Geol. 23f
Geology 23w, Elements of Mineralogy, 4, Geol. 1f
Military Science 1, Basic Course, R.O.T.C., 3

Third Quarter

Chemistry 16s, Qualitative Analysis, 9, Chem. 5w or 15w
Drawing 13s, Engineering Drawing, 8, Draw. 12w
Mathematics 5s, Analytical Geometry, 6, Math. 4w
b. Mathematics 3s, Algebra, 4, Math. 1f
Geology 24s, Elements of Mineralogy, 8, Geol. 23w
Military Science 1, Basic Course, R.O.T.C., 3

SOPHOMORE YEAR

First Quarter

Drawing 14f, Descriptive Geometry, 3, Draw. 13s, Math. 5s
Geology 25f, Elements of Mineralogy, 8, Geol. 24s
Geology, 105f, Rock Study, 4, Geol. 24s

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* The suffixes f, w, or s, after the course number indicate the quarter in which a course is offered—fall, winter, or spring quarter, respectively. Two or three suffixes indicate that a course is offered in each of the corresponding quarters.

† Figure following the descriptive name of a course indicates number of hours per week. Course names following indicate prerequisite courses.

Mathematics 6f, Calculus, 4, Math. 5s
Metallurgy 3f, General, 3, Met. 1w, 2w, Chem. 16s
Mining Engineering 1f, Mine-Surveying, 3, Math. 4w
Physics 3f, Elements of Mechanics, 3, Math. 5s
Physics 4f, Mechanics Laboratory, 2, Math. 5s
Military Science 2a, 2b, 2c, Basic Course, R.O.T.C., 3

Second Quarter

Chemistry 28w, Quantitative Analysis, 8, Chem. 16s
Drawing 15w, Drafting, 4, Draw. 14f
Geology 106w, Petrography, 4, Geol. 105f
Mathematics 7w, Calculus, 3, Math 6f
Metallurgy 4w, Met. of Pig Iron, 3, Met. 3f
Mining Engineering 2w, Mine-Surveying, 3, Min. Eng. 1f
Physics 23w, Heat, 3, Phys. 3f
Physics 24w, Heat Laboratory, 2, Phys. 4f
Military Science, 2a, 2b, or 2c, Basic Course, R.O.T.C., 3

Third Quarter

Geology 2s, Historical, 7, Geol. 1f
Mathematics 8s, Calculus, 6, Math. 7w
Metallurgy 5s, Wrought Iron and Steel, 3, Met. 4w
Mining 21s, Introductory Mining, 4
Mining Engineering 3s, Mine-Surveying, 7, Min. Eng. 2w
Physics 43s, Magnetism and Electricity, 3, Phys. 3f
Physics 44s, Magnetism and Elec. Lab., 2, Phys. 4f
Military Science, 2a, 2b, or 2c, Basic Course, R.O.T.C., 3
Mining Engineering 4s, Field Work beginning about May 1, 7 weeks, Min. Eng. 4s.
Geology 85, Field Work beginning about June 20, 2 weeks, Geol. 2s

JUNIOR AND SENIOR YEARS

Courses Leading to the Degree of Engineer of Mines

JUNIOR YEAR

First Quarter

Experimental Engineering, M.E. 84f, Elementary Lab., 4, with Mech. 112f
Geology 73f, Economic, 3, Geol. 2s, 105f
Mechanics 109f, Mechanics, 5, Math. 8s
Mechanics 112f, Mine Plant, 6, Math. 8s
Metallurgy 106f, Base Metals, 4, Met. 3f
Metallurgy 110f, Ore-Dressing, 3, Phys. 43s, Geol. 25f
Mining 130f, First Aid, 1 week
Mining 131, Exploration, 5, Mining 21s

Second Quarter

Experimental Engineering, M & W. 144w, Materials-Testing Lab., 4, with Mech. 110w
Mechanics 110w, Mechanics of Materials, 5, Mech. 109f
Mechanics 113w, Mine Plant, 6, Mech. 112f
Metallurgy 107w, Base Metals, 4, Met. 106f
Metallurgy 111w, Ore-Dressing, 3, Met. 110f
Mining 132w, Tunneling, 5, Mining 131f
Mining Engineering 105w, Mine-Mapping, 6, Min. Eng. 4s

Third Quarter

Mechanics 111s, Mechanics of Materials, 5, Mech. 110w
Mechanics 114s, Mine Plant, 6, Mech. 113w
Metallurgy 108s, Precious Metals, 4, Met. 107w
Metallurgy 115s, Ore-Dressing Lab., 6, Met. 111w
Mining 133s, Mining Methods, 5, Mining 132w
Mining Engineering 106s, Mine-Mapping, 6, Min. Eng. 105w
Metallurgy 116s, Field Work in Metallurgy beginning about May 1, 10 days, satisfactory completion of junior year
Mining 134s, Field Work in Mine Plant and Mining beginning about May 1, 2 weeks, satisfactory completion of junior year

SENIOR YEAR

First Quarter

Electrical Engineering 41f, Electric Power, 5, Phys. 43s
Geology 111f, Ore Deposits, 3, Geol. 73f, 106w
Mechanics 117f, Water Power, 7, Mech. 111s
Mechanics 118f, Engineering Construction, 8, Mech. 111s
Metallurgy 119f, Ore-Testing, 2, Met. 108s
Metallurgy 120f, Ore-Testing Lab., 8, Met. 108s
Mining 141f, Mining Methods, 5, Mining 133s
Mining 140f, Mine Rescue, 1 week
Mining 144f, Thesis, 2, Mining 133s

Second Quarter

Experimental Engineering, M.E., 181w, Advanced Lab., 4, Exp. Eng. M.E. 84f
Geology 112w, Petroleum, 3, Geol. 111f
Geology 115w, Applied Geology, 3, Geol. 73f, 111f
Mech. 119w, Mine Plant Design, 9, Mech. 118f
Metallurgy 121w, Special Problems, 4, Met. 119f
Mining 142w, Mine Management, 5, Mining 141f
Mining 145w, Thesis, 12, Mining 144f

Third Quarter

Geology 113s, Problems in Ore Deposits, 4, Geol. 112w
Mechanics 120s, Mine Plant Design, 12, Mech. 119w
Metallurgy 122s, Special Problems, 8, Met. 121w
Mining 143s, Mine Administration, 5, Mining 142w
Mining 146s, Thesis, 12, Mining 145w

DEPARTMENT OF MINING

The department is well supplied with samples of the smaller mine equipment, models, drawings, photographs, lantern slides, and mine maps. The lectures treat of prospecting, development, support of excavations, mining methods, mine aadministration, mining law, and the necessary allied subjects. The courses in mining extend through the sophomore, junior, and senior years.

FIELD WORK IN MINING

JUNIOR YEAR

At the end of the junior year students are required to study mine plant and mining methods in one or more mining districts under the direction of members of the faculty. This work begins about May 1, and not over

three weeks will be devoted to it. The work is carried on in the leading western metal-mining districts, the exact location to be announced in April of each year. The expenses for the trip are estimated at $225. A deposit of $50 must be made before starting on the trip to cover board and lodging and necessary side trips. Any balance will be returned at the close of the work in the field.

All notes, data, and sketches necessary for a complete report on the field work, must be fully and neatly recorded in notebooks. These notebooks will be collected at the close of the trip and returned to the student at the reopening of field work at the school. In judging the character of the student's field work, equal importance will be attached to the completed report and to the original field notes. The department reserves the right to reject notebooks considered below the standard that should be demanded of candidates for senior work. During the months of June, July, and August, the student is urged to spend at least six weeks in actual underground mining work in the West for which he may receive wages. The department will render all possible assistance in locating students in districts of their choice.

Field work will reopen at the School of Mines, Monday, September 22, 1924. No senior will be registered after that date. Registration will cover field work, electric power, and geology.

The final reports covering field work in mining and metallurgy must be prepared at the School of Mines under the direct supervision of the departments concerned. The program covering this work is as follows: metallurgy, September 22 to 29, inclusive; mining and mine plant, September 30 to October 13, inclusive.

On October 13 all seniors who expect to graduate must register for the remaining subjects. Prior to this date the student must submit a typewritten report on field work fully illustrated with drawings, to scale, made from the field sketches, covering metallurgical and milling operations, and details of plant and equipment. Final registration will not be allowed until after reports on field work are accepted. All final reports, therefore, must be presented on or before October 13. These reports shall become the property of the school.

The completion of sophomore and junior field work is a requisite for graduation, and satisfactory evidence thereof must be submitted to the department. Should a student, for sufficient reason, fail to complete this work in regular course, he may, with the consent of the department, be permitted to pursue his regular studies. In all such cases, however, the degree will be withheld until all field work is completed.

DEPARTMENT OF MINING ENGINEERING

MINE-SURVEYING

The work in surveying is given in the sophomore year and is designed primarily for mining engineers. The work begins with the elements of plane surveying, with special reference to the computations necessary, followed by the higher theoretical work in plane surveying and its application

to the problems met in underground surveying. Beginning about May 1, the class devotes seven weeks to field work at some convenient point on the Mesabi, Cuyuna, or Vermilion Range. The exact location will be announced in March of each year. The expenses for this trip are estimated at $150.

The students will be divided into squads of two to four. Each student will be required to complete satisfactorily a practical course in plane and underground surveying including exercises in chaining and taping; adjustment and use of surveying instruments, solar and stellar observations; laying out railroad tangents and curves; making earthwork estimates; and other problems. In addition each squad will be required to make a yardage estimate of the stripping of an open-pit mine; to transfer a meridian, from the surface, underground and make a complete survey of an underground mine.

The data obtained will be used in the course in mine-mapping during the winter quarter of the junior year.

A full equipment of surveying instruments of the latest and best types is furnished each squad for this work.

Courses Leading to the Degree of Engineer of Mines in Geology

JUNIOR YEAR

First Quarter

Geology 61f or 65f, Blowpipe Analysis or Crystallography, 6, Geol. 25f
Geology 73f, Economic, 3, Geol. 2s, 105f
Geology 131f, Advanced Petrology, 6, Geol. 2s, 106w
Geology 151f, Advanced General, 3, Geol. 73f
German 24f or 27f, or French 1f or 21f, or Spanish 1f or 65f, 5, 4, or 3
Mechanics 109f, Mechanics, 5, Math. 8s
Mining 130f, First Aid, 1 week
Mining 131f, Exploration, 5, Min. 21s

Second Quarter

Geology 124w, Struct. and Metamorphic, 3, Geol. 73f, 105f
Geology 132w, Advanced Petrology, 6, Geol. 2s, 106w
Geology 144w, Geologic Maps, 6, Geol. 73f
Geology 152w, Advanced General, 3, Geol. 73f
German 25w or 28w, or French 2w or 22w, or Spanish 2w or 66w, 5, 4, or 3
Mechanics 110w, Mechanics of Materials, 5, Mech. 109f
Mining 132w, Tunneling, 5, Min. 131f
Mining Engineering 105w, Mine-Mapping, 6, Min. Eng. 4s

Third Quarter

Geology 125s, Struct. and Metamorphic, 6, Geol. 73f, 105f
Geology 133s, Advanced Petrology, 6, Geol. 2s, 106w
Geology 145s, Geologic Maps, 12, Geol. 73f
Geology 153s, Advanced General, 3, Geol. 73f
Mechanics 111s, Mechanics of Materials, 5, Mech. 110w
Mining 133s, Mining Methods, 5, Min. 132w

Geology 150s, Field Mork in Geology beginning about May 1, six weeks, Geol. 125s

Geologic Field Work beginning about June 15 with geologic surveys or private companies

SENIOR YEAR

First Quarter

Geology 91f, Paleontology, 3, Geol. 2s
Geology 111f, Ore Deposits, 3, Geol. 73f, 106w
Metallurgy 110f, Ore-Dressing, 3, Phys. 5s, Geol. 25f
Mining 140f, Mine Rescue, 1 week
Mining 141f, Mining Methods, 5, Min. 133s
Thesis, 8
Electives, 6

Second Quarter

Geology 92w, Paleontology, 3, Geol. 2s
Geology 112w, Petroleum, 3, Geol. 111f
Geology 137w, Testing Economic Materials, 5, Geol. 73f
Geology 140w, Applied Petrography, 5, Geol. 111f, 133s
Geology 166w, Mineralography, 6, Geol. 111f
Metallurgy 111w, Ore-Dressing, 3, Met. 110f
Mining 142w, Mine Management, 5, Min. 141f

Third Quarter

Geology 93s, Paleontology, 3, Geol. 2s
Geology 113s, Problems in Ore Deposits, 4, Geol. 112w
Geology 141s, Applied Petrography, 5, Geol. 111f, 133s
Geology 167s, Mineralography, 6, Geol. 111f
Metallurgy 115s, Ore-Dressing Lab., 6, Met. 111w

FIELD WORK IN GEOLOGY

At the end of the sophomore year mining students are required to devote about two weeks to geologic mapping. This course usually comes after a seven-week course in surveying and the fields chosen are the Vermilion and Mesabi iron ranges of Minnesota. This work is intended to train the students in the interpretation of field relations and the preparation of geologic maps and cross sections.

The second field course in geology is required only of those students who are candidates for the engineer of mines (in geology) degree. The course begins early in May and is completed in June. The course requires altogether about six weeks' work, and the field chosen is the Black Hills region of South Dakota or some other western region. The expenses of the trip are estimated at $225. A deposit of $50 must be made before starting on the trip to cover lodging and necessary side trips. Any balance will be returned at the close of the work in the field. The student is trained in interpretation of field data; in detailed mapping, underground and on the surface; in the preparation of geologic cross sections through mines; and he may gather material which will serve as a basis for future study in advanced courses the following year. The work conforms to the standards of official surveys as nearly as practicable. In preparation for the trip a lecture of one hour per week will be scheduled for part of the third quarter preceding the trip. At the close of the field season the students are expected to obtain positions with mining companies either as miners or as engineers, or if openings are available, they may enter geological surveys for the season's work.

Field work in geology for students having taken either of the above trips will reopen at the School of Mines, Wednesday, September 24, 1924. The final reports covering the field work must be prepared at the School of Mines under the direct supervision of the Department of Geology. These reports are to be turned in to the department on September 29.

Courses Leading to the Degree of Metallurgical Engineer

JUNIOR YEAR

First Quarter

Geology 73f, Economic, 3, Geol. 2s, 105f
Mechanics 109f, Mechanics, 5, Math. 8s
Mechanics 112f, Mine Plant, 6, Math. 8s
Metallurgy 110f, Ore-Dressing, 3, Phys. 43s, Geol. 25f
Metallurgy 112f, Ore-Dressing Lab., 4, Phys. 43s, Geol. 25f
Metallurgy 106f, Base Metals, 4, Met. 3f
Metallurgy 153f, Metallography, 7, Chem. 28w, Phys. 43s
Mining 130f, First Aid, 1 week

Second Quarter

Mechanics 110w, Mechanics of Materials, 5, Mech. 109f
Mechanics 115w, Metallurgical Plant, 3, Mech. 112f
Metallurgy 111w, Ore-Dressing, 3, Met. 110f, 112f
Metallurgy 113w, Ore-Dressing Lab., 4, Met. 110f, 112f
Metallurgy 107w, Base Metals, 4, Met. 106f
Metallurgy 154w, Metallography, 7, Met. 153f
Mining Engineering 105w, Mine-Mapping, 6, Min. Eng. 4s

Third Quarter

Mechanics 111s, Mechanics of Materials, 5, Mech. 110w
Mechanics 116s, Metallurgical Plant, 3, Mech. 115w
Metallurgy 114s, Ore-Dressing Lab., 6, Met. 111w, 113w
Metallurgy 108s, Precious Metals, 4, Met. 107w
Metallurgy 155s, Metallography, 7, Met. 154w
Mining Engineering 106s, Mine-Mapping, 6, Min. Eng. 105w.
Metllurgy 116s, Field Work in Metallurgy beginning about May 1, 10 days, satisfactory completion of junior year
Mining 134s, Field Work in Mine Plant and Mining beginning about May 1, 2 weeks, satisfactory completion of junior year

SENOR YEAR

First Quarter

Electrical Engineering 41f, Electric Power, 5, Phys. 43s
Geology 111f, Ore Deposits, 3, Geol. 73f, 106w, or
Mechanics 118f, Engineering Construction, 8, Mech. 111s
Mechanics 117f, Water Power, 7, Mech. 111s
Metallurgy 119f, Ore-Testing, 2, Met. 108s
Metallurgy 120f, Ore-Testing Lab., 8, Met. 108s
Metallurgy 123f, Electrometallurgy, 3, Met. 108s
Metallurgy 124f, Thesis, 8
Mining 140f, Mine Rescue, 1 week

Second Quarter

Geology 112w, Petroleum, 3, Geol. 111f, or
Mechanics 119w, Mine Plant Design, 9, Mech. 118f
Metallurgy 121w, Special Problems in Ore-Testing, 4, Met. 119f

Metallurgy 117w, Advanced Metallurgy, 10, Met. 108s
Metallurgy 125w, Thesis, 18, Met. 124f
Metallurgy 164w, Advanced Metallography, 3, Met. 155s, or
Geology 115w, Applied Geology, 3, Geol. 73f, or
Mining 142w, Mine Management, 5, Min. 141f

Third Quarter

Metallurgy 122s, Special Problems in Ore-Testing, 8, Met. 121w
Metallurgy 118s, Advanced Metallurgy, 10, Met. 117w
Metallurgy 126s, Thesis, 18, Met. 125w
Metallurgy 165s, Advanced Metallography, 3, Met. 155s, or
Geology 113s, Problems in Ore Deposits, 4, Geol. 112w, or
Mining 143s, Mine Administration, 5, Min. 142w

DEPARTMENT OF METALLURGY

This department is well supplied with representative ores of all the most important metals, drawings of furnaces, and models and samples of all the different furnace products. The lectures treat of all the principal methods now in use. The practical work consists in visits to smelting and refining works which are accessible. The work in metallurgy extends through four years.

ASSAYING

The lectures treat of, and describe, apparatus, reagents, assay furnaces, fuels, etc., in connection with this subject. The principles of assaying and sampling are fully explained. A collection of representative ores of various metals with a collection of corresponding slags is shown, and instruction is given as to nature and quality of fluxes. Special and rapid methods of testing slags and metallurgical products as employed in western smelting works are emphasized.

The laboratory course includes preparing and testing reagents, making cupels, etc., and assaying samples of ores, furnace and mill products, and bullion; different charges are tried and practical conclusions drawn.

Great importance is attached to the work in the laboratory. A large, well-ventilated furnace room in which are located muffle and crucible furnaces, and another room of similar dimensions equipped with desks, pulp and bead balances, afford accommodations to a large number of students. Ores of various metals of known value are given the students who are required to make up the necessary charges and submit their report in detail. This work is offered to students completing the necessary courses in mineralogy and chemistry.

ORE-DRESSING

The lectures and recitations in ore-dressing extend through the junior year, and comprise a detail study of ore-dressing and concentrating machinery, together with a study of typical combinations of dressing machines as found in the various mining districts of the United States. In connection with the theoretical work, the ore-dressing laboratory and testing plant of the school are utilized for illustration, and practical use of ore-dressing machinery.

ORE-TESTING

The lectures treat of the problems in ore-testing such as extraction and losses in roasting, concentration, and other milling operations. Both the ore-dressing laboratory and the Mines Experiment Station laboratory are available for working out practical problems. The Mines Experiment Station laboratory is maintained to aid the mining interests of the state of Minnesota in solving problems connected with concentration and conservation of the iron and manganiferous ores in the state.

The School of Mines laboratories therefore serve both educational and commercial needs.

Educational.—The student becomes familiar with the use of the various types of machines such as crushers, rolls, classifiers, concentration and flotation machinery.

Commercial.—The laboratories are used by the Mines Experiment Station to determine the best methods of treatment to produce a commercial product at the lowest cost. Recently additional commercial machinery has been obtained and new appliances are constantly being developed. Commercial samples varying from 500 pounds to carload lots can be treated by various methods.

FIELD WORK IN METALLURGY

At the end of the junior year students are required to study practical operations at one or more smelters and mills. This begins about May 1. The expenses for this trip are estimated at $225. A deposit of $50 must be made before starting on the trip to cover board and lodging and necessary side trips. Any balance will be returned at the close of the work in the field.

All notes, data, and sketches, necessary for a complete report on the field work, must be fully and neatly recorded in notebooks. These notebooks will be collected at the end of the trip and returned to the student at the reopening of field work at the school. In judging the character of the student's field work equal importance will be given to the completed report and to the original field notes. The department reserves the right to reject notebooks considered below standard.

Upon termination of the junior field work in metallurgy and two weeks in mining and mine plant (not later than June 1), the members of the junior class who are candidates for the degree of metallurgical engineer are urged to spend at least six weeks in practical work in one or more of the smelters or mills, for which they may receive wages. The department will render all possible assistance in locating students in districts of their choice.

Field work will reopen at the School of Mines, Monday, September 22, 1924. No senior will be registered after that date. Registration will cover field work, electric power, and geology.

The final reports covering field work in metallurgy and mining must be prepared at the School of Mines under the direct supervision of the departments concerned. The program covering this work is as follows:

metallurgy, September 22 to 29, inclusive; mining and mine plant, September 30 to October 13, inclusive.

On October 13 all seniors who expect to graduate must register for the remaining subjects. Prior to this date the student must submit a typewritten report on field work fully illustrated with drawings to scale, made from the field sketches, covering metallurgical and milling operations, and details of plant and equipment. Final registration will not be allowed until after reports on field work are accepted. All final reports, therefore, must be presented on or before October 13. These reports will become the property of the school.

METALLOGRAPHY

Courses in metallography are offered to candidates for the degree of metallurgical engineer in the School of Mines, to students in the colleges of Dentistry, Engineering and Architecture, Science, Literature, and the Arts, in the School of Chemistry, and in the Graduate School.

These courses deal with the study of metals and alloys. The lectures treat of, and describe, the apparatus used in connection with this subject, the method of preparing specimens, physical and metallographic principles involved, and the interpretation of the results of microscopic examination and thermal analysis. There is an elaborate file of references and abstracts relating to the whole field of metallography, furnishing up-to-date information on the various phases of the work. A collection of specimens, photomicrographs, and lantern slides covering wrought iron, low carbon structural, rail, and tool steels, brasses, bronzes, and other industrial alloys is available for study and comparison. The laboratory course includes the microscopic and pyrometric study of metals and alloys. The laboratories are equipped with grinding and polishing apparatus, microscopes, photomicrographic apparatus, vacuum electric furnace, carbon resistance furnaces, nichrome and platinum resistance furnaces of various designs, gas furnaces, heat-treating furnace, and pyrometers of the latest and improved type. This department has a special dark room for the preparation of photomicrographs.

DEPARTMENTAL STATEMENTS

EXPLANATION OF COURSE NUMBERS

The suffixes f, w, or s, indicate the quarter in which a course is offered, e.g., fall, winter, or spring quarters, respectively. More than one suffix indicates that a course is offered in each of the corresponding quarters. No suffix indicates that the time of taking a course is to be arranged with the departments concerned.

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

CHEMISTRY

Professor Paul H. M.-P. Brinton, Ph.D.; Associate Professor M. Cannon Sneed, Ph.D.; Assistant Professor Norville C. Pervier, M.S.; Instructors Gladstone B. Heisig, M.S., M.A., Arthur E. Stoppel, B.S., Ch.E.

COURSES

No.	Title	Lec. or rec. hrs.	Lab. hrs.	Required of	Prereq. courses
4f	General Inorganic Chemistry....	3	3	All fr.	H.s. chem.
5w	General Inorganic Chemistry....	3	3	All fr.	4f
14f	General Inorganic Chemistry....	3	6	All fr.	....
15w	General Inorganic Chemistry....	3	6	All fr.	14f
16s	Qualitative Chemical Analysis...	3	6	All fr.	5w or 15w
28w	Quantitative Chemical Analysis..	1	7	All soph.	16s
123f	Adv. Analytical Chemistry.....	1	7	Elective	28w
124w	Adv. Analytical Chemistry.....	1	7	Elective	28w

4f. General Inorganic Chemistry. A study of the general laws of chemistry and of the non-metals, the metals, and their compounds. Mr. Heisig.

5w. General Inorganic Chemistry. A continuation of Course 4f. Mr. Heisig.

14f General Inorganic Chemistry. A study of the general laws of chemistry and of the non-metals, the metals, and their compounds. Mr. Pervier.

15w. General Inorganic Chemistry. A continuation of Course 14f. Mr. Pervier.

16s. Qualitative Analysis. Laboratory work in systematic qualitative analysis with lectures on solutions, ionization, chemical and physical equilibrium, oxidation and reduction, etc. Mr. Heisig.

28w. Quantitative Analysis. A short introductory course covering the general principles and methods of quantitative analysis, both gravimetric and volumetric. Typical problems are assigned and attention given to proper laboratory practice. Mr. Stoppel.

123f. Advanced Analytical Chemistry. Analytical methods for the determination of the common constituents of iron ore, iron, and steel are discussed and compared, with emphasis upon the general principles involved. Typical problems are assigned for laboratory practice. Mr. Brinton.

124w. Advanced Analytical Chemistry. A survey of the methods of analytical chemistry applied to the analysis of minerals and ores. Typical procedures for laboratory practice serve as a basis for discussion of more general methods. Mr. Brinton.

DRAWING AND DESCRIPTIVE GEOMETRY

Professor William H. Kirchner, B.S.; Assistant Professor Howard D. Myers, B.S. in C.E.; Instructor Orrin W. Potter, E.M.

COURSES

No.	Title	Lec. or rec. hrs	Lab. hrs.	Required of	Prereq. courses
11f	Engineering Drawing	..	10	All fr.	....
12w	Engineering Drawing	..	8	All fr.	11f
13s	Engineering Drawing	..	8	All fr.	12w
14f	Descriptive Geometry	3	..	All soph.	13s, Math. 5s
15w	Drafting	..	4	All soph.	14f

11f. Engineering Drawing. Sketching, lettering, representation, elements of drafting, details of machines and structures, interpretation of working drawings. Mr. Kirchner, Mr. Potter.

12w. Engineering Drawing. Continuation of Course 11f. The elements of general drafting, mechanical drawing as a language. Lines, views, dimensions, standards, signs, abbreviations, and explanatory notes. Mr. Kirchner, Mr. Potter.

13s. Engineering Drawing. Continuation of Course 12w. The elements of general drafting. Maps and sketches. Brush and pen conventions. Mr. Kirchner, Mr. Potter.

14f. Descriptive Geometry. Projection; central and special cases, principles and application, representation of lines, planes, and solids, and of their relations; tangencies, intersections, and developments. Recitations, lectures, and solution of problems. Mr. Myers.

15w. Drafting. Graphics, machine drafting, and structural drafting. Instruction in drafting room methods. Mr. Myers.

ELECTRICAL ENGINEERING

Professors George D. Shepardson, M.A., M.E., D.Sc., William T. Ryan, E.E.; Instructor George W. Swenson, M.S. (E.E.).

COURSES

No.	Title	Lec. or rec. hrs	Lab. hrs.	Required of	Prereq. courses
41f	Electrical Power	2	3	Sr.E.M.	Physics 43s

41f. Electric Power. Elementary principles of continuous currents. Continuous current generators and motors. Elementary principles of alternating currents. Alternating current generators, transformers, and motors. Measurement of power. Elementary principles of transmission and distribution. Lectures, recitation, laboratory work. Mr. Ryan.

EXPERIMENTAL ENGINEERING

MATHEMATICS AND MECHANICS

Professor William E. Brooke, B.C.E., M.A.; Instructor Charles Boehnlein, B.S., M.E.

COURSES

No.	Title	Lec. or rec. hrs	Lab. hrs.	Required of	Prereq. courses
144w	Materials-Testing Laboratory.....	..	4	Jr.E.M.	With Mech. 10w

144w. Materials-Testing Laboratory. Investigation of physical properties of metals and engineering materials; wood, cement, ropes, etc., supplemented by lectures and materials of construction and methods of testing. Mining and metallurgical engineers. Mr. Boehnlein.

MECHANICAL ENGINEERING

Professors John J. Flather, Ph.B., M.M.E., Frank B. Rowley, M.E.; Associate Professor Charles F. Shoop, B.S.; Assistant Professor Burton J. Robertson, E.E.

COURSES

No.	Title	Lec. or rec. hrs	Lab. hrs.	Required of	Prereq. courses
84f	Elementary Laboratory (General).	..	4	Jr.E.M.	With Mech. 12f
181w	Advanced Laboratory (General)..	..	4	Sr.E.M.	84f

84f. Elementary General Laboratory. Calibration of thermometers, gages, weirs, nozzle orifices, and meters. Efficiency of machines, friction of belting, friction tests; burning point, chill point, viscosity and specific gravity of oils. Tests of water motor, rams, and pulsometers. Mr. Shoop.

181w. Advanced General Laboratory. Indicator practice, valve-setting, separating and throttling calorimeters, tests of steam engines, gas engines, pumps, air compressors, blowers, turbines, boilers, and power plant. Mr. Rowley, Mr. Shoop, Mr. Robertson.

GEOLOGY AND MINERALOGY

Professors William H. Emmons, Ph.D., Frank F. Grout, Ph.D., Clinton R. Stauffer, Ph.D.; Assistant Professors John W. Gruner, Ph.D., George M. Schwartz, Ph.D.; Instructors Ira S. Allison, B.A., George A. Thiel, M.A.

COURSES

No.	Title	Lec. or rec. hrs.	Lab. hrs.	Required of	Prereq. courses
1f	General Geology	3	1	All fr.	....
2s	Historical Geology	3	4	All soph.	1f
19s	Elem. of Paleontology	3	..	Elective	....
23w	Elem. of Mineralogy	2	2	All fr.	1f
24s	Elem. of Mineralogy	4	4	All fr.	23w
25f	Elem. of Mineralogy	4	4	All soph.	24s
61f	Blowpipe Analysis	2	4	Elective	25f
65f	Crystallography	2	4	Elective	25f
73f	Econ. Geology	3	..	All jr.	2s, 105f
85s	Summer Field Work	..	2 wks.	All soph.	2s
91f	Index Fossils of North America	3	..	Sr.E.M.(Geol.)	2s
92w	Index Fossils of North America	3	..	Sr.E.M.(Geol.)	2s
93s	Index Fossils of North America	3	..	Sr.E.M.(Geol.)	2s
101f	Sedimentation	3	..	Elective	24s
105f	Rock Study	..	4	All soph.	24s
106w	Petrography	..	4	All soph.	105f
111f	Ore Deposits	3	..	All sr.	73f, 106w
112w	Geology of Petroleum	3	..	All sr.	111f
113s	Problems in Ore Deposits	..	4	All sr.	112w
115w	Applied Geology	3	..	Sr.E.M.	73f, 111f
124w	Struct. & Metamorph. Geol.	3	..	Jr.E.M.(Geol.)	73f, 105f
125s	Struct. & Metamorph. Geol.	6	..	Jr.E.M.(Geol.)	73f, 105f
127	Geol. of Lake Superior Region	3	..	Elective	125s
131f	Advanced Petrology	3	3	Jr.E.M.(Geol.)	2s, 106w
132w	Advanced Petrology	3	3	Jr.E.M.(Geol.)	2s, 106w
133s	Advanced Petrology	3	3	Jr.E.M.(Geol.)	2s, 106w
137w	Testing Econ. Minerals	1	4	Sr.E.M.(Geol.)	73f
140w	Applied Petrography	1	4	Sr.E.M.(Geol.)	111f, 113s
141s	Applied Petrography	1	4	Sr.E.M.(Geol.)	111f, 113s
144w	Interpretation of Geologic Maps	..	6	Jr.E.M.(Geol.)	73f
145s	Interpretation of Geologic Maps	..	12	Jr.E.M.(Geol.)	73f
150s	Field Geology	..	6 wks.	Jr.E.M.(Geol.)	125s
151f	Advanced General Geology	3	..	Jr.E.M.(Geol.)	73f
152w	Advanced General Geology	3	..	Jr.E.M.(Geol.)	73f
153s	Advanced General Geology	3	..	Jr.E.M.(Geol.)	73f
166w	Mineralography	..	6	Sr.E.M.(Geol.)	111f
167s	Mineralography	..	6	Sr.E.M.(Geol.)	111f
246	Pre-Cambrian Geology	3	3	Elective	125s

1f. General Geology. A synoptical treatment of materials of the earth and of geologic processes. Physiographic, dynamic, and structural geology. Mr. Thiel.

2s. Historical Geology. The sequence of events in geologic history, with special reference to North America. Mr. Thiel.

19s. Elements of Paleontology. An introduction to the study of fossil organisms. Lectures supplemented by field excursions. Mr. Stauffer.

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

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

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

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

85s. Field Work. About two weeks in June are spent in geologic mapping of selected areas in the iron district of Minnesota. Involves preparation of geologic maps and written reports. Mr. Gruner, Mr. Thiel.

91f-92w-93s. Index Fossils of North America. A study of fossil forms with special reference to those of geologic importance; faunas and their correlation. Mr. Stauffer.

101f. Sedimentation. Origin and structure of sedimentary deposits; the interpretation of these in relation to paleogeography. Lectures and assigned readings. Mr. Allison.

105f. Rock Study. The occurrence and genesis of igneous, sedimentary, and metamorphic rocks; their mineral and chemical composition; their structure, texture, and alteration. The classification and methods of identification and description of rocks. Mr. Grout, Mr. Lovering.

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. Mr. Grout, Mr. Thiel.

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. Mr. Emmons.

112w. Geology of Petroleum. The nature, origin, and accumulation of petroleum; discussion of the various oil fields of the world. Mr. Emmons.

113s. Problems in Ore Deposits. Field excursions, map work, lectures on field and laboratory methods. Mr. Emmons.

115w. Applied Geology. The application of methods to laboratory, library, and field problems in geology. Mr. Thiel.

124w-125s. Structural and Metamorphic Geology. A study of the principles and application of structural geology. The conditions, processes, and results of metamorphism. Mr. Schwartz.

127. 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. Mr. Thiel.

131f-132w-133s. Advanced Petrology. Advanced optical methods. Criteria for rapid identification of minerals and rocks. The uses of schedules and tables. Standard rock types. Regional and genetic studies. Petrographic reports. Mr. Grout

137w. Testing Economic Minerals. Methods of determining quality of mineral deposits, described and illustrated by laboratory tests of coal, clay, oil, building stone, and metallic ores. Mr. Grout.

140w-141s. Applied Petrography. Determination of ores and gangue minerals. Microscopic studies of paragenesis of ores and other mineral associations. Practical problem in mining and geology settled by microscopic and optical examinations. Mr. Grout, Mr. Gruner.

144w-145s. Interpretation of Geologic Maps. Study and problems in construction and interpretation of geologic maps; recognition of structural and stratigraphic relations. Geology 124 should precede or accompany this course. Mr. Allison.

150s. Field Geology. Detailed, systematic work conforming with standards of official surveys. Preparation of geologic maps, structure sections, reports; paragenesis of ores and their relations to geologic structures. Field for 1924, Black Hills, South Dakota. Reports to be written week before college opens in fall. Mr. Emmons, Mr. Schwartz.

151f-152w-153s. Advanced General Geology. Geologic processes and their results; development of the North American continent. Mr. Stauffer.

166w-167s. Mineralography. Methods of studying opaque minerals and the application of the methods to problems in ore genesis and history. Mr. Schwartz.

246. Pre-Cambrain Geology. The problems of pre-Cambrain correlation and structure; the pre-Cambrain stratigraphy of North America. (Given in alternate years.)

GERMAN

Professor Carl Schlenker, B.A.; Assistant Professors James Davies, Ph.D., George Lussky, Ph.D.

COURSES

No.	Title	Rec. hrs.	Required of	Prereq. courses
24f-25w-26s*	Beginning	4	Jr.E.M.(Geol.)	....
27f	Narrative Prose	3	Elective	26 or 2 yrs. prep.
28w-29s*	Advanced Chemical	3	Elective	27

24f-25w-26s. Beginning for Miners. Pronunciation, grammar, conversation; selected reading in easy prose Mr. Davies.

27f. Narrative Prose for Chemists. Reading, grammar review. Mr. Lussky.

28w-29s. Chemical German. Selections from more difficult works on chemistry. Mr. Lussky.

METALLURGY

Professors William R. Appleby, M.A., Peter Christianson, B.S., E.M., Oscar E. Harder, Ph.D., Levi B. Pease, M.S.; Instructors Ralph L. Dowdell, Met.E., M.S., Erwin H. Kersten, E.M., Elwyn L. Smith, B.S., Ludwig J. Weber, B.S., Ch.E.

* All quarters must be completed before credit is given in any one quarter.

COURSES

No.	Title	Lec. hrs.	Lab. hrs.	Required of	Prereq. courses
1w	Assaying	4	..	All fr.	Chem.14f,Geol.1f
2w	Assay Lab.	..	8	All fr.	Chem.14f,Geol.1f
3f	General Metallurgy	3	..	All soph.	1w,2w,Chem.16s
4w	Metallurgy of Pig Iron	3	..	All soph.	3f
5s	Met. Wrought Iron and Steel	3	..	All soph.	4w
106f	Met. of Base Metals	4	..	Jr.E.M.&Met.E.	3f
107w	Met. of Base Metals	4	..	Jr.E.M.&Met.E.	106f
108s	Met. of Precious Metals	4	..	Jr.E.M.&Met.E.	107w
109f	Met. of Base Metals	3	..	M.E.&Chem. elective	Chem.8s or equiv.
109w	Met. of Base Metals	3	..	E.E.&Chem. elective	Chem.8s or equiv.
110f	Ore-Dressing	3	..	All jr.	Phys.43s,Geol.25f
111w	Ore-Dressing	3	..	All jr.	110f
112f	Ore-Dressing Lab.	..	4	Jr.Met.E.	Phys.43s,Geol.25f
113w	Ore-Dressing Lab.	..	4	Jr.Met.E.	110f,112f
114s	Ore-Dressing Lab.	..	6	Jr.Met.E.	111w,113w
115s	Ore-Dressing Lab.	..	6	Jr.E.M.&E.M. (Geol.)	111w
116s	Field Work in Met.	..	†	Jr.Met.E.	Same as 124f
117w	Advanced Metallurgy	4	6	Sr.Met.E.	108s
118s	Advanced Metallurgy	4	6	Sr.Met.E.	117w
119f	Ore-Testing	2	..	Sr.E.M.&Met.E.	108s
120f	Ore-Testing Lab.	..	8	Sr.E.M.&Met.E.	108s
121w	Spec. Prob. in Ore-Test.	..	4	Sr.E.M.&Met.E.	119f
122s	Spec. Prob. in Ore-Test.	..	8	Sr.E.M.&Met.E.	121w
123f	Electrometallurgy	3	..	Sr.Met.E.	108s
124f	Thesis in Metallurgy	..	8	Sr.Met.E.	Satisfactory completion of jr. year
125w	Thesis in Metallurgy	..	18	Sr.Met.E.	124f
126s	Thesis and Specifications	..	18	Sr.Met.E.	125w
150f	Mphy. for Elec. Eng.	2	3	Elective	....
151w	Adv. Mphy. for Elec. Eng.	2	3	Elective	150f
153f	Mphy., Long Course	3	4	Jr.Met.E.	Chem.28w,Phys.43s
154w	Mphy., Long Course	3	4	Jr.Met.E.	153f
155s	Mphy., Long Course	3	4	Jr.Met.E.	154w
156f	Mphy. for Mech. Eng.	2	3	Elective	....
157w	Adv. Mphy. for Mech. Eng.	2	3	Elective	156f
159s	Dental Metallography	1	2	Elective	Chem.21-22
160f	Mphy. for Chemists	2	3	Elective	Chem.20
161w	Adv. Mphy. for Chemists	2	3	Elective	160f
162s	Adv. Mphy. for Chemists	2	3	Elective	160f
163f	Adv. Metallography	To be ar.		Elective	151, 155, 157, or equiv.
164w	Adv. Metallography	To be ar.		Elective	....
165s	Adv. Metallography	To be ar.		Elective	....
201f	Adv. Mphy. for Gr. Students	To be ar.		Elective	....
202w	Adv. Mphy. for Gr. Students	To be ar.		Elective	....
203s	Adv. Mphy. for Gr. Students	To be ar.		Elective	....

1w. Assaying. The determination of values of ores, metallurgical products by the fire method. Lectures and recitations. Mr. Appleby, Mr. Kersten.

† Ten days.

2w. Assay Laboratory. Practical determination of gold, silver, lead, and tin by the fire method. Mr. Christianson, Mr. Pease, Mr. Kersten, Mr. Smith.

3f. General Metallurgy. Combustion, fuels, refractory materials, furnaces and fluxes. Lectures and recitations. Mr. Christianson.

4w. Metallurgy of Pig Iron. General principles of iron blast furnace practice. Construction of furnace, handling of stock, and products, principles of regulation. Lectures and recitations. Mr. Christianson.

5s. Metallurgy of Wrought Iron and Steel. General principles involved in the production of wrought iron and steel. Lectures and recitations. Mr. Christianson.

106f. Metallurgy of Base Metals. Lead, copper, zinc, and mercury. Consideration of smelting methods and principles involved in refining. Lectures and recitations. Mr. Pease.

107w Metallurgy of Base Metals. Continuation of Course 106f. Mr. Pease.

108s. Metallurgy of the Precious Metals. Principles involved and methods used in the extraction of gold, silver, and other precious metals. Lectures and recitations. Mr. Pease.

109f. Metallurgy of Base Metals. Short course for mechanical engineers. Special consideration is given to the mechanical appliances. Mr. Christianson, Mr. Pease.

109w. Metallurgy of Base Metals. Short course for electrical engineers. Special consideration is given to electrical appliances. Lectures and recitations. Mr. Christianson, Mr. Pease.

110f. Ore-Dressing. Crushing, sizing, classification, and concentration of ores. Lectures and recitations. Mr. Smith.

111w. Ore-Dressing. Continuation of Course 110f. Mr. Smith.

112f. Ore-Dressing Laboratory. Practical examination of ores and the use of ore-dressing machinery. Mr. Smith.

113w. Ore-Dressing Laboratory. Practical problems in ore-dressing. Mr. Smith.

114s. Ore-Dressing Laboratory. Continuation of Course 113w. Mr. Smith.

115s. Ore-Dressing Laboratory. Short course in the laboratory use of ore-dressing machinery. Mr. Smith.

116s. Field Work in Metallurgy. Study of metallurgical operations at smelters and mills. Detail reports are required covering plants visited. Mr. Christianson, Mr. Pease.

117w. Advanced Metallurgy. Metallurgical calculations to determine heat balance and heat distribution. Lectures and laboratory work. Mr. Christianson.

118s. Advanced Metallurgy. Design of furnaces, conferences, and laboratory work. Mr. Christianson.

119f. Ore-Testing. General principles involved in determining the best method of extraction, including amalgamation, concentration, cyanidation, roasting, etc. Lectures and recitations. Mr. Christianson.

120f. Ore-Testing Laboratory. Practical determination of extraction and distribution of values in mill and metallurgical products. Methods of calculation. Mr. Christianson and assistants.

121w. Special Problems in Ore-Testing. Continuation of Course 120f. Practical determinations for regulating metallurgical operations. Mr. Pease.

122s. Special Problems in Ore-Testing. Continuation of Course 121w. Mr. Pease.

123f. Electrometallurgy. Application of electricity to production of heat for smelting ores and refining metals. Costs of fuel and electricity for heating, relative efficiencies of electric and fuel furnaces. Construction of high temperature furnaces and commercial plants. Mr. Christianson.

124f. Thesis in Metallurgy. Conferences to select suitable problem together with preliminary laboratory work on problem selected. Mr. Christianson, Mr. Harder, Mr. Pease.

125w. Thesis in Metallurgy. Continuation of Course 124f. Mr. Christianson, Mr. Harder, Mr. Pease.

126s. Thesis and Specifications. Completion of thesis including specifications covering installation of a plant. Mr. Christianson, Mr. Harder, Mr. Pease.

150f. Metallography for Electrical Engineers. Principles of metallography, including pyrometry, thermal analysis, constitution diagrams, microscopic and photomicrographic technique; study of typical alloys with special reference to electrical resistance, conductivity, magnets, etc. Laboratory work and demonstrations. Mr. Harder, Mr. Dowdell, Mr. Weber.

151w. Advanced Metallography for Electrical Engineers. Continuation of 150f. Study of iron and steel, alloy steels, metals and alloys used in electrical engineering practice. Special problems for outside reading and for research. Laboratory work. Mr. Harder, Mr. Dowdell, Mr. Weber.

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 metallurgy. Laboratory work. Mr. Harder, Mr. Dowdell, Mr. Weber.

156f. Metallography for Mechanical Engineers. Principles of metallography, including pyrometry, thermal analysis, constitution diagrams, microscopic and photomicrographic technique; metallography and heat treatment of iron and steel. Laboratory work. Mr. Harder, Mr. Dowdell, Mr. Weber.

157w. Advanced Metallography for Mechanical Engineers. Continuation of 156f. Metallography of alloy steels, tool steels, high speed tool steels, and important non-ferrous alloys; metallography applied to engineering practice and specifications. Outside reading and special reports. Laboratory work. Mr. Harder, Mr. Dowdell, Mr. Weber.

159s. Dental Metallography. Study of the dental alloys from the standpoint of metallography. Lectures, recitations, and demonstrations, taking up the most important metals and alloys, with special reference to those used in dentistry. Mr. Harder, Mr. Dowdell, Mr. Weber.

160f. Metallography for Chemical Students. Metallography, including constitution diagrams, preparation and standardization of thermocouples, preparation and thermal analysis of alloys, their microscopic examination and making photomicrographs; typical alloy systems such as iron-carbon (steel and cast iron); some non-ferrous alloys. Laboratory work. Mr. Harder, Mr. Dowdell.

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. Laboratory work. Mr. Harder, Mr. Dowdell.

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. Laboratory work. Mr. Harder, Mr. Dowdell.

163f-164w-165s. Advanced Metallography. Technical and scientific research. The study of steel rails, automobile and locomotive parts, tool steels, etc. Special problems in metallography with outside reading. Seminar work on the recent advances in metallography. Mr. Harder, Mr. Dowdell.

201f-202w 203s. Advanced Metallography for Graduate Students. Intended primarily for research work. Mr. Harder.

MILITARY SCIENCE AND TACTICS

Professor Bernard Lentz, Major, Infantry; Assistant Professors Henry H. Rutherford, Lieutenant Colonel, Medical Corps, Frederick R. Wunderlich, Major, Dental Corps, Roger Hilsman, Captain, Infantry, Leo J. Farrell, Captain, Infantry, Andrew C. Tychsen, Captain, Infantry, Newton W. Speece, Captain, Infantry, Myron J. Conway, First Lieutenant, Infantry; Instructors Joseph Havlicek, Master Sergeant, U.S.A., Retired, John McWilliams, First Sergeant, U.S.A., Retired, Alfred Brandt, Technical Sergeant, Harry E. Strider, Technical Sergeant, Aubrey R. Dunkum, Technical Sergeant, Ernest R. Mylk, Private, First Class.

Students who have completed the Basic Course, R.O.T.C., may be selected for advanced work by the professor of military science and tactics. Those who pursue the Advanced Course are required to sign an agreement with the government to continue the two years' course to completion. This includes attendance at a training camp, held normally during the summer following the first year's advanced work. The camp is conducted free of cost to the student, and in addition, while actually in camp, the student receives the pay prescribed for the seventh grade in the army. Students pursuing the Advanced Course are also furnished a special uniform and

receive a fixed allowance per day. The total government compensation for the two years' advanced work amounts to something over $200. Students who satisfactorily complete the Advanced Course will be commissioned in the Officers' Reserve Corps of the United States Army.

COURSES

No.	Title	Rec. hrs.	Required of	Prereq. courses
1	First Year Basic Course R.O.T.C.	3	All fr.*	None
2a	Second Year Basic Course R.O.T.C. Infantry	3	Soph.†	1
2b	Second Year Basic Course R.O.T.C. Coast Artillery	3	Soph.	1
3a	First Year Advanced Course R.O.T.C. Infantry	5	Elective, jr.	1, 2a
3b	First Year Advanced Course R.O.T.C. Coast Artillery	5	Elective, jr.	1. 2b
4a	Second Year Advanced Course R.O.T.C. Infantry	5	Elective, sr.	3a
4b	Second Year Advanced Course R.O.T.C. Coast Artillery	5	Elective, sr.	3b

MINE PLANT AND MECHANICS

Professor Elting H. Comstock, M.S.; Assistant Professors Anders J. Carlson, C.E., James C. Sanderson, Ph.D.

COURSES

No.	Title	Lec. or rec. hrs	Lab. hrs.	Required of	Prereq. courses
1f	Algebra and Solid Geometry	6	..	B fr.	..
2f	Algebra	6	..	A fr.	..
3s	Algebra	4	..	B fr.	1f
4w	Trigonometry	6	..	All fr.	..
5s	Analytical Geometry	6	..	All fr.	4w
6f	Calculus	4	..	All. soph.	5s
7w	Calculus	3	..	All soph.	6f
8s	Calculus	6	..	All soph.	7w
109f	Mechanics	5	..	Jr.E.M.&Met.E.	8s
110w	Mechanics of Materials	5	..	Jr.E.M.&Met.E.	109f
111s	Mechanics	5	..	Jr.E.M.&Met.E.	109f
112f	Mine Plant	6	..	Jr.E.M.&Met.E.	8s
113w	Mine Plant	6	..	Jr.E.M.	112f
114s	Mine Plant	6	..	Jr.E.M.	113w
115w	Metallurgical Plant	3	..	Jr.Met.E.	112f
116s	Metallurgical Plant	3	..	Jr.Met.E.	115w
117f	Hydraulics and Water Power	5	2	Sr.E.M.&Met.E.	111s
118f	Engineering Construction	..	8	Sr.E.M.	111s
119w	Mine Plant Design	..	9	Sr.E.M.	118f
120s	Mine Plant Design	..	12	Sr.E.M.	119w

* Must be legally eligible for enrolment in R.O.T.C.

† Two hours' drill credit allowed on account of work required in the classroom and in the field.

1f. Albegra and Solid Geometry. Equations, involution and evolution, theory of exponents, surds, quadratic equation, theory of logarithms, determinants. Demonstrations of most important theorems of solid geometry. Volumes, approximate volumes, prismoidal formula, etc. Mr. Sanderson.

2f. Algebra. Functions, functional notation, factor and remainder theorems, factors and values of functions, development of functions, progressions, series, theory of equations, permutations and combinations, theory of logarithms, determinants. Mr. Comstock, Mr. Sanderson.

3s. Algebra. Continuation of Course 1. Functions, functional notation, factor and remainder theorems, factors and values of functions, development of functions, progressions, series, theory of equations, permutations and combinations. Mr. Sanderson.

4w. Trigonometry. Trigonometric ratios, right triangles, definitions of trigonometric functions, analytic relations, trigonometric equations, etc., solution of spherical triangles. Mr. Comstock, Mr. Sanderson.

5s. Analytical Geometry. Systems of co-ordinates, loci, equations, properties of straight lines, transformation of co-ordinates, equations and properties of conics, equations of second degree, higher plane curves, space co-ordinates, point, plane, quadric surfaces, etc., empirical equations, graphic algebra. Mr. Sanderson.

6f-7w-8s. Calculus. Differentiation, elementary forms, geometric applications, rates, successive differentiation, maxima and minima, expansion of functions, intermediate forms, partial derivatives, change of variable, elementary integration, undetermined coefficients, rationalization, formulas of reduction, some differential equations of mechanics. Mr. Sanderson.

109f-111s. Mechanics. Composition and resolution of forces, laws of equilibrium, practical applications, rectilinear motion, circular motion, curvilinear motion in general, dynamics of rigid bodies, impact, work, and energy. Mr. Carlson.

110w. Mechanics of Materials. Mechanical and elastic properties of materials of construction; beams, columns, shafts, hollow cylinders and spheres, rollers, plates; theory of internal stress; reinforced concrete. Mr. Carlson.

112f-113w-114s. Mine Plant. Discussion of the machinery and appurtenances employed in the equipment of mines. Air compression, rock drills, mechanical features of hoisting, pumping, ventilation, underground transportation. Electricity applied to mining. Mr. Comstock.

115w-116s. Metallurgical Plant. Power, air, and water supply for metallurgical plants. Mr. Comstock.

117f. Hydraulics and Water Power. Laws of the equilibrium, pressure and flow of liquids, hydrographs and mass diagrams, estimate of power to be developed at a power site, design of dams and hydroelectric plants, theory of water wheels and turbines, speed control, power house equipment, transmission. Mr. Carlson.

118f. Engineering Construction. Theory of structures, loading, analytic and graphic resolution of stresses in framed structures, stresses in mining structures, design of mining structures. Mr. Carlson, Mr. Allard.

119w-120s. Mine Plant Design. A study of power possibilities, costs, etc., and designs of a power plant, surface equipment, and structures for a mine. Mr. Comstock, Mr. Allard.

MINING

Associate Professor Walter H. Parker, E.M.; Instructor Raymond W. Allard, E.M.

COURSES

No.	Title		Lec. or rec. hrs	Lab. hrs.	Required of	Prereq. courses
21s	Introductory Mining....	4	..		All soph.	Registration for soph. field trip
130f	First Aid	..	*		All jrs.	21s
131f	Exploration	5	..		Jr.E.M.&E.M.(Geol.)	21s
132w	Tunneling	5	..		Jr.E.M.&E.M.(Geol.)	131f
133s	Mining Methods	5	..		Jr.E.M.&E.M.(Geol.)	132w
134s	Practical Mining	..	2 wks.		Jr.E.M.	Satisfactory completion of junior yr. and 133s
140f	Mine Rescue	..	*		All sr.	....
141f	Mining Methods	5	..		Sr.E.M.&E.M.(Geol.)	133s
142w	Mine Management	5	..		Sr.E.M.&E.M.(Geol.)	141f
143s	Mine Administration ...	5	..		Sr.E.M.	142w
144f	Thesis	..	2		Sr.E.M.	133s, 134s
145w	Thesis	..	12		Sr.E.M.	144f
146s	Thesis	..	12		Sr.E.M.	145w

21s. Introductory Mining. Introductory mining course, preparatory to sophomore field trip. Mr. Allard.

130f. First Aid. Course in first aid to the injured, given by the staff of the United States Bureau of Mines car.

131f. Exploration. Occurrence of ore bodies, prospecting, exploration, boring, explosives, drilling, and blasting. Mr. Parker.

132w. Tunneling. Tunneling, drifting, shaft-sinking, raising, and mining methods. Mr. Parker.

133s. Mining Methods. Underground mining methods and support of underground excavations. Mr. Parker.

134s. Practical Mining. Study of mining operations. Mine plant and mining work in one or more mining camps. Mr. Parker, Mr. Comstock.

140f. Mine Rescue. Course in mine rescue, given by the staff of the United States Bureau of Mines car.

141f. Mining Methods. Coal mining, open-pit work, quarrying, placer mining, hydraulic mining, and dredging. Mr. Parker.

* 15 hours a week.

142w. Mine Management. Mine drainage, mine ventilation, mine transportation, mine sanitation, mine hygiene, cost accounting, and mine examination. Mr. Parker.

143s. Mine Administration. Course in mining law, mine management, and economics of mining. Mr. Parker.

144f. Thesis. Preparatory work on the mining thesis. Mr. Parker.

145w. Thesis. Preparation of an original thesis on some mining project, covering the exploration and development of a mining property. Mr. Parker.

146s. Thesis. Completion of thesis project. Mr. Parker.

MINING ENGINEERING

Professor Edwin M. Lambert, M.E.

COURSES

No.	Title	Lec. or rec. hrs.	Lab. hrs.	Required of	Prereq. courses
1f	Mine-Surveying	3	..	All soph.	Math. 4w
2w	Mine-Surveying	3	..	All soph.	1f
3s	Mine-Surveying	3	4	All soph.	2w
4s	Field Work	..	7 wks	All soph.	3s
105w	Mine-Mapping	..	6	All jr.	4s
106s	Mine-Mapping	..	6	Jr.E.M.&Met.E.	105w

1f-2w-3s. Mine-Surveying. Theory and problems in mine-surveying, including land subdivision, stadia measurements, triangulation, railroad curves and cross sections, computation of areas by co-ordinates; differential leveling, topographic map-reading, solar observations, shaft plumbing, underground traversing and leveling. Mr. Lambert.

4s. Field Work. Practice in general plane surveying during the month of May. Practice in underground surveying during the first three weeks of June. This work is given on the iron ranges of Minnesota. Mr. Lambert, Mr. Carlson, Mr. Allard.

105w-106s. Mine-Mapping. Mine-mapping in accordance with prevalent practice in mining districts. Ore and stripping estimates and mine maps based on Mesabi Range practice. Mr. Allard.

PHYSICS

Professors Henry A. Erickson, Ph.D., Anthony Zeleny, Ph.D.; Associate Professor Louallen F. Miller, Ph.D.

COURSES

No.	Title	Lec. or rec. hrs.	Lab. hrs.	Required of	Prereq. courses
3f	Elements of Mechanics and Sound	3	..	All soph.	Math. 5s
4f	Mechanics Laboratory	..	2	All soph.	With 3f
23w	Heat	3	..	All soph.	3f
24w	Heat Laboratory	..	2	All soph.	4f and with 23w
43s	Magnetism and Electricity	3	..	All soph.	3f
44s	Magnetism and Electricity Lab.	..	2	All soph.	4f and with 43s

3f. Elements of Mechanics and Sound. Mechanics of solids, fluids, wave motion, and sound. A study of the simpler fundamental principles. First part of the general course, 3, 23, 33, 43. Course 4 should be taken in conjunction with this course. Mr. Erikson, Mr. Miller.

4f. Elements of Mechanics and Sound Laboratory. Measurements in the mechanics of solids, fluids, wave motion, and sound; the laboratory part supplementing Course 3. One two-hour session in the laboratory a week. Mr. Erikson, Mr. Miller.

23w. Heat. A study of the principles underlying heat phenomena. Course 24 should be taken in conjunction with this course. Mr. Miller.

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

43s. Magnetism and Electricity. A study of the principles underlying magnetic and electric phenomena. Course 44 should be taken in conjunction with this course. Mr. Zeleny, Mr. Miller.

44s. Electrical Laboratory. The laboratory part supplementing Course 43. One two-hour session in the laboratory a week. Mr. Zeleny, Mr. Miller.

ROMANCE LANGUAGES

Professors Everett W. Olmsted, Ph.D., Litt.D., Head; Irville C. LeCompte, Ph.D., Colbert Searles, Ph.D.; Associate Professors Francis B. Barton, Docteur de l'Université de Paris, Ruth S. Phelps, M.A.; Assistant Professors Herbert E. Clefton, M.A., Jules T. Frelin, B.A., Joseph E. Gillet, Ph.D., Eugene F. Parker, Ph.D., Gustav van Roosbroeck, Ph.D.

COURSES

No.	Title	Rec. hrs.	Required of	Prereq. courses
1-2*	Beginning French	5	Jr.E.M.(Geol.)	....
3-4	Intermediate French	5	Elective	1-2
21-22-23*	Survey French Lit.	3	Elective	3-4
1-2*	Beginning Spanish	5	Jr.E.M.(Geol.)	....
3-4	Intermediate Spanish	5	Elective	1-2
65-66-67*	Spanish Literature	3	Elective	3-4

Note.—Beginning and intermediate courses are offered every quarter.

FRENCH

1-2. Beginning French.

3-4. Intermediate French.

21-22-23. General Survey of French Literature. Outline of French literature from 1600 to the present. Reading of representative texts. Mr. LeCompte, Mr. Searles, Mr. Barton.

SPANISH

1-2. Beginning Spanish.

3-4. Intermediate Spanish.

65-66-67. Spanish Literature. Outline of Spanish literature from 1500 to the present. Reading of representative texts. Mr. Gillet.

* All quarters must be complete before credit is given in any one quarter.

The Bulletin *of the* University *of* Minnesota

The College of Pharmacy

Announcement for the Year 1924-1925

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1924

JULY

Su	Mo	Tu	W	Th	Fr	Sa
..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..
..	..	..	..	..	..	..

AUGUST

..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

SEPTEMBER

..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	..	..	..	..
..	..	..	..	..	..	..

OCTOBER

..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..
..	..	..	..	..	..	..

NOVEMBER

..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	..	..	..	..	..	..

DECEMBER

..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..
..	..	..	..	..	..	..

1925

JANUARY

Su	Mo	Tu	W	Th	Fr	Sa
..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
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FEBRUARY

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
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MARCH

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	..	..	..	..
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APRIL

..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	..	..
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MAY

..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

JUNE

..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	..	..	..	..
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JULY

Su	Mo	Tu	W	Th	Fr	Sa
..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..
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AUGUST

..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	..	..	..	..	..

SEPTEMBER

..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	..	..	..
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OCTOBER

..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
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NOVEMBER

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	..	..	..	..	..
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DECEMBER

		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..
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UNIVERSITY CALENDAR
1924-25

1924			
September	18	Thursday	Payment of fees closes, except for new students
September	18-20		Entrance examinations
September	22-26		Examinations for removal of conditions and entrance examinations
			Physical examinations for all new students
			Registration period,[2] colleges of Science, Literature, and the Arts, Agriculture, Forestry, and Home Economics, and Education
September	25-26		Registration days[2] for all colleges not included above
September	26	Friday	Payment of fees for new students closes
September	29	Monday	Fall quarter begins, 8:30[1] a.m.
October	23	Thursday	Senate meeting, 4:30 p.m.
November	1	Saturday	Home Coming Day; classes dismissed the third and fourth hours
November	4	Tuesday	Election Day; a holiday
November	11	Tuesday	Armistice Day; a holiday
November	27	Thursday	Thanksgiving Day; a holiday
December	4	Thursday	State Day Convocation
December	17-20		Final examination period
December	18	Thursday	Commencement Convocation
December	18	Thursday	Senate meeting, 4:30 p.m.
December	20	Saturday	Fall quarter ends, Christmas vacation begins, 5:20 p.m.
1925			
January	5	Monday	Christmas vacation ends, winter quarter begins, 8:30[1] a.m.
February	12	Thursday	Lincoln's Birthday; a holiday
February	19	Thursday	Charter Day Convocation
February	19	Thursday	Senate meeting, 4:30 p.m.
March	16-19		Final examination period
March	21	Saturday	Winter quarter ends, spring vacation begins, 5:20 p.m.

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

[2] Registration subsequent to the date specified will necessitate the approval of the college concerned. See also penalty fees for late registration, page 6.

March	30	Monday	Spring vacation ends, spring quarter begins, 8:30[1] a.m.
April	10	Friday	Good Friday; a holiday
May	14	Thursday	Cap and Gown Day Convocation
May	21	Thursday	Senate meeting, 4:30 p.m.
May	30	Saturday	Memorial Day; a holiday
June	10-13		Final examination period
June	13	Saturday	Spring quarter closes, 5:20 p.m.
June	14	Sunday	Baccalaureate service
June	15	Monday	Fifty-third annual commencement
June	19-20		Summer Session first term begins, registration and payment of fees
June	22	Monday	Classes begin, 8:00 a.m.
July	4	Saturday	Independence Day; a holiday
August	1	Saturday	First term Summer Session closes Registration and payment of fees for second term closes
August	3	Monday	Second term classes begin
September	5	Saturday	Second term Summer Session closes

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 and peculiar circumstances shall justify the appropriate committee of the college concerned permitting registration at a later date.

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

ADMINISTRATIVE OFFICERS

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

William Watts Folwell, LL.D., President Emeritus

Frederick J. Wulling, Phm.G., Phm.D., LL.M., Dean of the College of Pharmacy, Professor of Pharmacology, and Director of the University Medicinal Plant Gardens

THE COLLEGE OF PHARMACY

GENERAL INFORMATION

The thirty-second annual course of the College of Pharmacy begins and ends as announced in the calendar on preceding pages.

ENTRANCE REQUIREMENTS

ADMISSION BY CERTIFICATE

Diplomas, certificates, or other certificates of the completion of an accredited four-year high school course, or of its educational equivalent, 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. Enough additional work to make in all 15 units, of which not more than 4 may be in Group F.

Prospective students in pharmacy are urged to secure high school preparation in physics, chemistry, botany, and physiology.

Group F consists of high school, vocational, and miscellaneous subjects. Not more than 4 units and studies in this group may be counted toward admission. The subjects are no longer designated by the University. The applicant is free to present in this division such studies as are not listed in other groups, but which are certified by the superintendent or principal as being of acceptable nature and counted toward graduation.

Beginning with the fall of 1924 elementary high school physics will be an entrance requirement.

The freshman class is limited to sixty students.

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 should request their high school principals or superintendents to send a complete transcript 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. (See calendar for registration dates.)

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 your home address as it appears on the records of this office. Those who fail to receive this before September 7 should write to the registrar and ask for it. (See calendar for dates of registration and payment of fees.)

FEES AND OTHER EXPENSES

The quarterly tuition fee of $35 for resident students and $45 for non-resident students includes all laboratory fees, except chemistry, and is payable at 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
Deposit (first quarter only)*	10.00
Military deposit (required of all students taking military drill)	10.00
Health fee (per quarter)	2.00
Minnesota Union or Shevlin Hall (per quarter)	1.00
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

PENALTY FEES:

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

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 examination 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 to be spent in this college; and must have passed examinations in the subjects required for graduation.

Drugstore experience is not a requirement for graduation.

* The following charges are made against the general deposit for each student in addition to such charges as may be incurred for lockers, library penalties, laboratory breakage, etc.:

Minnesota Daily	$0.50 a quarter
Post-office box	0.20 a quarter
University Address Book	0.35

ADVANCED STANDING

Applicants for advanced standing must pass the entrance examinations or present the usual equivalents. They must furnish satisfactory evidence of time spent and subjects covered in previous professional studies, and must pass the examinations of all departments in which they 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

Academically qualified persons desiring to do less than the work of the regular course may be admitted as unclassed or special students provided there is laboratory room for them. They will not be rated in their work or examined unless they make special request therefor. Work completed satisfactorily will be credited should the students subsequently enter the regular course, provided they meet the full entrance requirements. 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 quarter 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 by certain of the colleges during the first thirty days of the winter and spring quarters. Announcement of these examinations will appear in the general information bulletin and the *Minnesota Daily*. 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 temporary or permanent suspension. Students are strongly advised to be present at the beginning of the school year. Any of the facilities afforded by the University are open to the student of this college, subject to the approval of the dean. Opportunity is afforded to do advanced work in all branches. Textbooks may be obtained after coming to the University.

Students find their time fully occupied.

MEDICAL 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-six 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 three- or four-year course need only one additional year of drugstore experience before they become eligible for examination for full registration.

SCHOLARSHIPS

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 rating in both the first and second years of the regular course in this college up to ten days before Cap and Gown Day. If such student should discontinue attendance at the college, the said sum is to be awarded to the student next highest in standing who meets the other requirements.

THE FAIRCHILD SCHOLARSHIP

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

LEHN AND FINK GOLD MEDAL

Beginning with the year 1923-24. Messrs. Lehn and Fink of New York City will award annually a gold medal to that student in the College of Pharmacy who graduates with the highest general average rating from the four-year course leading to the degree bachelor of science in pharmacy.

THE JACOBSON PRIZE

Beginning with the year 1924-25, David L. Jacobson, '99, will offer a fifty dollar 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, Mr. John Dargavel, 3002 Twenty-seventh Ave. So., Minneapolis.

THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES

This college is a member of the American Conference of Pharmaceutical Faculties, whose object is the promotion of higher pharmaceutical education. Through the influence of the conference, high 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 conference. 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

Address communications not relating to registration 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 general information bulletin.

COURSE OF STUDY

Four graded courses leading respectively to the degrees pharmaceutical chemist, bachelor of science in pharmacy, master of science in pharmacy, and doctor of science in pharmacy, are authorized by the regents. Only the course leading to the first degree is described in this bulletin, but a limited number of applicants for advanced standing in the courses leading to the second and third degrees will be accepted now. These courses are graded, and the lower is a prerequisite for any higher. They cover respectively three, four, five, and six years.

THE PRESENT REGULAR COURSE

This course extends over a period of three full University years. The lengthening of the regular course from two to three years has been approved by the Minnesota State Pharmaceutical Association and by the Minnesota State Board of Pharmacy. The curriculum of this course is described in the following pages, but its division among the three years may be changed as experience may warrant.

OUTLINE OF THE REGULAR THREE-YEAR COURSE

(Subject to change)

FRESHMAN

First Quarter	*Second Quarter*	*Third Quarter*
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

JUNIOR

First Quarter	*Second Quarter*	*Third Quarter*
Materia Medica	Materia Medica	Materia Medica
Pharmacognosy	Pharmacognosy	Pharmacognosy
Pharmac. Chemistry, Practical	Pharmac. Chemistry, Practical	U. S. P. Testing
Military training	U. S. P. Testing	Therapeutics
Organic Chemistry	Military training	Operative Pharmacy
	Organic Chemistry	Military training

SENIOR

First Quarter	*Second Quarter*	*Third Quarter*
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

THE FOUR-YEAR COURSE

The four-year course includes all of the regular three-year course and in addition rhetoric, 10 credits; any modern language, 10 credits; physics, 10 credits; and electives sufficient to total at least 15 additional credits. Students who bring high school credit in physics may elect animal biology in place of physics. Students who have completed this academic or pre-pharmacy work in the College of Science, Literature, and the Arts, or in a college of corresponding standing, are eligible for entrance upon the second year of this course.

CREDIT VALUE

The credit values of courses were changed September, 1918. Now a credit value covers one period of lecture or recitation or two periods of laboratory work per week per quarter. The numbers expressing the credit value of courses are now fifty per cent greater than formerly.

STATEMENT OF COURSES

Following each course is a statement, in parentheses, of credits, classes of students eligible, prerequisites, days of the week, class hour, and location of class. Thus (3 cred.; jr., sr., grad.; 3-4; MTW II; 117F.) means that the courses 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 in Room 117 Folwell Hall.

DESCRIPTION OF COURSES

BACTERIOLOGY AND IMMUNOLOGY

Professor Winford P. Larson, M.D.; Associate Professor Arthur T. Henrici, M.D.; Assistant Professor Robert G. Green, M.A., M.D.; Instructors Madeleine Guillemin, M.A., Beryl S. Green, B.A., David O. Spriesterbach, M.S.

51f,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. Larson, Dr. Henrici, Dr. Green, Miss Guillemin.

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. To make this work of the utmost value the pharmaceutical library is being enlarged.

BOTANY

Professors C. Otto Rosendahl, Ph.D., Josephine E. Tilden, M.S.; Associate Professors Frederic K. Butters, Ph.D., Rodney B. Harvey, Ph.D.; Assistant Professors William S. Cooper, Ph.D., Ned L. Huff, M.A.; Instructor Arthur M. Johnson, Ph.D.

17f-18w-19s. General Botany and Greenhouse Work. Study of external forms of flowering plants with the relations, modifications, and functions of their several organs; special study of the flower with the outline of classification of flowering plants. Lectures, laboratory work, field work. (9 cred.; fr.; no prereq.) Mr. Butters.

CHEMISTRY

Professor William H. Hunter, Ph.D.; Associate Professor M. Cannon Sneed, Ph.D.; Instructors Walter M. Lauer, M.S., J. Lewis Maynard, B.A., Henry N. Stephens, Ph.D.

4f-5w. General Inorganic Chemistry. A study of the general laws of chemistry and of the non-metals, the metals, and their compounds. (8 cr.; fr.; prereq., high school chem.) Mr. Stephens.

14f-15w. General Inorganic Chemistry. A study of the general laws of chemistry and of the non-metals and their compounds. (10 cred.; fr.; no prereq.) Mr. Maynard.

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. Maynard.

31f-32w. Elementary Organic Chemistry. A discussion of the important classes of organic compounds, both aliphatic and aromatic. The laboratory work includes the preparation of typical substances. Primarily for dentistry and pharmacy students. (8 cred.; soph.; prereq., 5 or 15.) Mr. Lauer.

CLINICAL MICROSCOPY

Professor.....; Instructor.....

1s. Clinical Chemistry and Microscopy. Includes (a) the microscopic study of urine, its colors, 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.; Assistant Vician Vogel, Phm.C.

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. (2½ cred.; sr.; prereq., Pharm. 5.) Miss Bruce, Miss Vogel.

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

Professors Edwin L. Newcomb, Phm.D., Phm.M., Frederick J. Wulling, Phm.G., Phm.D., LL.M.; Instructor Earl B. Fischer, B.S., 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. (1 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. Newcomb, and Mr. Fischer, and assistants.

MILITARY SCIENCE AND TACTICS

Professor Bernard Lentz, Major, Infantry; Assistant Professors Henry H. Rutherford, Lieutenant Colonel, Medical Corps, Frederick R. Wunderlich, Major, Dental Corps, Roger Hilsman, Captain, Infantry, Leo J. Farrell, Captain, Infantry, Andrew C. Tychsen, Captain, Infantry, Newton W. Speece, Captain, Infantry, Myron J. Conway, First Lieutenant, Infantry; Instructors Joseph Havlicek, Master Sergeant, U.S.A., Retired, John McWilliams, First Sergeant, U.S.A., Retired, Alfred Brandt, Technical Sergeant, Harry E. Strider, Technical Sergeant, Aubrey R. Dunkum, Technical Sergeant, Ernest R. Mylk, Private, First Class.

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; infantry weapons and equipment. (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; military sketching and map-reading; infantry weapons including machine gun and automatic rifle; minor tactics. (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. Field engineering; infantry weapons, including trench mortars, 37 mm. gun, grenades, pistol; minor tactics and musketry. (No cred.; jr.; prereq., 1-2-3, 4-5-6; MWF II, III, IV, 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. Minor tactics; administration; military law; military history and policy of the United States; rules of land warfare. (No cred.; sr.; prereq., 51-52-53; MWF II, III, IV, VI, VIII; TThS I, II, III, IV; TTh VI, VII, VIII, IX; 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, Phm.G., Phm.D., LL.M., Gustav Bachman, Phm.D., Phm.M.; Associate Professor Charles H. Rogers, D.Sc. in Phm; Instructors Hallie Bruce, Phm.G., Martin B. Chittick, B.A., Phm.G., Charles V. Netz, Phm.C., B.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. (¾ cred.; fr., jr.; no prereq.) Mr. Wulling, Mr. Rogers.

3f. Metrology. A critical study of weights and measures and balances; specific gravity, specific volume; allegation, etc. (4½ 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. (4½ 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. (7½ cred.; fr., jr.; prereq., 7.) Mr. Rogers, Mr. Netz, and assistant.

4f,w,s. Pharmacy Quiz. A thoro review of the work covered in Courses 3f, 5w, 7s, and 2s. (4½ 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.

13s. Classification of Pharmaceutical Organic Compounds. A preparation for Pharmacy 15. (1½ cred.; jr., sr.; prereq., 83.) Mr. Wulling, Mr. Rogers.

15f,w,s. Pharmaceutical Organic Compounds and Their Preparations. Includes the critical study of cellulin and its derivatives, destructive distillation products, starches, sugars, fermentation products, organic acids, fixed oils and fats, volatile oils, waxes and animal fats, alkaloids, glucosides, animal drugs and products, etc. (9 cred.; jr., sr.; prereq., 13.) 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. (7½ cred.; jr., sr.; prereq., 11.) Mr. Bachman, Mr. Chittick, 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). (3 cred.; jr., sr.; prereq., 17.) Mr. Bachman, Mr. Chittick, 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.; jr., sr.; no prereq.) Mr. Bachman, Mr. Chittick.

21f,w,s. Prescription Dispensing. This course runs concurrently and in co-operation 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. (18 cred.; jr., sr.; no prereq.) Mr. Bachman, Miss Bruce, Mr. Turner.

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., 8.) 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., 15, 8a.) Mr. Bachman, Mr. Chittick, 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.; jr., sr.; prereq., 10.) Mr. Bachman, Mr. Chittick, Mr. Turner.

14s. Synthetic Remedies. The study of the pharmaceutical chemistry of synthetic chemicals in medical use. (1 cred.; jr., sr.; prereq., 15.) Mr. Rogers.

16w. Homeopathic Pharmacy. A brief exposition of the principles underlying the preparation of homeopathic remedies, including some laboratory work. (1 cred.; jr., sr.; prereq., 21.) Mr. Wulling, Mr. Bachman.

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., 8, 15.) Mr. Bachman, Mr. Chittick, 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.) Mr. Newcomb, Mr. Rogers.

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, Mr. Chittick.

29f,w,s. Drug and Food Analysis. A course designed to prepare students for commercial pharmaceutical analytical work. (24 cred.; sr.; no prereq.) 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, Phm.G., Phm.D., LL.M.

1s. Law for Pharmacists. The lectures introduced 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. The study of the statute laws of Minnesota affecting the practice of pharmacy. The lectures are given by special lectures experienced in the application and operation of pharmacy laws. (½ cred.; sr.; no prereq.)

PHARMACEUTICAL MINERALOGY AND CRYSTALLOGRAPHY

Professor Frank F. Grout, Ph.D.

1s. Mineralogy. A study of the occurrence and properties of minerals of pharmaceutical importance; ores of metals used in pharmacy; nonmetallic minerals and mineral waters in their mineralogic and geologic relation. (1 cred.; sr., grad.; no prereq.) Mr. Grout and assistant.

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.) Mr. Grout.

PHARMACOGNOSY

Professor Edwin L. Newcomb, Phm.D., Phm.M.; Instructor Earl B. Fischer, B.S.; Assistant Charles E. Smyithe.

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. Newcomb, Mr. Fischer, 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., 1.) Mr. Newcomb, Mr. Fischer, 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., 1.) Mr. Newcomb, Mr. Fischer, 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., 3s, Botany 17f,18w.) Mr. Newcomb, Mr. Fischer, 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., 1.) Mr. Newcomb.

6w. Physiological Drug Assay. Optional. The pharmacopoeial and the more important unofficial methods of biologic assay of drugs and their preparations are studied. Four-year course only. (3 cred.; sr.; prereq., 5.) Mr. Newcomb.

7w,s. Advanced Pharmacognosy. Designed to give students a working knowledge of the use of the more important microscopical accessories in advance pharmacognostic work. Four-year course only. (3 cred.; sr.; prereq., 5.) Mr. Newcomb.

PHYSICAL EDUCATION FOR MEN

Professor Fred W. Luehring, Ph.M., Director; Associate Professor Louis J. Cooke, M.D., Assistant Director; Instructors Emil Iverson, Blaine McKusick, LL.B., Harold T. Taylor, M.A., Niels Thorpe; Assistant Max Herseth.

A physical examination is required of all new matriculants, and of all others using the department privileges, at the beginning of the year, and as often during their college course as their physical condition may indicate. Students taking the required work in physical education are examined also at the close of the year.

4f. Personal Hygiene. One hour per week; first quarter. Examination at close of course. (No cred.; all; no prereq.) Dr. Cooke.

A special lecture on sex hygiene is given sometime during the first ten days of the autumn quarter, with required attendance on the part of all freshmen.

PHYSICAL EDUCATION FOR WOMEN

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

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 neuro-muscular 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.

4f. Preliminary Hygiene. One lecture a week. The most essential aspects of the care of the body. (No cred.; all new students; no prereq.) Dr. Norris.

PHYSIOLOGY

Professors Elias P. Lyon, Ph.D., M.D., Frederick H. Scott, Ph.D., M.B., D.Sc., Jesse F. McClendon, Ph.D.; Associate Professors Richard Olding Beard, M.D., Chauncey J. V. Pettibone, Ph.D., Assistant Professor Esther Greisheimer, Ph.D., MD.

4f,w,s,su. Human Physiology. Lectures and laboratory. (5 qu. cred.; S.L.A., H.E., and others; prereq., elem. biol. and chem.) Dr. Lyon, Dr. Beard, and others.

5f,w,su. Same as Course 4 without laboratory. Pharmacy students.

57f,su. Physiologic Chemistry. (4 qu. cred.; dent. stud. and others; prereq., org. chem.) Dr. Pettibone.

THERAPEUTICS AND TOXICOLOGY

Associate Professor Edgar D. Brown, Phm.D., M.D.

1s. 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 received consideration. (3 cred.; jr.; prereq., Pharmacognosy 5, Mat. Med. 1.) Dr. Brown.

The Bulletin *of the* University *of* Minnesota

The School of Chemistry
Part I

Announcement of Courses for the Years 1924-1926

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THE SCHOOL OF CHEMISTRY

FACULTY AND STAFF

ADMINISTRATION

Lotus Delta Coffman, Ph.D., LL.D., President
William Watts Folwell, LL.D., President Emeritus
Ora Miner Leland, B.S., C.E., Dean of the School of Chemistry and the College of Engineering and Architecture

CHEMISTRY

General Inorganic Chemistry

M. Cannon Sneed, Ph.D., Professor of General Inorganic Chemistry and Chief of the Division
Lillian Cohen, Ph.D., Assistant Professor of General Inorganic Chemistry
Raymond E. Kirk, M.S., Assistant Professor of General Inorganic Chemistry
Norville C. Pervier, Ph.D., Assistant Professor of General Inorganic Chemistry
Lloyd H. Reyerson, Ph.D., Assistant Professor of General Inorganic Chemistry
Hervey H. Barber, B.A., Instructor in General Inorganic Chemistry, in charge of stockroom service
Gladstone B. Heisig, M.S., M.A., Instructor in General Inorganic Chemistry
J. Lewis Maynard, B.A., Instructor in General Inorganic Chemistry
Henry N. Stephens, Ph.D., Instructor in General Inorganic Chemistry
Lawton B. Beckwith, B.A., Assistant in General Inorganic Chemistry
Albert L. Chaney, B.A., Assistant in General Inorganic Chemistry
H. Marjorie Crawford, M.S., Assistant in General Inorganic Chemistry
Walter S. Dyer, B.S., Assistant in General Inorganic Chemistry
F. Anton Gray, B.S., Assistant in General Inorganic Chemistry
Leonard W. Hartkemeier, B.S. (Chem.), M.S. (Ch.E.), Assistant in General Inorganic Chemistry
Roscoe E. Jackman, B.A., Assistant in General Inorganic Chemistry
Elsie I. Kilburn, B.A., Assistant in General Inorganic Chemistry
Anne N. Lohmann, B.A., Assistant in General Inorganic Chemistry
Paul E. Millington, B.A., Assistant in General Inorganic Chemistry
Mary L. Morse, M.S. (Chem.), Assistant in General Inorganic Chemistry
Caryl Sly, M.S., Assistant in General Inorganic Chemistry
Ben E. Sorenson, M.S. (Ch.E.), Assistant in General Inorganic Chemistry
Leslie F. Stone, B.S. (Chem.), Assistant in General Inorganic Chemistry

Analytical Chemistry

[1]Paul H. M.-P. Brinton, Ph.D., Professor of Analytical Chemistry and Chief of the Division
Isaac W. Geiger, Ph.D., Associate Professor of Analytical Chemistry

[1] On sabbatic furlough, 1924-25.

Landon A. Sarver, Ph.D., Instructor in Analytical Chemistry
Arthur E. Stoppel, Ph.D., Instructor in Analytical Chemistry
Reuben B. Ellestad, B.S. (Chem.), Assistant in Analytical Chemistry
Tohru Kameda, Assistant in Analytical Chemistry

Organic Chemistry

William H. Hunter, Ph.D., Professor of Organic Chemistry and Chief of the Division
George B. Frankforter, Ph.D., Professor of Industrial Organic Chemistry
Lee I. Smith, Ph.D., Assistant Professor of Organic Chemistry
Walter M. Lauer, Ph.D., Instructor in Organic Chemistry
Arthur C. Beckel, B.S. (Chem.), Assistant in Organic Chemistry
Theodore T. Budrow, B.S. (Chem.), Assistant in Organic Chemistry
Miles A. Dahlen, B.S. (Ch.E.), Assistant in Organic Chemistry

Physical Chemistry

Frank H. MacDougall, Ph.D., Professor of Physical Chemistry
Lawrence M. Henderson, Ph.D., Assistant Professor of Physical Chemistry
Ralph E. Beard, B.S., Assistant in Physical Chemistry
Vlon N. Morris, M.S., Assistant in Physical Chemistry
Lloyd E. Swearingen, M.S., Assistant in Physical Chemistry

Technological Chemistry

Everhart P. Harding, Ph.D., Associate Professor of Technological Chemistry
Ralph E. Brewer, M.S., Instructor in Technological Chemistry
Philip J. Riley, M.S., Assistant in Technological Chemistry

CHEMICAL ENGINEERING

Charles A. Mann, Ph.D., Professor of Chemical Engineering and Chief of the Division
[1]George H. Montillon, M.S. (Ch.E.), Assistant Professor of Chemical Engineering
Ralph E. Montonna, Ph.D., Assistant Professor of Chemical Engineering
Robert C. Ernst, M.S. (Ch.E.), Instructor in Chemical Engineering
Elliott L. McMillen, B.S. (Ch.E.), Assistant in Chemical Engineering

Fellows

Ruth E. Elmquist, B.A., M.S., duPont Fellow
Hertha R. Freche, B.A., Shevlin Fellow
Rudolph Krantz, B.S. (Ch.E.), Research Fellow in Engineering Experiment Station

DRAWING AND DESCRIPTIVE GEOMETRY

William H. Kirchner, B.S., Professor of Drawing and Descriptive Geometry and Head of the Department
Robert W. French, B.S. (C.E.), Associate Professor of Drawing and Descriptive Geometry

[1] Absent on leave, 1924-25.

Henry C. T. Eggers, Assistant Professor of Drawing and Descriptive Geometry

Robert F. Schuck, B.S. (E.E.), Assistant Professor of Drawing and Descriptive Geometry

Leon Archibald, B.Sc., Instructor in Drawing and Descriptive Geometry

John O. Cederberg, Jr., Instructor in Drawing and Descriptive Geometry

Alex S. Levens, B.S. (C.E.), Instructor in Drawing and Descriptive Geometry

William S. Williams, B.S. (E.E.), Instructor in Drawing and Descriptive Geometry

ECONOMICS

George W. Dowrie, Ph.D., Professor of Economics, Head of the Department, and Dean of the School of Business

Joseph E. Cummings, M.A., Assistant Professor of Economics

Alvin H. Hansen, Ph.D., Professor of Economics

Ernest A. Heilman, Ph.D., Associate Professor of Accounting

Bruce D. Mudgett, Ph.D., Professor of Economics

Harry J. Ostlund, B.A., Assistant Professor of Accounting

John J. Reighard, M.A., Assistant Professor of Accounting

J. Warren Stehman, Ph.D., Associate Professor of Economics

Roland S. Vaile, M.A., Associate Professor of Economics

Jeremiah S. Young, Ph.D., Professor of Political Science

Jay L. O'Hara, B.A., Lecturer in Economics

Ben W. Palmer, M.A., LL.B., Lecturer in Political Science

William H. Stead, M.A., Instructor in Economics

Arthur R. Upgren, B.A., Instructor in Economics

ELECTRICAL ENGINEERING

George H. Shepardson, M.A., M.E., D.Sc., Professor of Electrical Engineering and Head of the Department

Milo E. Todd, B.A., E.E., Assistant Professor of Electric Power Engineering

Edwin R. Martin, E.E., Assistant Professor of Electric Power Engineering

ENGLISH

Joseph M. Thomas, Ph.D., Professor of English and Head of the Department of English

————, Instructor in English

GEOLOGY AND MINERALOGY

William H. Emmons, Ph.D., Professor of Geology and Mineralogy and Head of the Department

W. Horatio Brown, E.M., Ph.D., Instructor in Geology and Mineralogy

GERMAN

Carl Schlenker, B.A., Professor of German and Head of the Department
James Davies, Ph.D., Assistant Professor of German
George Lussky, Ph.D., Assistant Professor of German

MATHEMATICS AND MECHANICS

William E. Brooke, B.C.E., M.A., Professor of Mathematics and Mechanics and Head of the Department
Hans H. Dalaker, Ph.D., Professor of Mathematics and Mechanics
Henry E. Hartig, B.S., E.E., Assistant Professor of Mathematics and Mechanics
Carl A. Herrick, M.E., Assistant Professor of Mathematics and Mechanics
Raymond R. Herrmann, E.E., Assistant Professor of Mathematics and Mechanics
William F. Holman, Ph.D., Professor of Mathematics and Mechanics
Jacob O. Jones, M.C.E., Associate Professor of Hydraulics
William M. McClintock, M.A., Assistant Professor of Mathematics and Mechanics
George C. Priester, B.E., M.S., Assistant Professor of Mathematics and Mechanics
[1]Roderick W. Siler, B.S., Assistant Professor of Mathematics and Mechanics
Hugh B. Wilcox, B.S. (E.E.), M.S., Assistant Professor of Mathematics and Mechanics
Charles Boehnlein, B.S., M.E., Instructor in Mathematics and Mechanics
Harry A. Doeringsfeld, C.E., Instructor in Mathematics and Mechanics
Elmer W. Johnson, E.E., M.E., Instructor in Mathematics and Mechanics
Oscar C. Lee, B.S. (E.E.), Instructor in Mathematics and Mechanics
Forrest E. Miller, B.S. (A.E.), Instructor in Mathematics and Mechanics
Walter R. Warne, Ph.B., B.Pd., Instructor in Mathematics and Mechanics

MECHANICAL ENGINEERING

John J. Flather, Ph.B., M.M.E., Professor of Mechanical Engineering and Head of the Department
John V. Martenis, M.E., Associate Professor of Machine Design
S. Carl Shipley, B.S., M.E., Professor of Machine Construction and Superintendent of Shops
Charles F. Shoop, B.S., B.S. (M.E.), Associate Professor of Steam Engineering
John Flodin, B.S., M.E., Instructor in Machine Design
Thomas P. Hughes, Instructor in Forging
John H. Moffett, Met.E., Instructor in Foundry Practice
Dayton A. Rogers, Instructor in Machine Shop Practice
[2]George L. Tuve, B.S., M.E., Instructor in Steam Engineering

METALLOGRAPHY

Oscar E. Harder, Ph.D., Professor of Metallography
Ralph L. Dowdell, Met.E., Instructor in Metallography
Ludwig J. Weber, B.S., Ch.E., Instructor in Metallography

[1] On sabbatic furlough, 1924-25.
[2] Absent on leave, 1924-25.

METALLURGY

William R. Appleby, M.A., Professor of Metallurgy and Dean of the School of Mines

Peter Christianson, B.S., E.M., Professor of Metallurgy

Levi B. Pease, M.S., Professor of Metallurgy

MILITARY SCIENCE AND TACTICS

Bernard Lentz, Major, Infantry, U.S.A., Professor of Military Science and Tactics and Head of the Department

Henry H. Rutherford, B.A., M.D., Lieutenant Colonel, Medical Corps, U.S.A., Assistant Professor of Military Science and Tactics

Frederick R. Wunderlich, D.D.S., Major, Dental Corps, U.S.A., Assistant Professor of Military Science and Tactics

Roger Hilsman, Captain, Infantry, Assistant Professor of Military Science and Tactics

Leo J. Farrell, Captain, Infantry, U.S.A., Assistant Professor of Military Science and Tactics

Andrew C. Tychsen, Captain, Infantry, U.S.A., Assistant Professor of Military Science and Tactics

Newton W. Speece, Captain, Infantry, U.S.A., Assistant Professor of Military Science and Tactics

Myron J. Conway, First Lieutenant, Infantry, U.S.A., Assistant Professor of Military Science and Tactics

Joseph Havlicek, Regimental Commissary Sergeant, U.S.A., Retired, Instructor in Military Science and Tactics

John McWilliams, First Sergeant, U.S.A., Retired, Instructor in Military Science and Tactics

Alfred Brandt, Technical Sergeant, Instructor in Military Science and Tactics

Harry E. Strider, Technical Sergeant, Instructor in Military Science and Tactics

Aubrey R. Dunkum, Technical Sergeant, Instructor in Military Science and Tactics

Ernest R. Mylk, Private, First Class, Spec. 4th Class, Instructor in Military Science and Tactics

PHYSICAL EDUCATION FOR MEN

Fred W. Luehring, Ph.M., Professor of Physical Education and Director of Physical Education and Athletics for Men

Louis J. Cooke, M.D., Associate Professor of Physical Education and Assistant Director of Physical Education and Athletics for Men

Louis Keller, M.A., Associate Professor of Physical Education and Athletics for Men

Emil Iverson, Instructor in Physical Education for Men

Blaine McKusick, B.A., LL.D., Instructor in Physical Education for Men

Harold T. Taylor, M.A., Instructor in Physical Education for Men

Niels Thorpe, Instructor in Physical Education for Men

Max Herseth, Assistant in Physical Education for Men

PHYSICAL EDUCATION FOR WOMEN

J. Anna Norris, M.D., Professor of Physical Education and Director of Physical Education for Women

Gertrude M. Baker, B.A., Assistant Professor of Physical Education for Women

May S. Kissock, B.A., Assistant Professor of Physical Education for Women

Alice J. H. Tolg, M.D., Assistant Professor of Physical Education for Women

Irene Clayton, B.S., Instructor in Physical Education for Women

Rhea M. Coxe, Instructor in Physical Education for Women

Grace Denny, B.S., Instructor in Physical Education for Women

Helen Hazelton, B.A., Instructor in Physical Education for Women

Katherine Sias, B.S., Instructor in Physical Education for Women

PHYSICS

Henry A. Erikson, B.E.E., Ph.D., Professor of Physics and Chairman of the Department

Gregory Breit, Ph.D., Assistant Professor of Physics

Louallen F. Miller, Ph.D., Associate Professor of Physics

John T. Tate, Ph.D., Professor of Physics

Joseph Valasek, Ph.D., Assistant Professor of Physics

John H. Van Vleck, Ph.D., Assistant Professor of Physics

Anthony Zeleny, Ph.D., Professor of Physics

J. William Buchta, Ph.D., Instructor in Physics

PHYSIOLOGIC CHEMISTRY

Jesse F. McClendon, Ph.D., Professor of Physiologic Chemistry

Chauncey J. V. Pettibone, Ph.D., Associate Professor of Physiologic Chemistry

William W. Swanson, B.A., M.S., Instructor in Physiologic Chemistry

PREVENTIVE MEDICINE AND PUBLIC HEALTH

Harold S. Diehl, M.A., M.D., Assistant Professor of Preventive Medicine and Public Health and Director of the Health Service

Harold A. Whittaker, B.A., Assistant Professor of Preventive Medicine and Public Health

R. Wilson Archibald, B.A., D.V.M., Instructor in Preventive Medicine and Public Health and Bacteriologist

James A. Childs, C.E., Instructor in Preventive Medicine and Public Health and Engineer

Lawrence H. Cady, B.A., M.D., Assistant

GENERAL INFORMATION

The School of Chemistry occupies a large modern building, recently completed, which is located on the new campus of the University. It is 180 by 200 feet and has six floors. Its laboratories are designed to afford facilities for instruction in the various branches of chemistry. The departmental library is well provided with complete sets of journals and compendia of chemical literature, among which are important sets not frequently found in university libraries. Many special laboratories for private research have been provided and facilities are available for graduate work leading to the higher degrees.

Courses and degrees.—The School of Chemistry offers three courses which lead to degrees, namely, (1) the four-year course in Chemistry; (2) the course in Chemical Engineering; and (3) the five-year course in Arts and Chemistry. The four-year course leads to the degree of bachelor of science in chemistry, while the five-year course in Arts and Chemistry leads to the degrees of bachelor of arts after four years and bachelor of science in chemistry at the end of the fifth year. These courses offer students a thoro training in the fundamentals of chemistry and related subjects. Each serves as a basis for specialization in chemistry and forms a suitable foundation for graduate work. Graduates of these courses secure positions in colleges, in governmental bureaus, and in the chemical industries, as teachers, analysts, or research assistants.

The course in Chemical Engineering leads to the degree of bachelor of science in chemical engineering at the end of four years, and to the degree of master of science in chemical engineering at the end of the fifth year which is taken in the Graduate School. It aims to give the student a broad foundation in chemistry, engineering, and allied sciences. The professional degree of chemical engineer will be conferred upon those who have received the degree of bachelor of science in chemical engineering, or its equivalent, when they have completed an additional year's college work in the Graduate School, have had four years of practical experience in positions of responsibility in chemical engineering, and have presented a satisfactory thesis based upon their professional work. The Master's degree for work in chemical engineering will be accepted in lieu of the additional year of college work required for the professional degree. While the graduates of this course are fitted to hold positions in the general fields of chemistry, they are especially prepared to undertake work in the manufacturing, operating, or research departments of industrial plants. The expansion of chemical industries and other branches of chemical activities in this country as a result of war conditions has created many new opportunities for chemical engineering graduates.

Admission.—Detailed information concerning admission, entrance requirements, advanced standing, and expenses will be found in the bulletin

of general information which will be sent to any address upon application to the registrar, University of Minnesota. While the regular matriculation takes place in the fall, it is possible for students to enter the School of Chemistry in January, at the opening of the winter quarter, if they meet the full requirements.

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

2. Mathematics: elementary algebra, one unit; plane geometry, one unit; higher algebra,* one-half unit; solid geometry,* one-half unit.

3. Enough additional work to make in all fifteen units, of which not more than four may be in Group F. Two units of German, one of chemistry, and one of physics are strongly recommended.

List of entrance subjects.—Only those subjects included in the following groups may be counted toward admission.

The term *unit* means not less than five recitations of forty minutes each per week for a period of thirty-six weeks. In laboratory, drawing, and other manual courses, twice this amount of time is required for one unit.

Group A English: 3 or 4 units.

Group B Languages: Latin, Greek, German, French, Spanish, Scandinavian, 1 to 4 units each.

Group C History and social sciences: European history, 2 units; English and senior American history, ½ unit each; economics, sociology, economic history of England, and economic history of the United States, ½ unit each; American government, commercial geography, and history of commerce, ½ unit or 1 unit each.

Group D Mathematics: Elementary algebra and plane geometry, 1 unit each; unified mathematics, 2 units; higher algebra, solid geometry, and trigonometry, ½ unit each.

* NOTE.—Students desiring to enter the School of Chemistry who have not the specified credits in higher algebra and solid geometry, but who present the full fifteen acceptable units, will be admitted subject to their taking the necessary course or courses for the satisfaction of these requirements during their first quarter, and without credit. They must expect, however, to attend the University Summer Session the following summer in order to obtain the regular third quarter's work in mathematics. To avoid this irregularity in their courses, students are urged to obtain the required higher algebra and solid geometry in high school or the University Summer Session or Extension Division before entering this school. It is also very desirable that physics and chemistry be included in the high school course. If chemistry is not presented for entrance, the student will find it necessary to take a quarter of freshman chemistry, five credits, in addition to the regular course. This will usually require attendance at the following Summer Session.

Group E Natural sciences: General science, physics, and chemistry, 1 unit each; botany and zoology, ½ or 1 unit each; physiology, astronomy, geology, and physiography, ½ unit each.

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

Advanced standing.—Students who have pursued courses of study in other colleges of recognized standing may receive advanced credit under the rules of the University and of the School of Chemistry.

Registration.—The hours for registration in the School of Chemistry are from 9:00 to 12:00 a.m. and from 2:00 to 4:30 p.m., on Thursday and Friday, September 25 and 26, 1924. Fees must be paid before registration can be effected. Each student will obtain a statement of his fees at the office of the registrar, Library Building.

All students entering the college for the first time must present their credentials to the registrar at the University, who will notify the applicant with regard to his admission. Before registering all new matriculants are required to take a physical examination.

Students should consult the University calendar in regard to registration dates and the *Handbook for Students in the School of Chemistry* for the procedure of registration.

Students will not be allowed to register for less than 14 or more than 19 credit hours without the approval of the Students' Work Committee.

No change in registration will be permitted later than 10 days after the beginning of the quarter.

Fees.—The following fees are charged:

Tuition fee (per quarter):	
Residents of Minnesota	$30.00
Nonresidents	40.00
Military deposit (required of all who register for military drill)	10.00
Deposit* (first quarter only)	5.00
Health fee (per quarter)	2.00
Minnesota Union or Shevlin Hall fee (per quarter)	1.00
Special fees:	
Examination for removal of conditions	1.00
Examinations for credit (after first six weeks in residence)	5.00
Special examinations	5.00
Chemistry deposit	5.00

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

Students exempt from fees.—Fellows, scholars, assistants, and instructors, and other members of the teaching staff and scientific bureaus or experiment stations, when regularly enrolled as students in the Graduate School are not required to pay tuition fees.

* The following charges are made against the general deposit for each student in addition to such charges as may be incurred for lockers, library penalties, laboratory breakage, etc.:

Minnesota Daily, a quarter	0.50
Post-office box, a quarter	.20
University Address Book	.35

Expenses.—Detailed statements regarding living expenses may be found in the bulletin of general information.

Junior review examinations.—In the spring quarter of their junior year, all students registered in the School of Chemistry will be given special examinations in general inorganic chemistry and qualitative and quantitative analysis. It is the purpose of the examinations to indicate any portions of these fundamental subjects of which the student may have insufficient working knowledge, in order that he may review them before entering upon more advanced work. For those who fail to pass at this time, re-examinations will be held at the opening of the senior year.

Inspection trip.—All seniors registered in Chemical Engineering are required to go on a trip of inspection and observation through certain large industrial plants. This trip is usually taken during the spring vacation and is under the personal supervision and guidance of members of the faculty. It includes plants in Milwaukee, Chicago, and near-by points. The expenses of the trip are minimized as far as practicable, and must be defrayed by the individual student. They amount to from $75 to $100 per student.

Theses.—Each senior in the course in Chemistry is required to prepare and submit a thesis based upon his original investigations. This work amounts to five credits per quarter throughout the senior year and each student is therefore expected to devote at least fifteen hours per week to it.

The subject of the thesis should be filed in the dean's office not later than November 1. The preliminary draft of the thesis should be submitted to the chief of the division concerned before June 1, and the final copy on or before June 10. A bound copy, 8½ by 11 inches, in the prescribed form, will be furnished by the student to be placed in the chemistry library.

The unit of credit.—The standard unit of credit in the University is the quarter credit, or simply, the *credit.* It corresponds to one class period per week for one quarter. This class period may be a one-hour lecture or recitation, or a two- or three-hour class in laboratory, drawing, field work, or computations, but in any case one credit is supposed to require three actual hours of the average student's time per week for one quarter. One hour of recitation is assumed to require two hours of preparation or study. A two-hour laboratory period may require one hour of report-writing to complete the credit. A three-hour period usually carries one credit without additional work outside of class. The credit allowed for a lecture may be from one-third to one hour depending upon the amount of outside work or study required in connection with it.

Requirements for graduation in Chemistry.—To obtain the degree of bachelor of science in chemistry the student must satisfactorily complete all of the required courses and in addition a sufficient number of approved electives to make a total of at least 210 credits. If high school chemistry was not presented for entrance, the five extra hours required in freshman chemistry increase the total requirement to 215 credits. Fifteen elective credits must be taken in chemistry.

Requirements for graduation in Chemical Engineering.—The degree of bachelor of science in chemical engineering requires the satisfactory completion of all the required courses together with a sufficient number of approved electives to make a total of 218 credits. In the absence of high school chemistry for entrance, this total requirement becomes 223 credits.

The additional eight credits above the course in Chemistry are made up of two credits for the inspection trip in the spring vacation of the senior year and six credits for the two courses in Chemical Manufacture in the Summer Session following the junior year. Thus the term requirements of the two courses are equal in amount and average 17½ credits per quarter for 12 quarters.

The Shevlin Fellowship in Chemistry.—The Shevlin Fellowship in Chemistry, established by the late Thomas H. Shevlin, of Minneapolis, is awarded annually and yields $500. Candidates for this fellowship should file their application before March 1 with the dean of the Graduate School. The Shevlin fellow devotes his entire time to graduate work and is not required to render any service to the University.

The duPont Fellowship in Chemistry.—This fellowship was founded by E. I. duPont de Nemours and Company, Wilmington, Delaware, and yields $750 annually. The holder devotes his entire time to graduate work and is not required to render any service to the University. Applications for this fellowship should be submitted to the dean of the School of Chemistry before March 15.

Research fellowships.—In the Engineering Experiment Station there are two research fellowships which are open to engineering graduates, including chemical engineers. Each of these bears an annual stipend of $750. The holder is required to give twenty hours per week to such research service as may be assigned to him. In addition he is expected to carry work in the Graduate School toward an advanced degree.

Assistants.—The School of Chemistry employs twenty-six assistants at $650 to $750 per annum. They are required to devote twelve hours per week to instruction and other assigned work. They thereby obtain valuable experience in laboratory teaching under competent direction. In addition to these duties, each assistant is expected to pursue graduate work toward a higher degree.

Reserve Officers Training Corps.—The War Department has established at this University units of infantry, coast (heavy) artillery, and signal corps in which both basic and advanced courses are given. The basic course is required for the first two years; the advanced course is elective for the third and fourth years.

Students of the School of Chemistry may enroll in the advanced course of the infantry or artillery under the prescribed regulations, and receive for this work eighteen elective credits toward graduation. They receive an allowance of cash and clothing from the government during the two years of the course, pay and transportation to attend a special training camp in the summer, and if successful, a commission in the

Reserve Corps of the U. S. Army after graduation. Special arrangements may be made in the student's program to enable him to take this course, the advantages of which are recognized.

Self-support and outside activities.—A large number of students contribute to their financial support by means of part time work during the college year. Frequently such students undertake too much. They are advised to carry a lighter program of studies and to plan to spend more than four years in the college course if outside work requires a large amount of their time.

Freshmen, in particular, are advised that the work of the first year in this college will require their closest attention and application if they are to succeed. They should refrain from participation in unnecessary outside activities, while bearing in mind the importance of physical as well as mental development.

Handbook for students.—Regulations and instructions for the guidance of students are issued at the time of registration in the form of a small pamphlet entitled *Handbook for Students in the School of Chemistry.* Each student is expected to observe these instructions.

Changes in bulletin.—The faculty of the School of Chemistry reserves the right to change its curricula and to cancel or change without notice any course printed in this bulletin. The bulletin is a statement of present conditions, and is subject to modification in any particular by faculty action.

American Chemical Society.—The Minnesota section of the American Chemical Society has its headquarters at the University. All students who are interested are cordially invited to attend its meetings.

CURRICULA

CHEMISTRY AND CHEMICAL ENGINEERING

FRESHMAN AND SOPHOMORE YEARS

The freshman and sophomore years are the same in Chemistry as in Chemical Engineering, so that the student may postpone his choice between these two curricula until the beginning of his junior year.

Mathematics.—Freshmen entering without high school higher algebra will take Course 9 (Higher Algebra); and those who have had higher algebra will register for Course 11 (College Algebra). At the end of the first two weeks those in both courses who have shown sufficient ability will proceed in Course 11 for the remainder of the fall quarter. The rest of the class will take Course 9, and will follow it with Courses 11, 12, and 13 during the winter and spring quarters and the *following Summer Session,* respectively.

Those entering without solid geometry must take Mathematics 10 (Solid Geometry) in their first quarter instead of drawing. They should take Drawing 7w-8s in the winter and spring quarters, three credits each.

Chemistry.—Students entering without high school chemistry will take Chemistry 6-7-8 (General Inorganic Chemistry) during their freshman year and Chemistry 12 (Qualitative Analysis) during the *following Summer Session.*

German.—If two years of high school German are presented for entrance, the student may complete the requirement in this subject by taking German 27, 28, 29 in the sophomore year. Without high school German, he will take German 24, 25, 26 in the sophomore year and German 27, 28, 29 in the junior year.

REGULAR FRESHMAN YEAR

For students satisfying the requirements of algebra, solid geometry, and chemistry.

First Quarter

Course No.	Title	Credits	Rec.	Lect.	Lab.
M. and M. 11	College Algebra	5	5	..	..
Chemistry 9	General Inorganic Chemistry	5	1	3	5
English 4	Rhetoric and Composition	3	3	..	..
Drawing 4	Drawing and Descriptive Geometry	2	..	..	6
M.E. 12, 13, or 17	Shop	2	..	..	6
Mil. Sci. 1	First Year Basic Course	..	..	..	3

Second Quarter

M. and M. 12	Trigonometry	5	5	..	..
Chemistry 10	General Inorganic Chemistry	5	1	3	5
English 5	Rhetoric and Composition	3	3	..	..
Drawing 5	Drawing and Descriptive Geometry	2	..	..	6
M.E. 12, 13, or 17	Shop	2	..	..	6
Mil. Sci. 2	First Year Basic Course	..	..	..	3

Third Quarter

Course No.	Title	Credits	Rec.	Lect.	Lab.
M. and M. 13	Analytic Geometry	5	5	..	..
Chemistry 12	Qualitative Analysis	5	2	1	6
English 6	Rhetoric and Composition	3	3	..	..
Drawing 6	Drawing and Descriptive Geometry	2	..	..	6
M.E. 12, 13, or 17	Shop	2	..	..	6
P.H. 2	Hygiene and First Aid	..	..	1	..
Mil. Sci. 3	First Year Basic Course	..	..	..	3

REGULAR SOPHOMORE YEAR

First Quarter

Course No.	Title	Credits	Rec.	Lect.	Lab.
M. and M. 24	Differential Calculus	5	5	..	..
Chemistry 13	Qualitative Analysis	5	2	..	9
Physics 3	Elements of Mechanics and Sound	3	1	3	..
Physics 4	Elements of Mechanics and Sound Lab.	1	..	..	2
German 24	Beginning German[1]	4	4	..	..
or					
German 27	Narrative Prose[2]	3	3	..	..
Mil. Sci. 4	Second Year Basic Course	..	..	..	3

Second Quarter

M. and M. 25	Integral Calculus	5	5	..	..
Chemistry 20	Quantitative Analysis	5	1	1	10
Physics 23	Heat	3	1	3	..
Physics 24	Heat Laboratory	1	..	..	2
German 25	Beginning German[1]	4	4	..	..
or					
German 28	Advanced Chemical German[2]	3	3	..	..
Mil. Sci. 5	Second Year Basic Course	..	..	..	3

Third Quarter

M. and M. 84	Technical Mechanics	5	5	..	..
Chemistry 21	Quantitative Analysis	5	1	1	10
Physics 43	Magnetism and Electricity	3	1	3	..
Physics 44	Electrical Laboratory	1	..	..	2
German 26	Beginning German[1]	4	4	..	..
or					
German 29	Advanced Chemical German[2]	3	3	..	..
Mil. Sci. 6	Second Year Basic Course	..	..	..	3

THE COURSE IN CHEMISTRY

(For freshman and sophomore years see pages 14 and 15)

JUNIOR YEAR

First Quarter

Course No.	Title	Credits	Rec.	Lect.	Lab.
Chemistry 35	Organic Chemistry	5	1	3	6
Chemistry 123	Advanced Analytical Chemistry	3	..	1	7
Chemistry 140	Physical Chemistry	5	1	3	6
German 27	Narrative Prose[3]	3	3	..	..
	Electives to complete program[4]				

[1] For those who have not had two years of high school German.

[2] For those who have had two years of high school German.

[3] Students who have completed German 29 will take an elective in place of German each quarter of the junior year.

[4] For list of suggested electives see page 18. A total of 15 elective credits must be taken in Chemistry for graduation.

Second Quarter

Course No.	Title	Credits	Rec.	Lect.	Lab.
Chemistry 36	Organic Chemistry	5	1	3	6
Chemistry 124	Advanced Analytical Chemistry	3	..	1	7
Chemistry 141	Physical Chemistry	5	1	3	6
German 28	Advanced Chemical German[2]	3	3	..	..
	Electives to complete program[3]				

Third Quarter[1]

Chemistry 37	Organic Chemistry	5	1	3	6
Chemistry 142	Physical Chemistry	5	1	3	6
German 29	Advanced Chemical German[2]	3	3	..	..
	Electives to complete program[3]				
Chemistry 51	Junior Review Exam. (General Inorg.)	0	2	..	..
Chemistry 52	Junior Review Exam. (Qualitative)	0	1	..	..
Chemistry 53	Junior Review Exam. (Quantitative)	0	2	..	..

SENIOR YEAR

First Quarter

Course No.	Title	Credits	Rec.	Lect.	Lab.
Chemistry 96	Thesis	5	..	..	15
Chemistry 161	Food Analysis	3	..	1	6
	Electives to complete program[3]				

Second Quarter

Chemistry 97	Thesis	5	..	..	15
Chemistry 162	Food Analysis	3	..	1	6
	Electives to complete program[3]				

Third Quarter

Chemistry 98	Thesis	5	..	..	15
Chemistry 163	Food Analysis	3	..	1	6
	Electives to complete program[3]				

THE COURSE IN CHEMICAL ENGINEERING

(For freshman and sophomore years see pages 14 and 15)

JUNIOR YEAR

First Quarter

Course No.	Title	Credits	Rec.	Lect.	Lab.
Chemistry 35	Organic Chemistry	5	1	3	6
Chemistry 167	Methods of Technical Analysis	3	..	1	6
M. and M. 85	Strength of Materials (with lab.)	4	3	..	3
M.E. 38	Machine Design	3	..	1	6
German 27	Narrative Prose[2]	3	3	..	..

[1] Students who plan to take Industrial Chemistry next year must register for Chemical Machinery 171 in this quarter.

[2] Students who have completed German 29 will take an elective in place of German each quarter of the junior year.

[3] For list of suggested electives see page 18. A total of 15 elective credits must be taken in Chemistry for graduation.

Second Quarter

Course No.	Title	Credits	Rec.	Lect.	Lab.
Chemistry 36	Organic Chemistry	5	1	3	6
Chemistry 168	Methods of Technical Analysis	3	..	1	6
M. and M. 86	Hydraulics (with lab.)	3	..	2	3
M.E. 147	Heat Engines	4	..	3	6
German 28	Advanced Chemical German[1]	3	3	..	..

Third Quarter

Chemistry 37	Organic Chemistry	5	1	3	6
Chemistry 171	Chemical Machinery	4	1	4	..
M.E. 148	Heat Engines	3	..	3	4
E.E. 43	Electric Power	3	..	2	3
German 29	Advanced Chemical German[1]	3	3	..	..
Chemistry 51	Junior Review Exam. (General Inorg.)	0	2	..	..
Chemistry 52	Junior Review Exam. (Qualitative)	0	1	..	..
Chemistry 53	Junior Review Exam. (Quantitative)	0	2	..	..

SUMMER SESSION

Summer practice consisting of Courses 174f,su-175w,su, Chemical Manufacture, will be taken by students in Chemical Engineering in the regular Summer Session between the junior and senior years. It is required for the degree of bachelor of science in chemical engineering.

SENIOR YEAR

First Quarter

Course No.	Title	Credits	Rec.	Lect.	Lab.
Chemistry 140	Physical Chemistry	5	1	3	6
Chemistry 172	Industrial Inorganic Chemistry	4	1	4	..
E.E. 44	Electric Power	3	..	2	3
	Electives to complete program[2]				

Second Quarter

Chemistry 141	Physical Chemistry	5	1	3	6
Chemistry 173	Industrial Organic Chemistry	4	1	4	..
E.E. 45	Electric Power	3	..	2	3
	Electives to complete program[2]				
Chemistry 187	Inspection Trip, spring vacation	2	..	..	..

Third Quarter

Chemistry 142	Physical Chemistry	5	1	3	6
Chemistry 178	Chemical Engineering Calculations	3	3	..	..
	Electives to complete program[2]				

ENGINEERING ADMINISTRATION

The following group of elective courses has been prepared for those advanced students in this college who desire a broad training for service in executive and administrative positions. There is an increasing demand for engineers who have such training, and students whose scholastic

[1] Students who have completed German 29 will take an elective in place of German each quarter of the junior year.

[2] In one of the quarters 3 credits must be elected in metallography, mineralogy, or metallurgy. See page 18 for list.

records are of high grade are encouraged to include this entire series of electives in their junior and senior years. The more advanced courses may be taken in a postgraduate year, also.

SOPHOMORE YEAR

First Quarter

Course No.	Title	Credits
Econ. 8	Principles of Economics	3

Second Quarter

Econ. 9	Principles of Economics	3

Third Quarter

Econ. 10	Principles of Economics	3

JUNIOR YEAR

First Quarter

Course No.	Title	Credits
Econ. 29	Principles of Accounting	3

Second Quarter

Econ. 91	Business Organization	3

Third Quarter

Econ. 92	Business Finance	3

SENIOR YEAR

First Quarter

Course No.	Title	Credits
Econ. 161	Labor Problems	3
Econ. 85	Principles of Marketing	3

Second Quarter

Econ. 168	Personnel Management	3
Econ. 73	Traffic and Rates	3

Third Quarter

Econ. 28	Business Law	3
Econ. 154	Public Utilities	3
Econ. 93	Cost Accounting	3

SUGGESTED ELECTIVES

Drawing 9s, 41f, 42w, 43s
Economics 8f, 9w, 10s
Metallurgy 3f, 4w, 5s, 109f, 109w, 106f, 107w, 108s
Mineralogy 67f
Metallography 160f-161w-162s
Political Science 1f,w,s, 7f,w,s, 11f,w
Quantitative Analysis 125s, 127f, 128w, 129s
Technical Analysis 161f, 162w, 163s, 164w, 166s
Inorganic Chemistry 101s, 102w, 103f, 104w, 105s
Organic Chemistry 131f, 133s, 134w, 137f, 138w, 139s
Physical Chemistry 143f, 144w, 145f, 150f, 152f,w,s, 156w
Chemical Engineering 174f, 175w, 176f, 177w, 178s, 183f, 184s, 185s, 186s, 187f

THE FIVE-YEAR COURSE IN ARTS AND CHEMISTRY

The degree of bachelor of arts is given at the end of the fourth year and the degree of bachelor of science in chemistry or master of arts (major in chemistry, in Graduate School) at the end of the fifth year.

FRESHMAN, SOPHOMORE, AND JUNIOR YEARS

During the first three years of the course the student is registered in the College of Science, Literature, and the Arts and is subject to its rules. He must complete the requirements of the Junior College and 45 credits in the Senior College, approved by the dean of the School of Chemistry and the assistant dean for the Senior College, and must secure 135 honor points. This work must include the following subjects:

Mathematics, 6, 7, 30, 50, 51, 52
Physics, 3-4, 23-24, 43-44
Advanced Chemical German, 28-29, and prerequisites
Technical Drawing, 41-42-43
General Inorganic Chemistry, 6-7-8 or 9-10
Qualitative Analysis, 12-13
Quantitative Analysis, 20-21

Programs which include the necessary courses to be taken by students who have had high school chemistry and two years of German and for those who enter without German or chemistry are given below.

SENIOR YEAR

During his fourth year he must complete the work required in the junior year of the four-year course in Chemistry of the School of Chemistry and must maintain a standing equivalent to that required by this college for graduation.

The degree of bachelor of arts is voted by the College of Science, Literature, and the Arts at the end of the fourth year, and the student must present a total of not less than 180 credits and 180 honor points, including the required work mentioned above.

FIFTH YEAR

The fifth year is the same as the fourth year of the four-year course in Chemistry, and upon its completion the student will be entitled to the degree of bachelor of science in chemistry. Students may register in the Graduate School for this year, if they so desire, to obtain the degree of master of arts with a major in chemistry.

SUGGESTED PROGRAMS

I. For Students Entering with Chemistry and Two Years of German

Freshman Year

Fall	Credits	Winter	Credits	Spring	Credits
English A	5	English B	5	English C	5
Chemistry 9	5	Chemistry 10	5	Chemistry 12	5
Mathematics 6	5	Mathematics 7	5	Mathematics 30	5

Sophomore Year

Fall	Credits	Winter	Credits	Spring	Credits
German 27	3	German 28	3	German 29	3
Mathematics 50	5	Mathematics 51	5	Mathematics 52	5
Chemistry 13	5	Chemistry 20	5	Chemistry 21	5
Drawing 41	2	Drawing 42	2	Drawing 43	2

Junior Year

Fall	Credits	Winter	Credits	Spring	Credits
Chemistry 35	5	Chemistry 36	5	Chemistry 37	5
Physics 3-4	4	Physics 23-24	4	Physics 43-44	4
Social Science Subject	5	Social Science Subject	5	Electives	5-8
Electives	3	Electives	3		

II. For Students Entering without German or Chemistry

Freshman Year

Fall	Credits	Winter	Credits	Spring	Credits
English A	5	English B	5	English C	5
Chemistry 6	5	Chemistry 7	5	Chemistry 8	5
Mathematics 6	5	Mathematics 7	5	Mathematics 30	5

Sophomore Year

Fall	Credits	Winter	Credits	Spring	Credits
German 1	5	German 2	5	German 3	5
Social Science Subject	5	Social Science Subject	5	Chemistry 12	5
Mathematics 50	5	Mathematics 51	5	Mathematics 52	5

Junior Year

Fall	Credits	Winter	Credits	Spring	Credits
Chemistry 13	5	Chemistry 20	5	Chemistry 21	5
Physics 3-4	4	Physics 23-24	4	Physics 43-44	4
Drawing 41	2	Drawing 42	2	Drawing 43	2
German 10	5	German 28	3	German 29	3

DESCRIPTION OF COURSES

CHEMISTRY

GENERAL INORGANIC CHEMISTRY

1f-2w-3s. General Inorganic Chemistry. A study of general laws of chemistry and of the non-metals and their compounds. 2. A continuation of Course 1. 3. Metals and their compounds. Continuation of Course 2. Four credits per quarter. No prerequisite.

4f-5w. General Inorganic Chemistry. A study of the general laws of chemistry and of the non-metals and their compounds. More intensive than Courses 1f, 2w, 3s. Four credits per quarter. Prerequisite: high school chemistry.

6f-7w-8s. General Inorganic Chemistry. Includes a study of general laws of chemistry and of non-metals and their compounds. 7. Continuation of Course 6. 8. A study of metals and their compounds. Five credits per quarter. No prerequisite.

9f,w-10w,s. General Inorganic Chemistry. Course 9. A study of general laws of chemistry and of non-metals and their compounds. More intensive than Courses 6 and 7. Course 10. The metals and their compounds. Five credits per quarter. Prerequisite: one year of high school chemistry.

11s,f. Qualitative Chemical Analysis. Laboratory work in systematic qualitative analysis with lectures on solutions, ionization, chemical and physical equilibrium, oxidation and reduction, etc. Four credits. Prerequisite: 3 or 5.

12f,s-13f,w. Qualitative Chemical Analysis. Laboratory work in systematic qualitative analysis with lectures on solutions, ionization, chemical and physical equilibrium, oxidation and reduction, etc. Five credits per quarter. Prerequisite: 8 or 10.

14f-15w. General Inorganic Chemistry. (Engineers, miners, and pharmacists.) Includes a study of the general laws of chemistry and of the non-metals, the metals, and their compounds. 15. Continuation of Course 14. Five credits per quarter. No prerequisite.

16s. Qualitative Chemical Analysis. (Engineers, miners, and pharmacists.) Laboratory work in systematic qualitative analysis with lectures on solutions, ionization, chemical and physical equilibrium, oxidation and reduction, and other subjects pertinent to qualitative analysis. Five credits. Prerequisite: 5 or 15.

18f,w,s,su. Elementary Chemistry for Nurses. A brief study of chemical and physical changes; elements and compounds; the fundamental laws of chemistry; the qualitative and quantitative composition of foods, air, and water. Fifty-five actual hours.

19s. Teachers' Course. A consideration of the fundamental principles of chemistry with particular reference to the teaching of chemistry in the high school. Discussion of such topics as training of the teacher,

laboratory equipment, etc. Three credits. Prerequisites: general chemistry and qualitative analysis.

51s. Junior Review Examination in General Inorganic Chemistry. Required of all juniors in the School of Chemistry. Second week of the spring quarter.

52s. Junior Review Examination in Qualitative Analysis. Required of all juniors in the School of Chemistry. Second week of the spring quarter.

101s. History of Chemistry. The historical development of the theories of chemistry from the period of the ancients to the present time is covered by this course, particular emphasis being given to modern theories and laws. Two credits. Prerequisite: 36.

102w. Advanced Qualitative Analysis. This course includes an analysis of minerals, alloys, paints, and the methods of detecting some of the rarer elements. Two or three credits. Prerequisite: 21.

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. Three credits per quarter. Prerequisites: 21, 36.

301f-302w-303s. Research in Inorganic Chemistry. Credits to be arranged.

ANALYTICAL CHEMISTRY

20w-21s. Quantitative Analysis. Introductory courses covering the general principles and methods of quantitative analysis. Typical problems are assigned and attention given to proper laboratory practice. Course 20, Gravimetric Analysis. Course 21, Volumetric Analysis. Five credits per quarter. Prerequisite: 13.

27f,w. Quantitative Analysis. (Pre-med.) An introductory course covering the general principles and methods of quantitative analysis, both gravimetric and volumetric. Typical problems are assigned and attention given to proper laboratory practice. Four credits. Prerequisite: 11 or 13.

28f,w,s. Quantitative Analysis. (Dentists, engineers, miners.) A short introductory course covering general principles of quantitative analysis, both gravimetric and volumetric. Typical problems are assigned and attention given to proper laboratory practice. Three credits. Prerequisite: 11 or 16.

53s. Junior Review Examination in Quantitative Analysis. Required of all juniors in the School of Chemistry. Second week of the spring quarter.

120w-121s. Quantitative Analysis. Discussion of the general principles, methods, and procedure of quantitative analysis, both gravimetric and volumetric. Typical problems are assigned and attention given to proper laboratory practice. Five credits per quarter. Prerequisite: 13.

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.

Sanitary analysis of water is included in spring quarter. One lecture, seven laboratory hours per week. Three credits. Prerequisite: 21 or 27.

127f-128w-129s. Chemistry of the Rare Elements. Chemical relations and general reactions of those rarer elements not considered in more general courses. Analyses of commercially important ores and compounds of these elements are made. One lecture and six hours laboratory per week. Three credits per quarter. Prerequisite: 21. (Not offered in 1924-25.)

227f-228w-229s. Selected Topics in Analytical Chemistry. Analytical problems of an advanced nature presenting special difficulties will be selected for study and investigation in the laboratory, in the library, and by conference. Open only to graduate students who have had 18 credits of quantitative analysis, and who have a reading knowledge of French and German. Two, three, or four credits per quarter. (Not offered in 1924-25.)

321f-322w-323s. Research in Quantitative Analysis. Credits to be arranged.

ORGANIC CHEMISTRY

31f-32w. Elementary Organic Chemistry. (Dentists, pharmacists.) A discussion of the important classes of organic compounds, both aliphatic and aromatic. The laboratory work includes the preparation of typical substances. Four credits per quarter. Prerequisite: 11.

31w-32s. Elementary Organic Chemistry. (Pre-med.) A discussion of the important classes of organic compounds, both aliphatic and aromatic. The laboratory work includes the preparation of typical substances. Four credits per quarter. Prerequisite: 11.

35f-36w-37s. Organic Chemistry. An introduction to the chemistry of carbon compounds. The laboratory work will include the preparation of characteristic substances. Five credits per quarter. Prerequisite: 15 credits in chemistry.

131s. Organic Analysis. Practice in the identification of organic compounds, and the modern methods of quantitative organic analysis. Three credits. Prerequisite: 37.

132w. The Rise and Development of Organic Chemistry. Includes biographical and other phases necessary to a complete discussion of the subject. Two credits. Prerequisite: 37.

133f. 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. Three credits. May be accompanied by appropriate laboratory work in Chemistry 138. Prerequisite: 37.

134f. The Terpenes. Includes a complete review of the terpenes proper, together with a discussion of the gums and resins and other allied compounds. May be accompanied by appropriate laboratory work in Chemistry 138. Two credits. Prerequisite: 37. (Not offered in 1924-25.)

135f-136w-137s. Organic Chemistry. Full discussion of aliphatic and aromatic series with preparation of some of the more important compounds. Certain other work of special nature will also be required. Offered to graduate students taking their minor in chemistry. Five credits per quarter. Prerequisite: 13.

138f,w,s. Advanced Organic Chemistry Laboratory Work. Difficult preparations and problems. It is intended primarily to supplement the students' knowledge of the methods of organic chemistry. Students may also register for this course who desire appropriate laboratory work for other advanced courses. Two to five credits. Prerequisite: 37.

139f,w,s. Advanced Organic Chemistry Laboratory Work. 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. Two to five credits. Prerequisite: 37.

191f-192w-193s. 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 Chemistry 138-139. Three credits per quarter. Prerequisite: 37.

231f-232w-233s. Organic Chemistry Seminar. One hour a week. One credit. Open only to students taking research in organic chemistry.

331f-332w-333s. Research in Organic Chemistry. Credits to be arranged.

PHYSICAL CHEMISTRY

140f-141w-142s. Physical Chemistry. A general survey of the subject. Three lectures and one recitation. Laboratory work three or six hours per week. Three, four, or five credits, depending on the amount of laboratory work. Prerequisites: two years college chemistry, one year college physics.

143f,w. Physical Chemistry. (Designed chiefly for medical and biological students) Four credits per quarter. Prerequisite: 32.

146f-147w-148s. Advanced Physical Chemistry. Three lectures and one recitation. Laboratory work for one three-hour period may be taken if desired. Three credits per quarter, or four with laboratory. Prerequisites: 142s and calculus.

149s. Principles of Colloidal Chemistry. Two credits. Prerequisite: 141.

150s. Application of Colloidal Chemistry. Two credits. Prerequisite: 141. (Not offered in 1924-25.)

151s. Radiochemistry. The occurrence, methods of isolation, and physicochemical properties of the radioactive substances, together with a brief consideration of the chemical, geological, and biological bearing of the subject. Two credits. Prerequisite: 141 or Physics 148.

152f,w,s. Laboratory Course in Radiochemistry. To accompany or follow Course 151. Credits arranged.

156w. Application of Physical Chemistry to Organic Chemistry. Illustrations of the use of physicochemical methods in organic research. Three credits. Prerequisites: 130, 142.

157f-158w-159s. Colloid Chemistry Laboratory. Credits and hours to be arranged. Must be preceded or accompanied by Physical Chemistry 149 or 150.

243f-244w-245s. Thermodynamics and Chemistry. A detailed study of the principles of thermodynamics and their application to physical and chemical phenomena. Four credits per quarter. Prerequisites: 142 and calculus. (Not offered in 1924-25.)

246f-247w-248s. Kinetic Theory and Atomistics. Kinetic theory of gases and liquids, crystal structure, structure of atom, quantum theory. Four credits per quarter. Prerequisites: 142 and calculus.

250f-251w-252s. Physical Chemistry Seminar. One hour a week. For students taking advanced courses in physical chemistry. One credit per quarter.

253f-254w-255s. Advanced Physical Chemistry Laboratory. To accompany or follow any of the advanced courses in physical chemistry. Credits arranged. Prerequisite: 142.

341f-342w-343s. Research in Physical Chemistry, Including Work in Electrochemistry, Radiochemistry, and Colloids. Credits to be arranged.

TECHNOLOGICAL CHEMISTRY

60w,s. Power Plant Chemistry. (Engineers.) Proximate analysis of coal, determination of calorific power; technical analysis of flue gases and furnace gases; examination of boiler waters; lubricating oils. Three credits. Prerequisite: 16.

161f-162w-163s. Food Analysis. A course including the chemical analysis of the various food materials and food products and the detection of food adulterants. Three credits per quarter. Prerequisite: 21.

164w. Exact Gas Analysis. One or two credits. Prerequisite: 21.

166s. Microchemistry. The precipitation, examination, and identification of minute quantities of substances and the examination of food materials, fibers, etc., by means of the microscope. One or two credits. Prerequisite: 21.

167f. Gas and Fuel Analysis. The chemical analysis of solid and gaseous fuels with a determination of their calorific value and methods of testing municipal gas. Three credits. Prerequisite: 20 and 21.

168w. Petroleum and Petroleum Products. Examination and testing of petroleum products, principally gasoline, illuminating and lubricating oils. Three credits. Prerequisite: 20 and 21.

169f,w,s. General Technical Analysis. Includes a large range of topics, textiles and paper, paint and varnishes, asphalt and tars, boiler waters, soaps, edible oils and fats and various other food materials and food products. One, two, or three credits. Prerequisite: 21.

361f-362w-363s. Research Work in Technological Chemistry. Credits to be arranged.

CHEMICAL ENGINEERING

171s. Chemical Machinery. Principles and materials of construction, operation and uses of chemical machinery. Lectures and recitations. Laboratory work in operating and testing. Visits to chemical plants. Four credits. Prerequisites: 21, 36.

172f. Industrial Inorganic Chemistry. Operations common to chemical industries, chemistry involved, apparatus used, marketing of products, utilization of by-products, trade journals. Topics: acids and alkalies, salts, chlorine, ammonia, glass, pigments, etc. Lectures and recitations. Four credits. Prerequisite: 171.

173w. Industrial Organic Chemistry. Similar to above but covering organic field. Destructive distillation of coal, wood, oil, explosives, dyes, paper, vegetable and animal oils, fats, waxes, soap, sugar, starch, etc. Lectures and recitations. Four credits. Prerequisite: 172.

174f,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 semi-plant scale equipment. Technical trade journals used. Laboratory. Two or more credits. Prerequisite: 171.

175w,su. Chemical Manufacture. (Organic.) Similar to above but covering the organic field. Laboratory. Two or more credits. Prerequisite: 171.

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. Four credits per quarter. Prerequisite: 142.

178s. Chemical Engineering Calculations. Problems in combustion, drying, evaporation, filtration, and general chemical processes. Three credits. Prerequisite: 173.

179s. Advanced Applied Electrochemistry. The more recent developments in the manufacture of inorganic and organic products. Credits arranged. Prerequisites: 142, 176, 177.

180f-181w-182s. Design of Chemical Equipment and Plants. Laying out of plants and design of equipment based on collected data for the same. Classroom and laboratory work. Two credits each per quarter. Prerequisite: 173.

183f. Chemistry of Explosives. The history and development of modern explosives, their manufacture and uses. Lectures, required reading, and reports. Four credits. Prerequisite: 173.

184s. Organic Dyestuffs. The technical chemistry of commercial dyes and their intermediates. Class and laboratory. Five credits. Prerequisite: 173.

185s. Advanced Chemical Manufacture. Problems in the manufacture of special chemicals on a large scale, using the industrial chemistry laboratory. Two or more credits. Prerequisites: 174, 175.

186s. 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 students who have completed the sophomore year in the School of Chemistry or College of Engineering. Three credits.

187s. Inspection Trip. Various industrial plants in the Middle West are visited by the class on a trip which lasts about ten days at the spring vacation period. Written reports covering the plants must be submitted. Required of seniors in Chemical Engineering. Two credits. Prerequisite: 173.

271f-272w-273s. Seminar. Presentation and discussion of papers concerning the newer developments in chemical industries. One credit per quarter.

371f-372w-373s. Research in Chemical Engineering, Industrial Inorganic and Industrial Organic Chemistry, Applied Electrochemistry and Electric Furnace Work and Chemical Manufacture. Credits to be arranged.

DRAWING AND DESCRIPTIVE GEOMETRY

4f-5w-6s. Engineering Drawing and Descriptive Geometry. The elements of drafting, including the study of polyhedra and other problems of solid and constructive geometry. An elementary course in descriptive geometry including graphical methods of representation, correlated in part with analytical geometry. Required of freshmen who satisfy the entrance requirements in mathematics. Two credits per quarter. Prerequisite: solid geometry.

7w-8s. Engineering Drawing and Descriptive Geometry. This course covers the same subject-matter as Course 4-5-6. It is required of freshmen who take Mathematics 9-10 during the first quarter. Three credits per quarter. Prerequisite: solid geometry.

9f,w,s. Drafting. Developments and intersections. Assembly drawings, outline drawings, diagrammatic layout, and detail drawings of experimental and industrial installations. Three credits per quarter. Prerequisite: Drawing 6 or 8.

M.&M.10f,w. Solid Geometry. Lines and planes in space, dihedral and polyhedral angles; polyhedrons, cylinders, cones, similarity, prismoid formula, sphere area, volumes, numerical exercises in area, volumes, weights. Three hours per week but without credit.

38f-39w-40s. Graphs and Charts. The theory and construction of graphic charts and diagrams. This course can be entered at any quarter, also can be continued from one quarter through the following quarter. Two credits per quarter. Prerequisites: Drawing 9, Mathematics and Mechanics 26.

41f,w-42f,w-43f,w. Technical Drawing. Theoretical and practical graphics, the reading and making of working plans. Projections, sketching, lettering, conventions, renderings, and translations. Two credits per quarter. No prerequisite.

44f,w,s. Lettering. A practical course in plain lettering and the making of graphs and charts. One credit per quarter. Prerequisite: none.

45f,w,s-46f,w,s. Alphabets. Construction and analysis of various types of letterings. Demonstrations and exercises. Open to juniors and seniors. Two credits per quarter. Prerequisite: none.

ECONOMICS

8f-9w-10s. General Economics. (Engineers.) Principles of economics with special emphasis upon their application to current problems such as money, banking, conservation, insurance, international commerce, monopolies, transportation, labor, socialism, public ownership, and finance. Three credits. No prerequisite.

28f,w,s. Business Law. A course in business law arranged for engineers, including the law of contracts, suretyship, agency, partnership, corporations, negotiable instruments, conveyance patents, and riparian rights. Offered to juniors, seniors and sophomores with six credits in economics. Three credits.

29f. Principles of Accounting. (Engineers.) The purpose and principles of account classification; capital and revenue; accruals; valuation; depreciation; preparation and interpretation of balance sheets, income accounts, and other statements. Three hours of lecture and one laboratory period a week. Four credits. No prerequisite.

51f-52w-53s. Business Law. Principles governing ordinary business transactions. Contracts—formation, operation, interpretation, breach, and discharge. Agency and service. Negotiable instruments. Business associations—partnerships and private corporations. Property—personal and real. Three credits per quarter. Prerequisite: nine credits in economics or political science.

72f,s. Economics of Transportation.

73w. Railway Traffic and Rates. Railway transportation from standpoint of the business man and shipper. Freight-shipping documents. Classification and tariffs, time and preference freight, private car lines, industrial trackage and terminal service, express rates and service, special passenger rates. Three credits. Prerequisites: 8, 9.

85f,s. Principles of Marketing. A general course dealing with the mechanics and operation of markets: classification, organization, market agencies as factors in production. The price-making process; control of supply, assumption of risk, incidence of marketing costs. Wastes of competition. Three credits. Prerequisites: 8, 9.

91w. Principles of Organization and Management. (Engineers.) Types of operating organization; specialization; co-ordination of men and departments, planning; delegation of authority; means of control; establishment and maintenance of standards for materials, operation, machinery; scientific management; personnel problems. Three credits. Prerequisite: seniors without prerequisite or juniors with 8 and 9 or equivalent.

92s. Business Finance. (Engineers.) A study of the principles of financing business concerns. Banking facilities from the viewpoint of the business man. The organization and financial management of corporations with special reference to the various types of corporate securities. Three credits. Prerequisites: 8, 9, or equivalent.

93s. Cost Accounting. (Engineers.) Principles of manufacturing cost accounting. Use of accounting records and reports to control materials, labor, and indirect factory expenses. Special factory cost problems. Three credits. Prerequisite: 29.

131f-132w-133s.* Cost Accounting. General principles of cost accounting; elements of costs; methods of arriving at costs, and of distribution overhead; application of cost accounting principles to selling, banking, mining, farming, etc. Three credits per quarter. Prerequisite: 29.

154s. Public Utilities. Economic and legal bases of classification. Relative advantages of public ownership and regulation. Central and municipal regulation compared. The basis of rates; relative rates; rates and service. Summary of the theories of valuation. Three credits. Prerequisite: 57.

161f,w. Labor Problems and Trade Unionism.

167w. Personnel Administration. Managerial policy for various types of organization on labor. Special attention to job analysis, employment, incentives, and regularization of employment.

168s. Advanced Personnel Administration. Special attention to employee-training, joint relations, health and safety, and methods of personnel research, e.g., by analysis of labor turnover.

ELECTRICAL ENGINEERING

43s-44f-45w. Electric Power. An elementary study of the problems involved in the generation, distribution, measurement, and utilization of electric power. Lectures, recitations, and laboratory work supplemented by numerous problems. Three credits per quarter. Prerequisite: physics.

ENGLISH

4f-5w-6s. Rhetoric and Composition. Practical training in the art of writing, the principles of structure, and analysis of specimens of good prose. Three credits per quarter. No prerequisite.

GEOLOGY AND MINERALOGY[1]

67f. Mineralogy of Chemical Materials. Lectures on special laboratory methods of mineralogy, nature and identification of the chief commercial minerals, and the world's supply and market for the same. Laboratory work in identification and tests of the value of minerals. Three credits. Prerequisite: 6 quarter credits of chemistry at University.

* All quarters must be completed before credit is given for any quarter.

[1] For other courses in the Department of Geology and Mineralogy, see bulletin for the College of Science, Literature, and the Arts.

GERMAN

Sequences.—For students entering without German, Courses 24-25-26, 27, 28-29. For students entering with two years of preparatory German, Courses 27, 28-29.

24f-25w-26s. Beginning German. Pronunciation, conversation, grammar, and composition; readings and easy prose. Four credits per quarter. No prerequisite.

27f. Narrative Prose. Reading, grammar review. Three credits. Prerequisite: 26 or two years preparatory German.

28w-29s. Advanced Chemical German. Selections from more difficult works on chemistry. Three credits per quarter. Prerequisite: 27.

MATHEMATICS AND MECHANICS

MATHEMATICS

9f,w. Higher Algebra. (High school.) Fundamental rules, fractions, linear simultaneous equations, graphs, theory of exponents, surds, complex quantities, quadratic equations, numerical exercises. Without credit.

10f,w(su). Solid Geometry. See Course 10f,w, under Department of Drawing and Descriptive Geometry.

11f,w,s. College Algebra. Theory of quadratic equations, interpretation of complex results, graphical representation, indeterminate equations, ratio, proportion, variation, progressions, series, undetermined coefficients, binomial theorem, logarithms, theory of equations, derivatives, Horner's method. Five credits. Prerequisite: higher algebra.

12w,s,su. Trigonometry. Rectangular co-ordinates, angles, trigonometric functions, solution of plane right triangles, reduction formulas, fundamental relations, addition formulas, double angles, half angles, identities and equations, inverse functions, oblique triangles, De Moivre's theorem, spherical right triangles. Five credits. Prerequisite: 11.

13f,w,s(su). Analytic Geometry. Co-ordinates, systems, equations, locus, straight line, second degree equations, polar co-ordinates, parametric equations, derivatives, tangents, normals, conic sections, rotation of axes, empirical equations, space co-ordinates, plane, line quadric surfaces, cylinders, space curves, tangent lines, planes. Five credits. Prerequisite: 12.

24f,w. Differential Calculus. Rules for differentiating, simple applications of derivative, maxima and minima, differentials, rates, change of variables, radius of curvature, mean value, indeterminate forms, partial differentiation, series, Taylor's theorem, asymtotes, singular points, applications to geometry of space. Five credits. Prerequisite: 13.

25w,s. Integral Calculus. Standard elementary forms, definite integral, rational fractions, integration by substitution, integration by parts, reduction formulas, integration a process of summation, successive and partial integration, elementary ordinary differential equations. Five credits. Prerequisite: 24.

MECHANICS

26f,s,su. Technical Mechanics. (Statics.) Five credits. Prerequisite: 25.

84s. Technical Mechanics. (For chemical engineers.) Statics, resolution of forces, conditions of equilibrium, center of gravity, moment of inertia, stresses in framed structures and machines, kinematics, dynamics of a particle, Newton's laws of motion, work, energy, power, impulse, and momentum. Five credits. Prerequisite: 25.

MATERIALS

85f. Strength of Materials with Laboratory. (For chemical engineers.) Mechanical and elastic properties of materials of construction, beams, shafts, columns, combined stresses, dynamic stresses. Four credits. Prerequisite: 84.

HYDRAULICS

86w. Hydraulics with Laboratory. (For chemical engineers.) Hydrostatics, Bernoulli's theorem, flow through orifices, pipes, and over weirs, dynamic action of jets and streams, flow of gases through pipes. Three credits. Prerequisite: 84.

MECHANICAL ENGINEERING

12f,w,s. Elementary Shop Practice in Foundry. Floor- and machine-molding, iron-, brass-, and aluminum-casting. Inspection trips and reports. One hour lecture and five hours laboratory. Two credits. No prerequisite.

13f,w,s. Elementary Shop Practice in Forging. Forging and welding wrought iron and steel; hardening, tempering, and annealing high carbon steel. One hour lecture and five hours laboratory per week. Two credits. No prerequisite.

17f,w. Elementary Shop Practice in Machine Shop. An elementary course in machine shop work arranged especially for students in Chemical Engineering. One hour lecture and five hours laboratory per week. Two credits. No prerequisite.

38f. Machine Design. Calculation and design of machine parts: riveted joints, screwed fastenings, bearings, rotating pieces, flexible connections, gears, engine details, rope driving. Arranged for students in Chemical Engineering. Lectures and drafting. Three credits. Prerequisite: M. & M. 26.

147w. Heat Engines. Elementary thermodynamics. Properties of steam; calorimeters, pyrometry; types and details of steam engines; valve gears; governors; compound engines; condensers, pumps. Combustion and fuels; evaporation; steam boilers, smoke prevention. Includes four hours laboratory work per week. Four credits. Prerequisite: M. & M. 84.

148s. Heat Engines. Elementary study of steam turbines and gas engines; gas producers. Refrigeration. Air compressors. Includes four hours work in laboratory each week. Three credits. Prerequisite: 147.

METALLOGRAPHY

160f. Metallography. (Chemists.) Principles of metallography, including constitution diagrams, preparation and standardization of thermocouples, preparation and thermal analysis of alloys, their microscopic examination and photomicrographs; typical alloy systems such as iron carbon (steel, cast iron), and some non-ferrous alloys. Laboratory work. Three credits. Prerequisite: Chemistry 21.

161w. Advanced Metallography. (Chemists.) Metallography and heat treatment of iron and steel, including alloy steels, commercial uses of various steels, and engineering specifications. Laboratory work. Three credits. Prerequisite: 160.

162s. Advanced Metallography. (Chemists.) Metallography of the non-ferrous metals with a study of the constitution diagrams, properties, and uses of important commercial alloys. Laboratory work. Three credits. Prerequisite: 160.

163f-164w-165s. Advanced Metallography. Technical and scientific research. The study of steel rails, automobile and locomotive parts, tool steels, etc. Special problems in metallography with outside reading. Seminar work on the recent advances in metallography.

201f-202w-203s. Advanced Metallography for Graduate Students. Intended primarily for research work.

METALLURGY

3f. General Metallurgy. Combustion, fuels, refractory materials, furnaces, and fluxes. Lectures and recitations. Three credits. Prerequisite: Chemistry 8 or equivalent.

4w. Metallurgy of Pig Iron. General principles of iron blast furnace practice. Construction of furnace, handling of stock and products, principles of regulations. Lectures and recitations. Three credits. Prerequisite: Metallurgy 3.

5s. Metallurgy of Wrought Iron and Steel. General principles involved in the production of wrought iron and steel. Lectures and recitations. Three credits. Prerequisite: Metallurgy 4.

106f. Metallurgy of the Base Metals. Lead, copper, zinc, and mercury. Consideration of smelting methods and principles involved in refining. Lectures and recitations. Four credits. Prerequisite: Metallurgy 3.

107w. Metallurgy of Base Metals. Continuation of Course 106. Four credits. Prerequisite: Metallurgy 106.

108s. Metallurgy of the Precious Metals. Principles involved and methods used in the extraction of gold, silver, and other precious metals. Lectures and recitations. Four credits. Prerequisite: Metallurgy 107.

109f. Metallurgy of Base Metals. (Chemists, mechanical engineers.) Special consideration is given to mechanical appliances. Lectures and recitations. Three credits. Prerequisite: Chemistry 8 or equivalent.

109w. Metallurgy of Base Metals. (Chemists, electrical engineers.) Special consideration is given to electrical appliances. Lectures and recitations. Three credits. Prerequisite: Chemistry 8 or equivalent.

MILITARY SCIENCE AND TACTICS

REQUIRED WORK

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

ELECTIVE WORK

Students who have completed the Basic Course, R.O.T.C. may be selected for advanced work by the professor of military science and tactics.* Those who pursue the Advanced Course are required to sign an agreement with the government to continue the two years' course to completion. This includes attendance at a training camp, held normally during the summer following the first year's advanced work. The camp is conducted free of cost to the student, and in addition, while actually in camp, the student receives the pay prescribed for the seventh grade in the army. Students pursuing the Advanced Course are also furnished a special uniform and receive a fixed allowance per day. The total Government compensation for the two years' advanced work amounts to something over $200. Students who satisfactorily complete the Advanced Course will be commissioned in the Officers' Reserve Corps of the United States Army. The University allows 18 credits for the two years' Advanced Course R.O.T.C. work, which may be applied towards graduation.

1f-2w-3s. First Year Basic Course R.O.T.C. No prerequisite.

Infantry. Practical and theoretical instruction in school of soldier, squad and company; elementary subjects of military training; infantry equipment.

Coast Artillery. Duties of heavy artillery soldier; military customs and methods; elementary topography; practical study of one gun and one carriage.

4f-5w-6s. Second Year Basic Course. R.O.T.C. Prerequisite: 1-2-3.

Infantry. Practical instruction in school of platoon and company; military sketching and map-reading; infantry weapons; minor tactics.

* Students in Chemical Engineering who wish to take the Advanced Course, R.O.T.C. in their junior year may postpone some of the required work until their senior year, but this should be done only after consultation with Professor C. A. Mann.

Coast Artillery. Duties of non-commissioned officer of heavy artillery: guns, carriages, ammunition and accessories; elementary topography (preparation of precise maps); construction and operation of motor vehicles.

51f-52w-53s. First Year Advanced Course. R.O.T.C. Three credits per quarter. Prerequisite: 4-5-6.

Infantry. Field engineering; infantry weapons including trench mortars, 37 mm. gun, grenades, and pistol; minor tactics.

Coast Artillery. Duties of a heavy artillery officer; guns, carriages, and determination of geodetic data; motor transport (advanced).

54f-55w-56s. Second Year Advanced Course, R.O.T.C. Three credits per quarter. Prerequisite: 51-52-53.

Infantry. Minor tactics; administration: military law; military history and policy of the United States; rules of land warfare.

Coast Artillery. Duties of heavy artillery officer; administrative methods; military law; military policy of the United States; tactics of infantry; field engineering; problems in employment of heavy artillery and in the use of heavy artillery against armored ships.

PHYSICAL EDUCATION FOR MEN

General statement.—A physical examination is required of all new matriculants, and of all others using the department privileges, at the beginning of the year, and as often during their college courses as their physical condition may indicate.

For a special four-year professional course in physical education and athletic coaching, see bulletin of the College of Education. Students interested in this course should consult Professor L. F. Keller before registering.

1f-2w-3s. Freshman Physical Education. Mass activities, corrective exercise, apparatus work, swimming, games, and efficiency test. Credit.* No prerequisite.

4f,w,s. Freshman Hygiene. Credit.* No prerequisite.

7f-8w-9s. Advanced Leaders. One hour of instruction; two hours leading squads in Physical Education 1-2-3 or 16-17-18 under supervision. One credit per quarter. Prerequisite: 1-2-3 or instructor's permission.

10f-11w-12s. Minor Sports. Study of nature and function of play; use of leisure time; rules, theory, technique and values of different sports. Fall: golf, soccer, handball, boxing. Winter: winter sports, wrestling, tumbling. Spring: swimming, indoor baseball, volley-ball, tennis. Lecture one hour, practice three hours. Two credits per quarter. Prerequisite: 1-2-3 or instructor's permission.

16f-17w-18s. Drill Substitution. By petition in substitution for military science. Examiner, Dr. L. J. Cooke. No credit. No prerequisite.

* Course 1-2-3, 4 carries a total of three credits. The entire course must be completed before credit is receivd for any quarter. Preventive Medicine 12 may be offered as a substitute for Course 4.

30s. Athletic Training and First Aid. Principles governing conditioning of men for various sports; diet, sleep, exercise, bathing, massage. Overtraining, its cause, diagnosis, prevention and cure. Prevention and first aid treatment of common athletic injuries. Two credits. No prerequisite.

PHYSICAL EDUCATION FOR WOMEN

This department aims to promote the health of the women students. It gives physical examination and advice to all on entrance; plans systematically to keep in close touch with them during their first two years of residence; conducts yearly consultations with, and examines when necessary, all upper-class students; gives courses in hygiene; organizes neuromuscular activity leading toward organic strength, nervous stability, conscious motor control, correct bodily mechanics, skill in handling the body and in physical recreation, and the development of that valuable social quality known as good sportsmanship; co-operates closely with the Woman's Athletic Association in encouraging and organizing athletic sports; holds regular office hours for the purpose of consultation with all students who desire its advice.

Work in this department is required of all newly entering students (see Courses 1-2-3 and 4) and of all sophomores, who are permitted as free a choice among the sophomore courses as their physical condition permits (see "sophomore" courses; students who cannot swim must register for Course 22-23 during their sophomore year). Physical examinations or consultations required annually of all students.

For a special four-year professional course designed to prepare graduates for the responsible direction of physical education activities see bulletin for the College of Education.

Six credits toward the degree can be gained by taking courses in exercise. (Courses 43-44-45, 66-67-68, 69-70-71.)

For further information see bulletin of the College of Science, Literature, and the Arts and of the College of Education.

1f-2w-3s. Elementary Physical Training. Lighter forms of gymnastics, apparatus work, orthopedic exercise, folk dancing, indoor and outdoor games. Individual health consultations. No credit. Prerequisite: none. Required of all new students.

4f. Preliminary Hygiene. One lecture a week. The most essential aspects of the care of personal health. No credit. Prerequisite: none. Required of all new students.

PHYSICS

3f. Elements of Mechanics and Sound. Mechanics of solids, fluids, wave motion, and sound; simpler fundamental principles. First part of a general course, 3, 23, 31, 43. Course 4 should be taken with this course. Three lectures, one quiz hour a week. Three credits. Prerequisites: trigonometry, equivalent of Mathematics 12.

4f. Elements of Mechanics and Sound Laboratory. Measurements in the mechanics of solids, fluids, wave motion, and sound; the laboratory part supplementing Course 3. One two-hour session in the laboratory a week. One credit. Prerequisite: 3 or registration in 3.

23w. Heat. A study of the principles underlying heat phenomena. Course 24 should be taken in conjunction with this course. Three lectures, one quiz hour a week. Three credits. Prerequisite: 3.

24w. Heat Laboratory. The laboratory part supplementing Course 23. One two-hour session in the laboratory a week. One credit. Prerequisites: 4, 23 or registration in 23.

31f,s. Optics. A study of the principles underlying light phenomena. Course 32 should be taken in conjunction with this course. Three lectures, one quiz hour a week. Three credits. Prerequisite: 3.

32f,s. Optics Laboratory. The laboratory part supplementing Course 31. One two-hour session in the laboratory a week. One credit. Prerequisites: 4, 31, or registration in 31.

35w. Optics. Experimental demonstration of optical phenomena and a brief study of the fundamental optical principles. Two lectures a week. Designed for those who cannot take the fuller course. Two credits. Prerequisite: 3.

43s. Magnetism and Electricity. A study of the principles underlying magnetic and electric phenomena. Course 44 should be taken in conjunction with this course. Three lectures, one quiz hour a week. Three credits. Prerequisite: 3.

44s. Electrical Laboratory. The laboratory part supplementing Course 43. One two-hour session in the laboratory a week. One credit. Prerequisites: 4, 43, or registration in 43.

101f-103w-105s. Theoretical Physics. An intensive analytical survey of the fundamental principles of mechanics, sound, heat, light, electricity, and magnetism, designed to supplement the general course and to prepare students for more specialized graduate courses. Five lectures a week. Five credits per quarter. Prerequisites: 12 credits in physics, calculus.

102f. Laboratory Arts. Designed to acquaint students with the methods used in glass-blowing, silvering, etching, metal to glass seals, making quartz fibers, soldering, spinning, spot welding, etc., as a preparation for general experimental work.

104w. Precision Mechanics. Standard methods of precise measurements of length, mass, and time.

111f-113w-115s. Elements of Mathematical Physics. A study of the fundamental principles and standard methods involved in the mathematical analysis of physical problems. Three lectures a week. Three credits per quarter. Prerequisites: 105, calculus.

112f-114w-116s. Elementary Physical Investigation. The experimental or theoretical study of physical phenomena, the nature or laws of which are not as yet understood. Three credits per quarter. Prerequisites: 106, calculus.

122s. Pyrometry and Heat. An experimental study of pyrometry, heat quantity, heat transfer, hygrometry, and gas liquefaction. One lecture, two three-hour sessions in the laboratory a week. Three credits. Prerequisites: 23, 24.

132w. Applied Optics. Special experimental work in spectrometry, optical instruments, photometry, absorption, polarized light. Two three-hour laboratory periods a week. Prerequisites: 31, 32.

144f. Electrical Measurements. Devoted mainly to the study of potentiometer methods, capacity, inductance, and magnetic flux. Three two-hour laboratory periods a week. Three credits. Prerequisites: 43, 44.

146w. Electrical Measurements of Precision. Precision measurements of electromotive force, current, resistance, capacity, inductance, and magnetic flux. Use of apparatus of highest precision. Special problems. Three two-hour laboratory periods a week. Three credits. Prerequisite: 144.

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.

150. Conduction through Gases. An analytical study of the theories and methods of investigation, supplemented by laboratory technique.

PHYSIOLOGIC CHEMISTRY

100w-101s. Physiologic Chemistry. The components of the animal body; foods, digestion, the excreta, and metabolism. Third year medical students and others. Three credits per quarter. Prerequisites: physics and Chemistry 130.

100x-101x. Physiologic Chemistry Laboratory. Three credits per quarter.

PREVENTIVE MEDICINE AND PUBLIC HEALTH

2s. Hygiene and First Aid to the Sick and Injured. Lectures, demonstrations, and recitations. Promotion of health. Sources, routes, and prevention of communicable diseases. One hour per week during spring quarter. No credit.

102f,w,s,su. Sanitation. Sanitary supervision of water and milk supplies, sewerage systems and sewage, refuse, and garbage disposal systems. Practical work including field investigations, laboratory examinations, interpretation of results, recommendations to correct unsatisfactory conditions, report-writing and office procedure. Open only to graduate students and seniors who have had Bacteriology 101; Chemistry 21 or 27, and 32 or 37; Physics 22, 32, 42. Credits and hours arranged.

The Bulletin *of the* University *of* Minnesota

The School of Chemistry
Part II

Announcement of Program for the Year 1924-1925

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1924

JULY

Su	Mo	Tu	W	Th	Fr	Sa
..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..
..	..	..	..	..	..	..

AUGUST

Su	Mo	Tu	W	Th	Fr	Sa
..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

SEPTEMBER

Su	Mo	Tu	W	Th	Fr	Sa
..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	..	..	..	..
..	..	..	..	..	..	..

OCTOBER

Su	Mo	Tu	W	Th	Fr	Sa
..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..
..	..	..	..	..	..	..

NOVEMBER

Su	Mo	Tu	W	Th	Fr	Sa
..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	..	..	..	..	..	..

DECEMBER

Su	Mo	Tu	W	Th	Fr	Sa
..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..
..	..	..	..	..	..	..

1925

JANUARY

Su	Mo	Tu	W	Th	Fr	Sa
..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
..	..	..	..	..	..	..

FEBRUARY

Su	Mo	Tu	W	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
..	..	..	..	..	..	..
..	..	..	..	..	..	..

MARCH

Su	Mo	Tu	W	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	..	..	..	..
..	..	..	..	..	..	..

APRIL

Su	Mo	Tu	W	Th	Fr	Sa
..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	..	..
..	..	..	..	..	..	..

MAY

Su	Mo	Tu	W	Th	Fr	Sa
..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

JUNE

Su	Mo	Tu	W	Th	Fr	Sa
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14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	..	..	..	..
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JULY

Su	Mo	Tu	W	Th	Fr	Sa
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12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..
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AUGUST

Su	Mo	Tu	W	Th	Fr	Sa
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9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	..	..	..	..	..

SEPTEMBER

Su	Mo	Tu	W	Th	Fr	Sa
..	..	1	2	3	4	5
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13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	..	..	..
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OCTOBER

Su	Mo	Tu	W	Th	Fr	Sa
..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
..	..	..	..	..	..	..

NOVEMBER

Su	Mo	Tu	W	Th	Fr	Sa
1	2	3	4	5	6	7
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15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	..	..	..	..	..
..	..	..	..	..	..	..

DECEMBER

Su	Mo	Tu	W	Th	Fr	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..
..	..	..	..	..	..	..

UNIVERSITY CALENDAR

1924-25

1924			
September	18	Thursday	Payment of fees closes, except for new students
September	18-20		Entrance examinations
September	22-26		Examinations for removal of conditions
			Physical examinations for all new students
			Registration period,[2] colleges of Science, Literature, and the Arts, Agriculture, Forestry, and Home Economics, and Education
September	22	Monday	First semester evening extension classes begin[3]
September	25-26		Registration days[2] for all colleges not included above
September	26	Friday	Payment of fees for new students closes
September	29	Monday	Fall quarter begins, 8:30[1] a.m.
October	23	Thursday	Senate meeting, 4:30 p.m.
November	1	Saturday	Home Coming Day; classes dismissed the third and fourth hours
November	4	Tuesday	Election Day; a holiday
November	11	Tuesday	Armistice Day; a holiday
November	27	Thursday	Thanksgiving Day; a holiday
December	4	Thursday	State Day Convocation
December	17-20		Final examination period
December	18	Thursday	Commencement Convocation
			Senate meeting, 4:30 p.m.
December	20	Saturday	Fall quarter ends. Christmas vacation begins, 5:20 p.m.
1925			
January	3	Saturday	Registration for winter quarter in College of Engineering and Architecture
January	5	Monday	Christmas vacation ends, winter quarter begins, 8:30[1] a.m.
January	30	Friday	First semester evening extension classes close
February	2	Monday	Second semester evening extension classes begin[3]
February	12	Thursday	Lincoln's Birthday; a holiday
February	19	Thursday	Charter Day Convocation
			Senate meeting, 4:30 p.m.
March	16-19		Final examination period
March	21	Saturday	Winter quarter ends, spring vacation begins, 5:20 p.m.

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

[2] Registration subsequent to the date specified will necessitate the approval of the college concerned.

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

March	28	Saturday	Registration for spring quarter in College of Engineering and Architecture
March	30	Monday	Spring vacation ends, spring quarter begins, 8:30[1] a.m.
April	10	Friday	Good Friday; a holiday
May	14	Thursday	Cap and Gown Day Convocation
May	21	Thursday	Senate meeting, 4:30 p.m.
May	29	Friday	Second semester evening extension classes close
May	30	Saturday	Memorial Day; a holiday
June	10-13		Final examination period
June	13	Saturday	Spring quarter closes, 5:20 p.m.
June	14	Sunday	Baccalaureate service
June	15	Monday	Fifty-third annual commencement
June	19-20		Summer Session first term begins, registration and payment of fees
June	22	Monday	Classes begin, 8:00 a.m.
July	4	Saturday	Independence Day; a holiday
August	1	Saturday	First term Summer Session closes
			Registration and payment of fees for second term closes
August	3	Monday	Second term classes begin
September	5	Saturday	Second term Summer Session closes

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 and peculiar circumstances shall justify the appropriate committee of the college concerned permitting registration at a later date.

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

SCHOOL OF CHEMISTRY

ADMINISTRATION

O. M. Leland, Dean 127C
I. W. Geiger, Chairman, Student Work Committee .. 127C
H. H. Barber, Supplies 226C

OFFICES OF OUTSIDE DEPARTMENTS

Drawing and Descriptive Geometry 208E
Economics 113B
Electrical Engineering 135EE
English 221F
Geology and Mineralogy 108P
German 211F
Mathematics and Mechanics 114E
Mechanical Engineering 105ME
Metallography 306M
Metallurgy 103M
Military Science and Tactics ..... A
Physical Education for Men 106A
Physical Education for Women .. 101WGm
Physics 20Ph
Physiologic Chemistry 307MH
Preventive Medicine and Public Health ..... MH

ABBREVIATIONS

Buildings.—A, Armory; B, Business; C, Chemistry; E, Engineering; EE, Electrical Engineering; Ex, Experimental Engineering; F, Folwell Hall; M, Mines; ME, Mechanical Engineering; MH, Millard Hall; P, Pillsbury; Ph, Physics; WGm, Women's Gymnasium.

I, II, III, etc. First hour (8:30 to 9:20), second hour (9:30 to 10:20), third hour (10:30 to 11:20), fourth hour (11:30 to 12:20), fifth hour (12:30 to 1:20), sixth hour (1:30 to 2:20), seventh hour (2:30 to 3:20), eighth hour (3:30 to 4:20), ninth hour (4:30 to 5:20).

Ar.	To be arranged or assigned
Cred.	Credits
f,w,s,su	Quarters: fall, winter, spring, and summer session
Lab.	Laboratory
Lect.	Lecture
MTWThFS	Monday, Tuesday, etc.
Pre-med.	Pre-medical
Prereq.	Prerequisite
Rec.	Recitation
Sec.	Section

PROGRAM

1924-25

CHEMISTRY

GENERAL INORGANIC CHEMISTRY

No.	Title	Hour	Day	Room	Instructor
1f-2w-3s	General Inorganic Chemistry				
	Sec. 1 (Pre-med., pre-dent., jr. architects.)				
	Lect.	VI	MWF	225C	Mr. Reyerson
	Lab.	VI-VII or VIII-IX	TTh	110C	Mr. Reyerson
	Sec. 2 (Agr.) fall, winter				
	Lect.	VII	MWF	100C	Mr. Pervier
	Lab.	VIII-IX	MW	210C	Mr. Pervier
	Sec. 2 (Agr.) spring				
	Lect.	VII	MF	325C	Mr. Pervier
		IV	S	325C	Mr. Pervier
	Lab.	VIII-IX	MF	210C	Mr. Pervier
4f-(5w)	General Inorganic Chemistry				
	Sec. 1 (Engrs.)				
	Lect. 1	IV	MWF	100C	Mr. Heisig
	2	II	TThS	225C	Mr. Kirk
	3	VII	MWF	490C	Mr. Kirk
	Lab. 1	VII-IX	W	110C	Mr. Heisig
	2	I-III	M	110C	Mr. Kirk
	3	III-V	W	110C	Mr. Heisig
	4	II-IV	F	110C	Mr. Kirk
	Sec. 2 (Miners)				
	Lect.	II	TThS	111C	Mr. Pervier
	Lab.	VI-VIII	Th	110C	Mr. Pervier
	Sec. 3 (Pharm., phys. ed.)				
	Lect.	I	MWF	325C	Mr. Stephens
	Lab.	VII-VIII	TTh	110C	Mr. Stephens
	Sec. 4 (Pre-dent., pre-med.)				
	Lect.	VI	MWF	100C	Mr. Stephens
	Lab.	VI-VII or VIII-IX	TTh	210C	Mr. Stephens
			TTh	210C	
(4f)-5w	General Inorganic Chemistry				
	Sec. 1 (Engrs.)				
	Lect. 1	IV	MWF	490C	Mr. Heisig
	2	II	TThS	225C	Mr. Kirk
	3	VII	MWF	490C	Mr. Kirk
	Lab. 1	VI-VIII	W	110C	Mr. Heisig
	2	I-III	M	110C	Mr. Kirk
	3	III-V	W	110C	Mr. Heisig
	4	II-IV	F	110C	Mr. Kirk
	Sec. 2 (Miners)				
	Lect.	II	TThS	111C	Mr. Pervier
	Lab.	VI-VIII	Th	110C	Mr. Pervier

No.	Title	Hour	Day	Room	Instructor
	Sec. 3 (Pharm., phys. ed.)				
	Lect.	I	MWF	325C	Mr. Stephens
	Lab.	VII-VIII	TTh	110C	Mr. Stephens
	Sec. 4 (Pre-dent., pre-med.)				
	Lect.	VI	MWF	100C	Mr. Stephens
	Lab.	VI-VII	TTh	210C	Mr. Stephens
		or			
		VIII-IX	TTh	210C	
6f-7w-8s	General Inorganic Chemistry				
	Lect.	II	MWF	225C	Miss Cohen
	Lab.	I-III	ThS	210C	Miss Cohen
9f-10w	General Inorganic Chemistry				
	Sec. 1 (Agr.)				
	Lect.	VII	MWF	225C	Mr. Reyerson
	Lab.	VIII-IX	MWF	110C	Mr. Reyerson
	Sec. 2 (Chem., S.L.A.)				
	Lect.	II	MWF	100C	Mr. Sneed
	Lab.	I-III	ThS	290C	Mr. Sneed
9w-10s	General Inorganic Chemistry				
	Lect.	IV	MWF	225C	Ar
	Lab.	VIII-IX	MWF	290C	Ar
11f	Qualitative Chemical Analysis				
	Lect.	IV	MWF	225C	Miss Cohen
	Lab.	VI-VII	MW	290C	Miss Cohen
11s	Qualitative Chemical Analysis				
	Lect.	VI	MWF	100C	Mr. Stephens
	Lab.	VI-VII	TTh	210C	Mr. Stephens
		or			
		VIII-IX			
12f	Qualitative Chemical Analysis				
	Lect.	I	TThS	115C	Mr. Maynard
	Lab.	VI-VIII	MW	290C	Mr. Maynard
12s	Qualitative Chemical Analysis				
	Lect.	II	MWF	100C	Mr. Sneed
	Lab.	I-III	ThS	290C	Mr. Sneed
13f	Qualitative Chemical Analysis				
	Lect.	VI	MW	111C	Mr. Kirk
	Lab.	VII-IX	MW	290C	Mr. Kirk
		VI-VIII	F		
13w	Qualitative Chemical Analysis				
	Lect.	I	TTh	115C	Mr. Maynard
	Lab.	VI-VIII	MWF	290C	Mr. Maynard
14f-15w	General Inorganic Chemistry				
	Sec. 1 (Engrs.)				
	Lect.	II	TS	100C	Mr. Heisig
		II	Th	325C	Mr. Heisig
	Lab.	VI-IX	T	110C	Mr. Heisig
		VI-VII	Th	110C	Mr. Heisig
	Sec. 2 (Miners)				
	Lect.	II	TThS	111C	Mr. Pervier
	Lab.	VIII-IX	T	110C	Mr. Pervier
		VI-IX	Th	110C	Mr. Pervier
	Sec. 3 (Pharm., phys. ed.)				
	Lect.	I	MWF	115C	Mr. Maynard
	Lab.	VI-VIII	TTh	110C	Mr. Maynard

No.	Title	Hour	Day	Room	Instructor
16s	Qualitative Chemical Analysis				
	Sec. 1 (Engrs.)				
	Lect. 1	IV	MWF	490C	Mr. Heisig
	2	VI	MWF	490C	Mr. Kirk
	3 Continuation of 15				
		II	TThS	225C	Mr. Heisig
	Lab. 1	I-III	MF	110C	Mr. Heisig
	2	II-IV	T	110C	Mr. Kirk
		I-III	Th	110C	Mr. Kirk
	3	VII-IX	MF	110C	Mr. Kirk
	4 Continuation of 15				
		VI-IX	Th	110C	Mr. Heisig
		I-II	F	110C	Mr. Heisig
	Sec. 2 (Miners)				
	Lect.	II	TThS	111C	Mr. Pervier
	Lab.	VII-IX	MF	110C	Mr. Pervier
	Sec. 3 (Pharm.)				
	Lect.	I	MWF	325C	Mr. Maynard
	Lab.	VI-VIII	TTh	110C	Mr. Maynard
18f,w,s	Elementary Chemistry for Nurses ..				
		VI	T	100C	Mr. Barber
	Lect.	I	S	225C	Mr. Barber
	Lab.	II-III	S	210C	Mr. Barber
19s	Teachers' Course	IV	MWF	315C	Mr. Geiger
51s	Junior Review Examination (General Inorganic)	Ar	Ar	ArC	Mr. Sneed
52s	Junior Review Examination (Qualitative Analysis)	Ar	Ar	ArC	Mr. Sneed
101s	History of Chemistry	Ar	Ar	ArC	Miss Cohen
102w	Advanced Qualitative Analysis ...	Ar	Ar	290C	Mr. Sneed
103f-104w-105s	Advanced Inorganic Chemistry ...	IV	MWF	111C	Mr. Sneed
301f-302w-303s	Research in Inorganic Chemistry ..	Ar	Ar	ArC	Mr. Sneed

ANALYTICAL CHEMISTRY

20w-21s	Quantitative Analysis				
	Lect.	VI	M	325C	Mr. Geiger
	Rec. (Chem.)	VI	W	315C	
	Lab. (Chem.)	VI-IX	F	310C	
		VII-IX	MW	310C	
	Rec. (S.L.A.)	VI	F	315C	
	Lab. (S.L.A.)	VI-IX	W	310C	
		VII-IX	MF	310C	
27f	Quantitative Analysis				
	Lect.	VI	M	325C	Mr. Geiger
	Rec. Sec. 1	VI	W	315C	
	Sec. 2	VI	F	315C	
	Lab. Sec. 1	VII-IX	MW	310C	
		VI-IX	F	310C	
	Sec. 2	VII-IX	MF	310C	
		VI-IX	W	310C	
27w	Quantitative Analysis				
	Lect.	VI	W	325C	Mr. Sarver
	Rec.	VI	F	115C	
	Lab.	VI-IX	M	310C	
		VII-IX	WF	310C	

No.	Title	Hour	Day	Room	Instructor
28f	Quantitative Analysis				
	(Mech. engineers)				
	Lect.	VI	T	325C	Mr. Sarver
	Lab.	VII-IX	T	310C	
		VI-IX	Th	310C	
28w	Quantitative Analysis				
	(Miners)				
	Lect.	VI	T	325C	Mr. Geiger
	Lab.	VII-IX	T	310C	
		VI-IX	Th	310C	
	(Elect. engineers)				
	Lect.	VI	Th	325C	Mr. Stoppel
	Lab.	VI-IX	T	310C	
		VII-IX	Th	310C	
28s	Quantitative Analysis				
	Sec. 1 Lect.	VI	T	325C	Mr. Sarver
	Lab.	VII-IX	T	310C	
		VI-IX	Th	310C	
	Sec. 2 Lect.	VI	W	325C	Mr. Stoppel
	Lab.	VII-IX	W	310C	
		VI-IX	F	310C	
53s	Junior Review Examination (Quantitative Analysis)	Ar	Ar	ArC	Mr. Geiger
120w-121s	Quantitative Analysis	VI-IX	MWF	ArC	Mr. Geiger
123f-124w-125s	Advanced Analytical Chemistry ...				
	Lect.	VI	T	315C	Mr. Sarver
	Lab.	VII-IX	T	310C	
		VI-IX	Th	310C	
127f-128w-129s	Chemistry of the Rare Elements ..	(Not offered in 1924-25)			
227f-228w-229s	Selected Topics in Analytical Chemistry	(Not offered in 1924-25)			
321f-322w-323s	Research in Quantitative Analysis	Ar	Ar	ArC	Mr. Geiger

ORGANIC CHEMISTRY

31f-32w	Elementary Organic Chemistry ...				
	Lect.	VI	MWF	490C	Mr. Lauer
	Rec. Sec. 1	VII	M	111C	Mr. Lauer
	2	VII	W	111C	
	3	VII	M	115C	
	4	VII	F	111C	
	5	VII	W	115C	
	6	VII	F	115C	
	Lab. (Secs. to be ar.)	VII-IX	MW	390C	Mr. Lauer
			MF	390C	
			WF	390C	
31w-32s	Elementary Organic Chemistry ...				
	Lect.	IV	MWF	100C	Mr. Smith
	Lab. Sec. 1, 2	VI-VIII	TTh	390C	Mr. Smith
	3, 4	VI-VIII	WF	390C	
	5, 6	I-III	WF	390C	

No.	Title	Hour	Day	Room	Instructor
35f-36w-37s	Organic Chemistry				
	Lect.	III	MWF	325C	Mr. Hunter
	Rec. Sec. 1				
	(Chem.)	IV	T	111C	Mr. Hunter
	Sec. 2				
	(Others)	III	Th	111C	Mr. Lauer
	Lab. Sec. 1				
	(S.L.A., Ch. Eng.)	VI-VIII	TTh	390C	Mr. Lauer
	(Ch. Eng. winter)	VII-IX	TTh		
	Sec. 2 (Chem. 4 yr. f,w)	I-III	TTh	390C	
	(Chem. 4 yr. s)	VI-VIII	TTh		
131s	Organic Analysis				
	Lect.	Ar	Ar	ArC	Mr. Lauer
	Lab.	Ar	Ar	390C	Mr. Lauer
132w	The Rise and Development of Organic Chemistry	Ar	Ar	ArC	Mr. Frankforter
133f	Reagents in Organic Chemistry ...				
	Lect.	II	MWF	325C	Mr. Smith
134f	The Terpenes	(Not offered in 1924-25)			
135f-136w-137s	Organic Chemistry				
	Lect.	III	MWF	325C	Mr. Hunter
	Rec.	III	Th	111C	Mr. Lauer
	Lab.	VI-VIII	TTh	390C	Mr. Lauer
138f,w,s-139f,w,s	Advanced Organic Chemistry Laboratory Work	Ar	Ar	390C	Mr. Hunter
191f-192w-193s	Advanced Organic Chemistry	III	TThS	315C	Mr. Hunter
231f-232w-233s	Organic Chemistry Seminar	Ar	Ar	ArC	
331f-332w-333s	Research in Organic Chemistry ...	Ar	Ar	ArC	Mr. Hunter, Mr. Frankforter, Mr. Smith

PHYSICAL CHEMISTRY

140f-141w-142s	Physical Chemistry				
	Lect.	IV	MWF	325C	Mr. MacDougall
	Rec. Sec. 1 (Chem.)	IV	S	111C	
	2 (Others)	IV	S	115C	Mr. MacDougall
	Lab. Sec. 1 (Chem.)	VI-VIII	MW	15C 117C	Mr. MacDougall
	2 (Others)	VI-VIII	F	15C 117C	Mr. MacDougall
143f,w	Physical Chemistry				
	Lect.	VI	TTh	225C	Mr. Henderson
	Lect.	VI	F	325C	Mr. Henderson
	Lab. Sec. 1	I-III	MW	15C	Mr. Henderson
	2	VII-IX	TTh	117C	Mr. Henderson
146f-147w-148s	Advanced Physical Chemistry	Ar	Ar	ArC	Mr. Henderson
149s	Principles of Colloidal Chemistry ..	Ar	Ar	ArC	Mr. Reyerson
150s	Application of Colloidal Chemistry	(Not offered in 1924-25)			
151s	Radiochemistry	Ar	Ar	ArC	Mr. Henderson
152f,w,s	Radiochemistry Laboratory	Ar	Ar	ArC	Mr. Henderson
156w	Applications of Physical Chemistry to Organic Chemistry	Ar	Ar	ArC	Mr. Henderson
157f-158w-159s	Colloid Chemistry Laboratory	Ar	Ar	ArC	Mr. Reyerson
243f-244w-245s	Thermodynamics and Chemistry ..	(Not offered in 1924-25)			
246f-247w-248s	Kinetic Theory and Atomistics	II	TThS	315C	Mr. MacDougall

No.	Title	Hour	Day	Room	Instructor
250f-251w-252s	Physical Chemistry Seminar	IV	T	315C	Mr. MacDougall, Mr. Henderson, Mr. Reyerson
253f-254w-255s	Advanced Phys. Chemical Laboratory	Ar	Ar	ArC	Mr. MacDougall
341f-342w-343s	Research in Physical Chemistry ..	Ar	Ar	ArC	Mr. MacDougall, Mr. Henderson, Mr. Reyerson

TECHNOLOGICAL CHEMISTRY

60w,s	Power Plant Chemistry				
	Lect.	IV	W	215C	Mr. Harding
	Lab.	VI-IX	MW	10C	Mr. Harding
161f-162w-163s	Food Analysis				
	Lect.	IV	T	215C	Mr. Harding
	Lab.	VI-IX	F	217C	Mr. Harding, Mr. Brewer
		II-III	F	217C	Mr. Harding, Mr. Brewer
164w	Exact Gas Analysis	Ar	Ar	ArC	Mr. Harding
166s	Microchemistry	Ar	Ar	ArC	Mr. Harding
167f	Gas and Fuel Analysis				
	Lect.	I	S	111C	Mr. Harding
	Sec. 1 Lab.	I-III	TTh	10C	Mr. Brewer
	Sec. 2 Lab.	VI-VIII	M	10C	Mr. Harding
		II-IV	S	10C	
168w	Petroleum and Petroleum Products				
	Lect.	I	S	111C	Mr. Harding
	Sec. 1 Lab.	I-III	TTh	217C	Mr. Brewer
	Sec. 2 Lab.	VI-VIII	M	217C	Mr. Harding
		II-IV	S	217C	Mr. Harding
169f,w,s	General Technical Analysis				
	Lect.	II	Th	215C	Mr. Harding
	Lab.	I-III	TS	217C	Mr. Harding, Mr. Brewer
361-362w-363s	Research Work in Technological Chemistry	Ar	Ar	ArC	Mr. Harding

CHEMICAL ENGINEERING

No.	Title	Hour	Day	Room	Instructor
171s	Chemical Machinery	I	MTWThF	111C	Mr. Mann
	Lab.	VI-VIII	M or W	90C	
172f	Industrial Inorganic Chemistry	I	MTWThF	111C	Mr. Montonna
173w	Industrial Organic Chemistry	I	MTWThF	111C	Mr. Montonna
174f,su-175w,su	Chemical Manufacture (Organic) ..	Ar	Ar	90C	Mr. Mann
176f-177w	Applied Electrochemistry				
	Lect.	III	MWF	111C	Mr. Ernst
	Lab.	VI-VIII	W or Th	25C	
178s	Chem. Eng. Calculations	II	MWF	111C	Mr. Ernst
179s	Advanced Applied Electrochemistry	Ar	Ar	ArC	Mr. Mann

No.	Title	Hour	Day	Room	Instructor
180f-181w-182s	Design of Chemical Equipment and Plants	VI-VIII	MF	410C	Mr. Mann
183f	Chemistry of Explosives	(Not offered in 1924-25)			
184s	Organic Dyestuffs	Ar	Ar	ArC	Mr. Frankforter
185s	Advanced Chemical Manufacture	Ar	Ar	ArC	Mr. Mann
186s	Gas Manufacture and Distribution	Ar	Ar	ArC	
187s	Inspection Trip	I-VIII (Spring vacation)			Mr. Mann
271-272-273	Seminar	Ar	Ar	ArC	Mr. Mann
371-372-373	Research	Ar	Ar	ArC	Mr. Mann, Mr. Frankforter

DRAWING AND DESCRIPTIVE GEOMETRY

No.	Title	Hour	Day	Room	Instructor
4f	Engineering Drawing and Descriptive Geometry	VIII-IX	TThF		Mr. Schuck,
	Sec. 1			443C	Mr. Williams
	2			445C	
5w	Engineering Drawing and Descriptive Geometry	I-II	T	445C	Mr. Williams
		VII-VIII	TTh	445C	Mr. Williams
6s	Engineering Drawing and Descriptive Geometry	I-II	T	443C	Mr. Williams
		VI-VII	WTh	443C	Mr. Williams
7w	Engineering Drawing and Descriptive Geometry	I-II	T	455C	Mr. Schuck
		VII-IX	TTh	455C	Mr. Schuck
8s	Engineering Drawing and Descriptive Geometry	I-III	T	445C	Mr. Schuck
		VI-VIII	W	445C	Mr. Schuck
		VI-VII	Th	445C	Mr. Schuck
9f,w,s	Drafting	Ar	Ar	Ar	
M.&M.10f	Solid Geometry				
	Sec. 1	VI	MWF	205E	Mr. Schuck,
	2 (Chem.)	VII	TTh	215E	Mr. Archibald,
		V	S	215E	Mr. Campbell
	3	III	MW	339EE	
		IV	S	339EE	
	4	VII	MWF	215E	
M.&M.10w	Solid Geometry	VII	MWF	215E	Mr. Campbell
38f-39w-40s	Graphs and Charts	I	WF	107E	Mr. Eggers
41f,w-42f,w-43f,w	Technical Drawing				
	Sec. 1	I-II	MWF	455C	Mr. Schuck,
	2	III-IV	MWF	445C	Mr. Cederberg
	3	VIII-IX	MWF	455C	
41s-42s-43s	Technical Drawing				
	Sec. 1	I-II	MWF	445C	Mr. Schuck,
	2	III-IV	MWF	455C	Mr. Cederberg
	3	VIII-IX	MTF	445C	
44f,w,s	Lettering				
	Sec. 1	IV	T	203E	Mr. French
	2	II	Th	206E	Mr. Levens
45f,w,s-46f,w,s	Alphabets	II	TTh	215E	Mr. Kirchner, Mr. Schuck

ECONOMICS

No.	Title	Hour	Day	Room	Instructor
8f-9w-10s	General Economics				
	Sec. 1	I	MWF	21E	Mr. Mudgett
			(s)	22E	
	2	I	MWF	237EE	
	3	III	MWF	335EE	
	4	IV	MWF	106E	
	5	IV	MWF	107E	
28f,w,s	Business Law	I	MWF	135E	Mr. Palmer
	(Sections limited to 50 students)				
29f	Principles of Accounting				
	Sec. 1	I	MWF	238EE	Mr. Ostlund
	2	IV	MWF	138EE	
51f-52w-53s	Business Law				
	Lect.	II	WF	OLAud	Mr. Young
	Sec. 1	I	M	110F	
	2	II	M	102F	
	3	IV	M	Ar	
	4	VI	M	311F	
	5	I	T	Ar	
	6	II	T	104F	
	7	IV	T	125F	
	8	VI	T	25F	
72f	Economics of Transportation				
	Sec. 1	VI	MWF	202B	Mr. Cummings
	2	VIII	MWF	109B	
72s	Economics of Transportation	VIII	MWF	109B	Mr. Cummings
73w	Railway Traffic and Rates	VI	MWF	102B	Mr. Cummings
85f	Principles of Marketing				
	Lect.	I	F	209B	Mr. Vaile
	Sec. 1	I	F	202B	
	2	I	MF	209B	
	3	III	ThS	213B	
	4	IV	WF	213B	
85s	Principles of Marketing				
	Lect.	I	F	109B	Mr. Vaile
	Sec. 1	I	TTh	109B	
	2	I	MW	109B	
	3	III	TTh	213B	
	4	IV	WF	213B	
91w	Principles of Organization and Management	I	MWF	238EE	Mr. O'Hara
92s	Business Finance	I	MWF	238EE	Mr. Stehman
93s	Cost Accounting	IV	MWF	ME	Mr. Ostlund
131f-132w-133s	Cost Accounting	II	TThS	109B	Mr. Ostlund
			(s)	303B	
154s	Public Utilities	I	MWF	102B	Mr. Reighard
161f	Labor Problems and Trade Unionism				
	Lect.	IV	MW	202B	Mr. Hansen
	Sec. 1	IV	F	202B	
	2	IV	F	209B	
	3	I	F	213B	
161w	Labor Problems and Trade Unionism	III	TThS	202B	Mr. Hansen

No.	Title	Hour	Day	Room	Instructor
167w	Personnel Administration				
	Lect.	II	T	202B	Mr. Stead
	Sec. 1	II	ThS	202B	
	2	III	ThS	102B	
168s	Advanced Personnel Administration	II	TThS	209B	Mr. Stead

ELECTRICAL ENGINEERING

No.	Title	Hour	Day	Room	Instructor
43s	Electric Power				
	Lect.	II	TTh	36EE	Mr. Martin
		I	S		
	Lab.	II-III	S	107EE	Mr. Todd
44f-45w	Electric Power				
	Lect.	II	TTh	36EE	Mr. Martin
		III	S		
	Lab.	I-II	S	107EE	Mr. Todd

ENGLISH

No.	Title	Hour	Day	Room	Instructor
4f-5w-6s	Rhetoric and Composition				
	Sec. 1	III	MWF	315C	
	2			225C	

GEOLOGY AND MINERALOGY

No.	Title	Hour	Day	Room	Instructor
67f	Mineralogy of Chemical Materials				
	Lect.	III	MWThF	104P	Mr. Brown
		III-IV	T	100P	Mr. Brown

GERMAN

No.	Title	Hour	Day	Room	Instructor
24f-25w-26s	Beginning German	IV	MTWF	209½F	Mr. Davies
27f	Narrative Prose	II	MWF	209½F	Mr. Lussky
28w-29s	Advanced Chemical German	II	MWF	209½F	Mr. Lussky

MATHEMATICS AND MECHANICS

MATHEMATICS

No.	Title	Hour	Day	Room	Instructor
9f,11f	Higher Algebra				
	Sec. 21-22	VI	MTWThF	217E	Mr. Brooke
				215C	
9w	Higher Algebra				
	Sec. 1	VI	MTWThF	104E	
	2	VII	M	209Ex	
		III	TThFS	209Ex	
10f,w	See Course 10f,w under Department of Drawing and Descriptive Geometry				
11w	College Algebra				
	Sec. 10	VI	MTWThF	215C	

No.	Title	Hour	Day	Room	Instructor
11s	College Algebra				
	Sec. 1	II	MWThFS	136E	
	2	VI	M	203E	
		III	TThFS	203E	
12w	Trigonometry				
	Sec. 10	VI	MTWThF	217E	
12s	Trigonometry				
	Sec. 10	IV	MTWF	115C	
		IV	S	315C	
13f	Analytic Geometry				
	Sec. 1	VII	MTWThF	203E	
	2	V	MTWFS	205E	
	3	VI	MTWThF	205E	
13w	Analytic Geometry				
	Sec. 1	VI	MTWThF	215E	
	2	V	MTWFS	205E	
13s	Analytic Geometry				
	Sec. 10	IV	MTWFS	21E	
24f	Differential Calculus				
	Sec. 10 (Chemists)	III	MTWThF	215C	
	11	III	MTWThF	115C	
24w	Differential Calculus				
	Sec. 3	III	MWThFS	139EE	
25w	Integral Calculus				
	Sec. 7	III	MWThFS	115C	
25s	Integral Calculus	III	MWThFS	139EE	
	MECHANICS				
26f	Technical Mechanics (Statics)				
	Sec. 1	V	MTWFS	203E	
	2	IV	MTWFS	136E	
26s,su	Technical Mechanics (Statics)				
See Engineering Bulletin					
	(Chemists are allowed to take Course 26 only by special permission of the Students' Work Committee)				
84s	Technical Mechanics	III	MTWThF	115C	
	MATERIALS				
85f	Strength of Materials with Laboratory	I	MWF	139EE	
		VI-VII	M	Ex	
	HYDRAULICS				
86w	Hydraulics with Laboratory	I	MF	139EE	
		VI-VII	W	Ex	

MECHANICAL ENGINEERING

No.	Title	Hour	Day	Room	Instructor
12f,w	Foundry	VII-IX	MW	ME	Mr. Moffett
12s	Foundry	VII-IX	MF	ME	Mr. Moffett
13f w	Forge	VII-IX	MW	ME	Mr. Hughes
13s	Forge	VII-IX	MF	ME	Mr. Hughes
17f,w	Machine Shop	VII-IX	MW	ME	Mr. Shipley, Mr. Rogers

No.	Title	Hour	Day	Room	Instructor
38f	Machine Design				
	Lect.	IV	W	201Ex	Mr. Martenis,
	Lab.	VI-IX	MF	204ME	Mr. Flodin
147w-148s	Heat Engines				
	Lect.	IV	MWF	201Ex	
	Lab.	VI-IX	F	Ex	

METALLOGRAPHY

No.	Title	Hour	Day	Room	Instructor
160f-161w-162s	Metallography				
	Lect.	II	MW	306M	Mr. Harder
	Lab.				
	Sec. 1	VI-VIII	Th	306M	Mr. Harder,
	2	Ar	Ar	306M	Mr. Dowdell, Mr. Weber
163f-164w-165s	Advanced Metallography	Ar	Ar	M	Mr. Harder
201f-202w-203s	Advanced Metallography for Graduate Students	Ar	Ar	M	Mr. Harder

METALLURGY

No.	Title	Hour	Day	Room	Instructor
3f	General Metallurgy	I	TThS	108M	Mr. Christianson
4w	Metallurgy of Pig Iron	I	TThS	108M	Mr. Christianson
5s	Metallurgy of Wrought Iron and Steel	I	TThS	108M	Mr. Christianson
106f,107w	Metallurgy of Base Metals	I	F	108M	Mr. Pease
		III	TThS	108M	Mr. Pease
108s	Metallurgy of Precious Metals	I	F	108M	Mr. Pease
		III	TThS	108M	Mr. Pease
109f,w	Metallurgy of Base Metals	IV	MWF	108M	Mr. Christianson, Mr. Pease

MILITARY SCIENCE AND TACTICS

No.	Title	Hour	Day	Room	Instructor
1f-2w	First Year Basic Course, R.O.T.C.				
	Sec. 1	I	MWF	A	Ar
	2	IX	MWF	A	Ar
3s	First Year Basic Course, R.O.T.C.	VII-IX	T	A	Ar
4f-5w	Second Year Basic Course, R.O.T.C.				
	Sec. 1	I	MWF	A	Ar
	2	IX	MWF	A	Ar
6s	Second Year Basic Course, R.O.T.C.	VII-IX	T	A	Ar
51f-52w	First Year Advanced Course, R.O.T.C.				
	Artillery	IV	MF	A	Ar
		VII-IX	W	A	Ar
	Infantry	I, II	TThS	A	Ar
		III, IV	TThS	A	Ar
		VI, VII	TTh	A	Ar
		VIII, IX	TTh	A	Ar
		II	MWF	A	Ar
		III	MWF	A	Ar
		VI	MWF	A	Ar
		VIII	MWF	A	Ar

No.	Title	Hour	Day	Room	Instructor
53s	First Year Advanced Course, R.O.T.C.				
	Artillery	IV	MF	A	Ar
		VII-IX	W	A	Ar
	Infantry	III	TS	A	Ar
		VII-IX	T or W	A	Ar
54f-55w	Second Year Advanced Course, R.O.T.C.				
	Artillery	I	MW	A	Ar
		VII-IX	F	A	Ar
	Infantry	I, II	TThS	A	Ar
		III, IV	TThS	A	Ar
		VI, VII	TTh	A	Ar
		VIII, IX	TTh	A	Ar
		II	MWF	A	Ar
		III	MWF	A	Ar
		VI	MWF	A	Ar
		VIII	MWF	A	Ar
56s	Second Year Advanced Course, R.O.T.C.				
	Artillery	I	MW	A	Ar
		VII-IX	F	A	Ar
	Infantry	IV	TS	A	Ar
		VII-IX	T or W	A	Ar

PHYSICAL EDUCATION FOR MEN

No.	Title	Hour	Day	Room	Instructor
1f-2w-3s	Freshman Physical Education				
	Sec. 1	II	TTh	A	
	2	III	TTh	A	
	3	VI	TTh	A	
	4	VII	TTh	A	
	5	VIII	TTh	A	
4f,w	Freshman Hygiene				
	Sec. 1	II	T	301F	Dr. Cooke
	2	III	W	301F	and others
	3	IV	S	301F	
	4	IV	T	301F	
4s	Freshman Hygiene				
	Sec. 1	II	T	301F	Dr. Cooke
	2	IV	T	301F	and others
	3	II	S	301F	
7f-8w-9s	Advanced Leaders				
	Sec. 1	IV	T	A	
		II	TTh		
	2	IV	T	A	
		III	TTh		
	3	IV	T	A	
		VI	TTh		
	4	IV	T	A	
		VII	TTh		
	5	IV	T	A	
		VIII	TTh		
	6	II	MWF	A	
	7	III	MWF	A	
	8	IV	MWF	A	

No.	Title	Hour	Day	Room	Instructor
10f-11w-12s	Minor Sports				
	Lect.	IV	S	A	Mr. Keller and others
	Lab.	IV	MWF		
16f-17w-18s	Drill Substitution				
	Sec. 1	II	MWF	A	Mr. Iverson
	2	III	MWF	A	
	3	IV	MWF	A	
30s	Athletic Training and First Aid ...	I	MWF	A	Dr. Cooke

PHYSICAL EDUCATION FOR WOMEN

No.	Title	Hour	Day	Room	Instructor
1f-2w-3s	Elem. Phy. Training	IV	MWF	3,151,153WGm	Ar
		VI	MWF	3,151,153WGm	Ar
		VII	MWF	3,151,153WGm	Ar
		VIII	MWF	3,151,153WGm	Ar
		III	TThS	3,151,153WGm	Ar
4f	Preliminary Hygiene	I	M	201WGm	Dr. Norris
		II	T		
		III	W		
		IV	T		
		VI	Th		

PHYSICS

No.	Title	Hour	Day	Room	Instructor
3f	Elements of Mechanics and Sound				
	Lect.	II	MWF	30Ph	Mr. Erikson
	Quiz	II or IX	Th	100C	
4f	Elements of Mechanics Laboratory	VI-VII or	Th	16Ph	Mr. Erikson
		I-II	Th	16Ph	Mr. Erikson
23w	Heat				
	Lect.	II	MWF	30Ph	Mr. Miller
	Quiz	II or IX	Th	100C	
24w	Heat Laboratory	VI-VII	Th	23Ph	Mr. Miller
31f,s	Optics				
	Lect.	I	TThS	30Ph	Mr. Valasek
	Quiz	IX	Th	30Ph	Mr. Valasek
32f,s	Optics Laboratory				
	Sec. 1	VI-VII	Th	23Ph	Mr. Valasek
	2	VI-VII	F	23Ph	Mr. Valasek
	3	VIII-IX	F	23Ph	Mr. Valasek
35w	Optics				
	Lect.	VI	TTh	30Ph	Mr. Valasek
43s	Magnetism and Electricity				
	Lect.	II	MWF	30Ph	Mr. Zeleny
	Quiz	II or IX	Th	100C	
44s	Electric Laboratory	VI-VII	Th	31Ph	Mr. Zeleny

PHYSIOLOGIC CHEMISTRY

No.	Title	Hour	Day	Room	Instructor
100w-101s	Physiologic Chemistry ..... Lect.	IV	MWF	129MH	Mr. McClendon, Mr. Pettibone
100x-101x	Physiologic Chemistry Laboratory Sec. a	I-III	TTh	310MH	Mr. McClendon, Mr. Swanson
	b	I-III	FS	310MH	Mr. Pettibone and assistant

PREVENTIVE MEDICINE AND PUBLIC HEALTH

No.	Title	Hour	Day	Room	Instructor
2s	Hygiene and First Aid to the Sick and Injured	VI	T	305E	Dr. Cady
102f,w,s	Sanitation	Ar	Ar	SBH	Mr. Whittaker, Dr. Archibald, Mr. Childs

The Bulletin *of the* University *of* Minnesota

The College of Education
Part I
Announcement of Courses for the Years 1924-1926

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Wylle B. McNeal, M.A., Professor of Home Economics Education
Dexter D. Mayne, Professor of Agricultural Pedagogics

[1] Absent on leave, 1924-25.

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Sophia Hubman, M.A., Instructor in Teachers' Course in German
Rewey Belle Inglis, M.A., Instructor in Education
Aura Keever, B.S., Instructor in Home Economics Education

[1] Absent on leave, 1924-25.

Paulena Nickell, B.S., Instructor in Home Economics
Victor E. Nylin, B.S., Instructor in Agricultural Education
Abe Pepinsky, Instructor in Music
J. Orin Powers, M.A., Instructor in Education
Elizabeth Rivers, B.S., Instructor in Home Economics
Gertrude D. Ross, Instructor in Art Education
Irene I. Sell, Ph.B., Instructor in Home Economics
Homer J. Smith, M.A., Instructor in Trade and Industrial Education
Louise Sobye, B.S., Instructor in Home Economics
Lynn E. Stockwell, M.A., Instructor in Trade and Industrial Education
Louis A. Tohill, M.A., Instructor in Education

UNIVERSITY HIGH SCHOOL

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Marie B. Denneen, M.A., Instructor in Latin
Mary Gold, M.A., Instructor in History
Leonard D. Haertter, M.A., Instructor in Mathematics
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Sophia Hubman, M.A., Instructor in German
Rewey Belle Inglis, M.A., Instructor in English
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[1]Frances Morehouse, M.A., Instructor in History
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Dora V. Smith, M.A., Instructor in English
Lynn E. Stockwell, M.A., Instructor in Manual Training
Louis A. Tohill, M.A., Instructor in History and Social Science
John A. Smith, B.Ed., Instructor in Science

EXTENSION SPECIALISTS

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George F. Howard, Professor of Agriculture
Frank W. Peck, M.S., Associate Professor of Farm Management

ASSISTANTS

John Bohan, M.A., Assistant in Educational Psychology
Ingolf Friswold, B.S., Assistant in Educational Administration
Herbert E. Marshall, B.S., Assistant in Theory and Practice of Teaching
Willard C. Olson, M.A., Assistant in Bureau of Educational Research
Doris Stevens, B.A., Assistant in University High School

[1] Absent on leave, 1924-25.

Lucille Sutorious, B.S., Assistant in Art Education
Oliver L. Troxel, M.A., Assistant in Educational Administration
Austin H. Turney, B.S., Assistant in Educational Psychology
Fred von Borgersrode, B.S., Assistant Director Bureau of Educational Research

MEMBERS OF OTHER FACULTIES GIVING INSTRUCTION IN THE COLLEGE OF EDUCATION

Fred L. Adair, B.S., M.A., M.D., F.A.C.S., Associate Professor of Obstetrics and Gynecology
Cephas D. Allin, LL.B., M.A., Professor of Political Science, Chairman of the Department of Political Science
[1]William Anderson, Ph.D., Associate Professor of Political Science
Leon E. Arnal, Architecte Diplômé Government France, Professor of Architecture
Clyde H. Bailey, Ph.D., Professor of Agricultural Biochemistry
Gertrude M. Baker, B.A., Assistant Professor of Physical Education for Women
Francis B. Barton, Docteur de l'Université de Paris, Associate Professor of Romance Languages
Joseph W. Beach, Ph.D., Professor of English
Richard O. Beard, M.D., Associate Professor of Physiology
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Charles Bird, Ph.D., Assistant Professor of Psychology
John D. Black, Ph.D., Professor of Agricultural Economics and Chief of the Division of Agricultural Economics
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Gisle C. Bothne, M.A., Professor of Scandinavian Languages and Literatures and Head of the Department of Scandinavian
Gregory Breit, Ph.D., Assistant Professor of Physics
[1]Raymond W. Brink, Ph.D., Associate Professor in Mathematics
[1]Paul H. M.-P. Brinton, Ph.D., Professor of Chemistry
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William H. Bussey, Ph.D., Professor of Mathematics
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Frederic K. Butters, Ph.D., Associate Professor of Botany
Leroy A. Calkins, M.D., Ph.D., Assistant Professor of Obstetrics and Gynecology

[1] Absent on leave, 1924-25.
[2] Absent on leave, winter and spring quarters, 1924-25.
[3] Absent on leave, fall and winter quarters.

F. Stuart Chapin, Ph.D., Professor of Sociology, Chairman of the Department of Sociology, and Director of the Training Course for Social and Civic Work

Royal N. Chapman, Ph.D., Associate Professor of Animal Biology

Mary Ellen Chase, Ph.D., Assistant Professor of English

Albert J. Chesley, M.D., Associate Professor of Preventive Medicine and Public Health

Alice M. Child, M.A., Assistant Professor of Home Economics

Edwin L. Clarke, Ph.D., Assistant Professor of Sociology

Herbert E. Clefton, M.A., Assistant Professor of Romance Languages

Lillian Cohen, Ph.D., Assistant Professor of Chemistry

George P. Conger, B.D., Ph.D., Assistant Professor of Philosophy

Myron J. Conway, First Lieutenant, Infantry, U.S.A., Assistant Professor of Military Science and Tactics

Louis J. Cooke, M.D., Assistant Director of Physical Education and Athletics for Men

[1]William S. Cooper, Ph.D., Assistant Professor of Botany

Robert V. Cram, Ph.D., Assistant Professor of Latin

Joseph E. Cummings, M.A., Assistant Professor of Economics

James Davies, Ph.D., Assistant Professor of German

Darrell H. Davis, Ph.D., Associate Professor of Geography

William S. Davis, Ph.D., Professor of History

Harold S. Diehl, M.A., M.D., Assistant Professor of Preventive Medicine and Public Health

Hal Downey, Ph.D., Professor of Histology

George W. Dowrie, Ph.D., Professor of Economics and Head of the Department of Economics

William P. Dunn, B.D., M.A., Assistant Professor of English

Davis Edwards, M.A., Assistant Professor of Public Speaking

Richard M. Elliott, Ph.D., Professor of Psychology and Chairman of the Department of Psychology

Manuel C. Elmer, Ph.D., Associate Professor of Sociology

William H. Emmons, Ph.D., Professor of Geology and Head of the Department of Geology and Mineralogy

Charles A. Erdmann, M.D., Associate Professor of Applied Anatomy

Henry A. Erikson, Ph.D., Professor of Physics and Chairman of the Department of Physics

Leo J. Farrell, Captain, Infantry, U.S.A., Assistant Professor of Military Science and Tactics

Donald N. Ferguson, M.A., Associate Professor of Music

Ina T. Firkins, B.L., Reference Librarian

Oscar W. Firkins, M.A., Professor of Comparative Literature

John J. Flather, Ph.B., M.M.E., Professor of Mechanical Engineering

Guy Stanton Ford, Ph.D., Professor of History and Chairman of the Department of History

[1] Absent on leave, 1924-25.

James H. Forsythe, M.A. in Arch., Associate Professor of Architecture
William S. Foster, Ph.D., Professor of Psychology
George B. Frankforter, Ph.D., Professor of Chemistry
Edward M. Freeman, Ph.D., Professor of Plant Pathology and Botany
Jules T. Frelin, B.A., Assistant Professor of Romance Languages
Robert W. French, B.S. in C.E., Assistant Professor of Drawing and Descriptive Geometry
Frederic B. Garver, Ph.D., Professor of Economics
John M. Gaus, M.A., Associate Professor of Political Science
Isaac W. Geiger, Ph.D., Associate Professor of Chemistry
Joseph E. Gillet, Ph.D., Assistant Professor of Romance Languages
Haldor B. Gislason, B.A., LL.B., Assistant Professor of Public Speaking
Harriet I. Goldstein, Associate Professor of Drawing and Design
Ross A. Gortner, Ph.D., Professor of Agricultural Biochemistry
Samuel A. Graham, Ph.D., Assistant Professor of Entomology
[1]Norman Scott Brien Gras, Ph.D., Professor of Economic History
Robert G. Green, M.A., M.D., Assistant Professor of Bacteriology and Immunology
Esther Greisheimer, Ph.D., M.D., Assistant Professor of Physiology
Frank F. Grout, Ph.D., Professor of Geology and Mineralogy
John W. Gruner, Ph.D., Assistant Professor of Geology and Mineralogy
Arthur S. Hamilton, B.S., M.D., Professor of Nervous and Mental Diseases
Alvin H. Hansen, Ph.D., Professor of Economics
Everhart P. Harding, Ph.D., Associate Professor of Chemistry
J. Arthur Harris, Ph.D., Professor of Botany and Head of the Department of Botany
William L. Hart, Ph.D., Associate Professor of Mathematics
Rodney B. Harvey, Ph.D., Associate Professor of Plant Pathology and Botany
Ernest A. Heilman, Ph.D., Associate Professor of Accounting
Lawrence M. Henderson, Ph.D., Assistant Professor of Chemistry
Arthur T. Henrici, M.D., Associate Professor of Bacteriology and Immunology
Edgar J. Huenekens, B.A., M.D., Assistant Professor of Pediatrics
James T. Hillhouse, Ph.D., Assistant Professor of English
Roger Hilsman, Captain, Infantry, U.S.A., Assistant Professor of Military Science and Tactics
[2]Edward W. D. Holway, Assistant Professor of Botany
Ned L. Huff, M.A., Assistant Professor of Botany
Gertrude Hull, Assistant Professor of Music
William H. Hunter, Ph.D., Professor of Chemistry
John Corrin Hutchinson, B.A., Professor of Greek, Emeritus
Clarence M. Jackson, M.S., M.D., Professor of Anatomy and Director of the Department of Anatomy

[1] Absent on leave, 1924-25.
[2] Died, March 31, 1923.

Dunham Jackson, Ph.D., Professor of Mathematics
[1]Elizabeth Jackson, Ph.D., Assistant Professor of English
[1]Albert Ernest Jenks, Ph.D., Professor of Anthropology, Chairman of the Department of Anthropology, and Director of the Americanization Training Course
John B. Johnston, Ph.D., Professor of Neurology
Robert T. Jones, B.S. in Arch., Associate Professor of Architecture
Roy C. Jones, M.S. in Arch., Associate Professor of Architecture
Cornelia Kennedy, M.S., Ph.D., Assistant Professor of Agricultural Biochemistry
Earle G. Killeen, Professor of Music
William H. Kirchner, B.S., Professor of Drawing and Descriptive Geometry and Head of the Department of Drawing and Descriptive Geometry
May S. Kissock, B.A., Assistant Professor of Physical Education for Women
Frederick Klaeber, Ph.D., Professor of Comparative and English Philology and Head of the Department of Comparative Philology
Harry H. Knight, Ph.D., Assistant Professor of Entomology
August Charles Krey, Ph.D., Associate Professor of History
Samuel Kroesch, Ph.D., Associate Professor of German
Harold F. Kumm, M.A., LL.B., S.J.D., Assistant Professor of Political Science
Morris B. Lambie, M.A., Assistant Professor of Political Science
Alvin H. Larson, B.S., Assistant Professor of Plant Pathology and Botany
Winford P. Larson, M.D., Professor of Bacteriology and Immunology and Head of the Department of Bacteriology and Immunology
Karl S. Lashley, Ph.D., Professor of Psychology
Julian G. Leach, Ph.D., Assistant Professor of Plant Pathology and Botany
Francis P. Leavenworth, M.A., Professor of Astronomy and Head of the Department of Astronomy
Irville C. LeCompte, Ph.D., Professor of Romance Languages
Thomas G. Lee, B.S., M.D., Professor of Comparative Anatomy
Bernard Lentz, Major, Infantry, U.S.A., Professor of Military Science and Tactics
William Lindsay, Associate Professor of Music
Fred W. Luehring, Ph.M., Professor of Physical Education and Director of the Department of Physical Education and Athletics
[1]Elmer J. Lund, Ph.D., Associate Professor of Animal Biology
[1]Gustav A. Lundquist, M.A., Assistant Professor of Rural Sociology
George F. Lussky, Ph.D., Assistant Professor of German
Elias P. Lyon, Ph.D., M.D., Professor of Physiology and Director of the Department of Physiology
Jesse F. McClendon, Ph.D., Professor of Physiologic Chemistry

[1] Absent on leave, 1924-25.

Orianna McDaniel, M.D., Assistant Professor of Preventive Medicine and Public Health

Wylle B. McNeal, M.A., Professor of Home Economics and Chief of the Division of Home Economics

Frank H. MacDougall, Ph.D., Professor of Chemistry

[1]Kemp Malone, Ph.D., Assistant Professor of English

Frederick M. Mann, M.S. in Arch., Professor of Architecture and Head of the Department of Architecture

Louallen F. Miller, Ph.D., Associate Professor of Physics

Dwight E. Minnich, Ph.D., Assistant Professor of Animal Biology

Cecil A. Moore, Ph.D., Associate Professor of English

Clarence A. Morrow, B.S., Ph.D., Assistant Professor of Agricultural Biochemistry

Amy P. Morse, B.A., Assistant Professor of Drawing and Design

Bruce D. Mudgett, Ph.D., Professor of Economics

Mildred D. Mudgett, Ph.D., Assistant Professor of Sociology and Supervisor of Field Practice Work

Howard D. Myers, B.S. in C.E., Assistant Professor of Drawing and Descriptive Geometry

Jay A. Meyers, Ph.D., M.D., Assistant Professor of Preventive Medicine and Public Health

Walter R. Myers, Ph.D., Assistant Professor of Economics

Henry F. Nachtrieb, B.S., Professor of Animal Biology, Head of the Department of Animal Biology, and Director of the Zoological Museum

Charles W. Nichols, Ph.D., Assistant Professor of English

J. Anna Norris, M.D., Professor of Physical Education for Women and Director of Health and Physical Education for Women

Oscar W. Oestlund, Ph.D., Associate Professor of Animal Biology

Everett W. Olmsted, Ph.D., Litt.D., Professor of Romance Languages and Head of the Department of Romance Languages

Harry J. Ostlund, B.A., Assistant Professor of Economics

Leroy S. Palmer, Ph.D., Professor of Agricultural Biochemistry

Eugene F. Parker, Ph.D., Assistant Professor of Romance Languages

E. Maud Patchin, B.S., Assistant Professer of Textiles and Clothing

Donald G. Paterson, M.A., Professor of Psychology

Chauncey J. Pettibone, Ph.D., Associate Professor of Physiologic Chemistry

Anna H. Phelan, Ph.D., Assistant Professor of English

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Ruth S. Phelps, M.A., Associate Professor of Romance Languages

Joseph B. Pike, M.A., Professor of Latin and Head of the Department of Latin

H. Bruce Price, Ph.D., Associate Professor of Agricultural Economics

Harold S. Quigley, Ph.D., Associate Professor of Political Science

[1] Absent on leave, 1924-25.

Frank M. Rarig, M.A., Associate Professor of Public Speaking
Andrew T. Rasmussen, Ph.D., Associate Professor of Neurology
Thomas M. Raysor, Ph.D., Assistant Professor of English
Gertrude Reeves, Assistant Professor of Music
John J. Reighard, M.A., Assistant Professor of Accounting
Lloyd H. Reyerson, Ph.D., Assistant Professor of Chemistry
William A. Riley, Ph.D., Professor of Entomology and Chief of the Division of Entomology and Economic Zoology
Thomas S. Roberts, M.D., Professor of Ornithology and Associate Director of the Zoological Museum
Rhodes Robertson, M.S. in Arch., Assistant Professor of Architecture
Herbert W. Rogers, Ph.D., Research Assistant Professor of Psychology
Carl O. Rosendahl, Ph.D., Professor of Botany
Arthur G. Ruggles, M.A., Professor of Economic Entomology
Henry H. Rutherford, B.A., M.D., Lieutenant Colonel, Medical Corps, U.S.A., Assistant Professor of Military Science and Tactics
Martin B. Ruud, Ph.D., Assistant Professor of English
Charles A. Savage, Ph.D., Professor of Greek and Chairman of the Department of Greek
Richard E. Scammon, Ph.D., Professor of Anatomy
Carl Schlenker, B.A., Professor of German and Chairman of the Department of German
George M. Schwartz, Ph.D., Assistant Professor of Geology and Mineralogy
Carlyle M. Scott, Professor of Music and Chairman of the Department of Music
Frederick H. Scott, Ph.D., M.B., D.Sc., Professor of Physiology
Colbert Searles, Ph.D., Professor of Romance Languages
S. Carl Shipley, B.S., M.E., Professor of Mechanical Engineering
Lester B. Shippee, Ph.D., Associate 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., Associate Professor of Romance Languages
Lee I. Smith, Ph.D., Assistant Professor of Chemistry
M. Cannon Sneed, Ph.D., Professor of Chemistry
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Hazelton Spencer, Ph.D., Assistant Professor of English
Elvin C. Stakman, Ph.D., Professor of Plant Pathology and Botany
Clinton R. Stauffer, Ph.D., Professor of Geology and Mineralogy
J. Warren Stehman, Ph.D., Associate Professor of Economics
[1]George M. Stephenson, Ph.D., Assistant Professor of History
[1]Elmer E. Stoll, Ph.D., Professor of English
Andrew A. Stomberg, M.S., Professor of Scandinavian Languages and Literatures
Lucy A. Studley, M.A., Assistant Professor of Home Economics
Emerson G. Sutcliffe, Ph.D., Assistant Professor of English

[1] Absent on leave, 1924-25.

David F. Swenson, B.S., Professor of Philosophy
John T. Tate, Ph.D., Professor of Physics
Joseph M. Thomas, Ph.D., Professor of English
Josephine E. Tilden, M.S., Professor of Botany
Andrew C. Tychsen, Captain, Infantry, U.S.A., Assistant Professor of Military Science and Tactics
Alice J. H. Tolg, M.D., Assistant Professor of Physical Education for Women
Anthony L. Underhill, Ph.D., Associate Professor of Mathematics
Roland S. Vaile, M.A., Associate Professor of Economics
Joseph Valasek, Ph.D., Assistant Professor of Physics
Gustav L. van Roosbroeck, Ph.D., Assistant Professor of Romance Languages
John H. Van Vleck, Ph.D., Assistant Professor of Physics
Cortlandt van Winkle, Ph.D., Assistant Professor of English
E. Marion Wade, M.A., Assistant Professor of Preventive Medicine and Public Health
Warren C. Waite, M.A., Assistant Professor of Agricultural Economics
Wilson D. Wallis, Ph.D., Associate Professor of Anthropology
Frank K. Walter, M.A., M.L.S., Librarian
Frederic L. Washburn, M. A., Professor of Economic Vertebrate Zoology
Marion Weller, B.A., Associate Professor of Textiles
[1]Albert B. White, Ph.D., Professor of History
Harold A. Whittaker, B.A., Assistant Professor of Preventive Medicine and Public Health
Norman Wilde, Ph.D., Professor of Philosophy and Head of the Department of Philosophy
John J. Willaman, Ph.D., Associate Professor of Plant Chemistry
Herbert Woodrow, Ph.D., Associate Professor of Psychology
Holbrook Working, Ph.D., Associate Professor of Agricultural Economics
Frederick R. Wunderlich, D.D.S., Major, Dental Corps, U.S.A., Assistant Professor of Military Science and Tactics
Jeremiah S. Young, Ph.D., Professor of Political Science
Anthony Zeleny, Ph.D., Professor of Physics
Frank J. Bruno, B.A., B.D., Professorial Lecturer in Sociology
John P. Dalzell, B.A., LL.B., Lecturer in Political Science
J. Franklin Ebersole, M.A., Professorial Lecturer in Architecture
Paul C. Gauger, B.S. in Arch., Special Lecturer in Architecture
Samuel B. Harding, Ph.D., Professorial Lecturer in History
Alma Haupt, B.A., R.N., Lecturer in Sociology
William Hodson, B.A., LL.B., Lecturer in Sociology
Elizabeth S. Muenzinger, Ph.D., Lecturer in Sociology
Arthur S. Nichols, B.S., Special Lecturer in Architecture
Benjamin W. Palmer, M.A., LL.B., Lecturer in Political Science

[1] Absent on leave, fall quarter.

Ira S. Allison, Ph.D., Instructor in Geology and Mineralogy
Marion Andrews, M.A., Instructor in Economics
R. Wilson Archibald, V.M.D., Instructor in Preventive Medicine and Public Health
Amy E. Armstrong, M.A., Instructor in English
Elizabeth Atkins, Ph.D., Instructor in English
Emma Bach, M.A., Instructor in German
Reuel R. Barlow, B.A., Instructor in Journalism
William O. Beal, M.A., M.S., Instructor in Astronomy and Assistant Astronomer
Clifford Bender, M.A., Instructor in English
C. Ralph Bennett, B.A., Instructor in English
Ethel E. Benton, M.A., Instructor in Romance Languages
Harold C. Blote, B.A., Instructor in Philosophy
Paul Bosanko, LL.B., M.A., Instructor in Romance Languages
Ruth E. Boynton, B.A., M.D., Instructor in Preventive Medicine and Public Health
Alfred Brandt, Technical Sergeant, Instructor in Military Science and Tactics
Arthur R. Braunlich, M.A., Instructor in English
Lawrence M. Brings, B.A., Instructor in Public Speaking
Henry D. Brohm, B.S., Instructor in Economics
Carlotta M. Brown, Instructor in Millinery
W. Horatio Brown, B.S., E.M., Ph.D., Instructor in Geology and Mineralogy
J. William Buchta, M.A., Instructor in Physics
Eula B. Butzerin, R.N., B.S., Instructor in Preventive Medicine and Public Health
Elizabeth Carlson, Ph.D., Instructor in Mathematics
Muriel B. Carr, Ph.D., Instructor in English
John O. Cederberg, Jr., Instructor in Drawing and Descriptive Geometry
John A. Cederstrom, Ph.B., Instructor in Animal Biology
James A. Childs, C.E., Instructor in Preventive Medicine and Public Health
Jonas C. Christensen, M.S., Instructor in Plant Pathology and Botany
Claud F. Clayton, M.A., Instructor in Economics
Irene Clayton, B.S., Instructor in Physical Education for Women
Nelson F. Coburn, M.A., Instructor in Romance Languages
Reynold F. B. Cote, M.A., Instructor in Economics
Rhea Coxe, Instructor in Physical Education for Women
John J. Creamer B.A., LL.B., Instructor in English
Henry Cunnington, Instructor in Bassoon
John W. Dawson, B.S. in Arch., Instructor in Architecture
Frances Kelley del Plaine, M.A., Instructor in English
Grace E. Denny, B.S., Instructor in Physical Education for Women
Ira T. C. Dissinger, B.A., Instructor in English
Louise Dosdall, M.A., Instructor in Plant Pathology

Lynwood G. Downs, M.A., Instructor in German
Aubrey R. Dunkum, Staff Sergeant, Instructor in Military Science and Tactics
Christian Erck, Instructor in Cello
Robert D. Evans, M.S., Instructor in Bacteriology and Immunology
Majl Ewing, M.A., Instructor in English
George H. Fairclough, F.A.G.O., M.Mus., Instructor in Organ
Ralph H. Farmer, B.A., Instructor in Economics
Hally J. Fisher, R.N., Instructor in Home Nursing
Ray W. Frantz, M.A., Instructor in English
Alice H. Fuller, B.S., Instructor in Preventive Medicine and Public Health
Margaret Gable, M.A., Instructor in English
Edwin W. Gaumnitz, M.A., Instructor in Economics
Gladys E. C. Gibbens, Ph.D., Instructor in Mathematics
Thaddeus Giddings, Instructor in Public School Music
Paul M. Gilmer, M.A., Instructor in Animal Biology
Vetta Goldstein, Instructor in Drawing and Design
Adah Grandy, B.L., Instructor in English
Richard A. Graves, M.A., Instructor in Economics
Beryl S. Green, B.A., Instructor in Bacteriology and Immunology
Lennox B. Grey, Ph.B., Instructor in English
Earl L. Griggs, M.A., Instructor in English
Robert A. Guinn, B.A., Instructor in Romance Languages
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, M.S., Instructor in Agricultural Biochemistry
Richard Hartshorne, Ph.D., Instructor in Geography
Mildred Hartsough, Ph.D., Instructor in History
J. Wesley Hatcher, B.A., Instructor in Sociology
Joseph Havlicek, Regimental Commissary Sergeant, Instructor in Military Science and Tactics
Helen Hazelton, B.A., Instructor in Physical Education for Women
Edna F. Heidbreder, M.A., Instructor in Psychology
Arthur W. Henry, Ph.D., Instructor in Plant Pathology and Botany
[1]Marshall Hertig, Ph.D., Instructor in Animal Biology
C. Russell Hoffer, M.S., Ph.D., Instructor in Sociology
Walter F. Hoffman, M.S., Ph.D., Instructor in Agricultural Biochemistry
Layton Holloway, M.A., Instructor in English
Calvin C. Hoover, B.A., Instructor in Economics
Thomas P. Hughes, Instructor in Mechanical Engineering
Ralph T. Huntley, B.A., Instructor in Orientation Courses
Emil W. Iverson, Instructor in Physical Education for Men
Frances Johnson, Ph.D., Instructor in Mathematics
Arnold V. Johnston, M.A., Instructor in Political Science

[1] Absent on leave, fall quarter.

Blanche Kendall, Instructor in Music
Helen M. Kepler, M.A., M.D., Instructor in Anatomy
John Kierzek, M.A., Instructor in English
Paul C. King, B.A., Instructor in Romance Languages
Agnes Kolshorn, M.A., Instructor in Home Economics
Richard L. Kozelka, M.A., Instructor in Economics
Herbert W. Krieger, M.A., Instructor in Anthropology
Frank Kuchinka, Instructor in Double Bass
Otto F. Kuhlman, M.A., Instructor in Economics
Carney Landis, Ph.D., Instructor in Psychology
Walter M. Lauer, Ph.D., Instructor in Chemistry
William C. Lawson, B.S., M.E., Instructor in Drawing and Descriptive Geometry
Alex S. Levens, B.S., M.C.E., Instructor in Drawing and Descriptive Geometry
Thomas S. Lovering, M.E. in Geol., Ph.D., Instructor in Geology and Mineralogy
Katherine E. Ludgate, Ph.D., Instructor in Psychology
Reuel I. Lund, C.P.A., M.A., Instructor in Accounting
George A. Lundberg, M.A., Instructor in Sociology
Olav K. Lundeberg, M.A., Instructor in Romance Languages
Duane McCracken, M.A., Instructor in Economics
Blaine McKusick, LL.B., Instructor in Physical Education for Men
John McWilliams, First Sergeant, Instructor in Military Science and Tactics
Margaret E. Macgregor, M.A., Instructor in English
John F. Markey, B.A., Instructor in Sociology
Ernest S. Mariette, B.S., M.D., Instructor in Medicine
Lillian M. Mayer, M.D., Instructor in Preventive Medicine and Public Health
J. Lewis Maynard, B.A., Instructor in Chemistry
Shirley P. Miller, M.A., Instructor in Anatomy
Ella May Minert, Instructor in Voice
John H. Moffett, M.E., Instructor in Mechanical Engineering
Wayne L. Morse, M.A., Instructor in English
Ernest Mylk, Private 1st Class, Spec. 4th Class, Instructor in Military Science and Tactics
Ralph M. Nelson, B.S., Instructor in Forest Pathology
Elizabeth Nissen, M.A., Instructor in Romance Languages
Ruth Noer, B.S., Instructor in Home Economics
Paul Oczipka, Ph.D., Instructor in German
Fern Osbeck, B.S., Instructor in Home Economics
Emily Payne, Ph.D., Instructor in Animal Biology
Robert H. Perry, M.A., Instructor in English
George M. Peterson, M.A., Instructor in Economics
Harold A. Phelps, M.A., Instructor in Sociology
Alvin E. Prottengeier, B.A., Instructor in German

Lloyd J. Quaid, B.S. in Elec. Eng., Instructor in Drawing and Descriptive Geometry
Karl Reuning, Ph.D., Instructor in German
Grace E. Richards, M.A., Instructor in English
William H. Richards, Instructor in Mechanical Engineering
Harlow C. Richardson, B.A., Instructor in English
Inez C. Richter, Instructor in Music
Fred E. Ringham, B.A., Instructor in Economics
Adolph Ringoen, Ph.D., Instructor in Animal Biology
Raymond C. Rose, M.S., Instructor in Plant Pathology
Harold Russell, B.A., B.L.S., Instructor in Library Methods
William J. Russis, M.A., Instructor in Romance Languages
W. Martin Sandstrom, B.A., M.S., Instructor in Agricultural Biochemistry
Landon A. Sarver, M.A., Instructor in Chemistry
Karl Scheurer, Instructor in Music
Robert F. Schuck, B.S. in E.E., Instructor in Drawing and Descriptive Geometry
James L. Seal, M.S., Instructor in Plant Pathology
Irene I. Sell, Ph.B., Instructor in Home Economics
Reginald C. Sherwood, M.S., Ph.G., Instructor in Agricultural Biochemistry
Katharine Sias, B.A., Instructor in Physical Education for Women
Walter R. Smith, B.A., Instructor in Physical Education for Men and Director of Intramural Athletics
David O. Spriestersbach, M.S., Instructor in Bacteriology and Immunology
Harold C. Sproul, M.A., Instructor in English
R. Rhodes Stabley, M.A., Instructor in English
William H. Stead, M.A., Instructor in Economics
Lawrence D. Steefel, Ph.D., Instructor in History
Clyde W. Stephens, Instructor in Piano
Henry N. Stephens, Ph.D., Instructor in Chemistry
Thomas E. Steward, B.A., Instructor in Journalism
Louise Stoddard, Instructor in Home Economics
Harry E. Strider, Technical Sergeant, Instructor in Military Science and Tactics
William W. Swanson, B.A., M.S., Instructor in Physiology
William J. Tannewitz, B.A., Instructor in Public Speaking
Harold T. Taylor, M.A., Instructor in Physical Education for Men
W. Bayard Taylor, B.A., Instructor in Economics
George A. Thiel, Ph.D., Instructor in Geology and Mineralogy
Gertrude I. Thomas, Instructor in Dietetics
Faith Thompson, Ph.D., Instructor in History
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
Arthur R. Upgren, B.A., Instructor in Economics
Warren C. Waite, M.A., Instructor in Agricultural Economics

George B. Watts, M.A., Instructor in Romance Languages
Oscar Wesley, M.A., Instructor in Sociology
Benjamin W. Wheeler, M.A., Instructor in History
Henry J. Williams, Instructor in Harp
David H. Willson, Ph.D., Instructor in History
Carl W. Young, B.A., Instructor in Political Science
Elmer E. Young, Instructor in Free-Hand Drawing
Nina L. Youngs, B.A., Instructor in Economics
Carle C. Zimmermann, M.A., Instructor in Sociology

ASSISTANTS AND SCHOLARS

ANIMAL BIOLOGY

Lennart G. Bryngelsson B.S., Teaching Assistant
Walter Carter, M.S., Assistant
Louis A. Fried, B.S., Assistant
Marion Irwin, B.A., Assistant
Lewis E. Nolan, Assistant
Clarence E. Olson, B.S., Assistant
Dietrich Smith, B.A., Assistant
Hugh E. Wallace, B.S., Assistant

ANTHROPOLOGY

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ASTRONOMY

Franz H. Rathmann, B.A., Assistant

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Harriet George, M.A., Assistant
Raymond Landon, M.S., Assistant
Ethel M. Mygrant, B.A., Assistant
Jessie P. Rose, M.A., Assistant
Nellie A. Thompson, B.A., Assistant and Technician
Jerry A. Vacha, M.S., Assistant

ENGLISH

Elizabeth Bond, M.A., Scholar
Elizabeth Craddick, B.A., Assistant
Elizabeth Gile, B.A., Assistant
Edith H. Jones, M.A., Scholar
Medora E. D. Kinne, B.A., Scholar
Howard Laramy, B.A., Assistant
Elizabeth Mann, B.A., Scholar
Henrietta C. Naeseth, M.A., Scholar

Linnette I. Nelson, B.A., Scholar
Leone B. Nunan, B.A., Assistant
Wendell O. Rogers, B.A., Assistant

GEOLOGY

Ira Cram, M.A., Assistant
William A. P. Graham, B.A., M.S., Scholar
Leslie Miller, B.A., Scholar
Eunice Peterson, M.A., Assistant

GERMAN

Martin Bertram, M.A., Assistant
Bertha Bertsch, B.A., Assistant
Selma S. Gryce, M.A., Scholar
Esther Hendrickson, M.A., Assistant
Miriam Huhn, B.A., Scholar
Gina Wangsness, B.A., Assistant

GREEK

Dorothy B. Strong, B.A., Assistant

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Gladys C. Blakey, M.A., Assistant
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John Gruber, M.A., Scholar
Florence Hartwig, B.S., Teaching Assistant
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Harold McCumber, M.A., Teaching Fellow
Thorvald B. Madsen, B.A., Teaching Fellow
George F. T. Mayer, B.A., Scholar
Helen Parker Mudgett, B.A., Assistant
Louise Nixon, M.A., Teaching Fellow
Stanley Perry, B.A., Teaching Fellow
Alice F. Tyler, M.A., Assistant
Lyder Unstad, M.A., Assistant
Nelle Young, M.A., Assistant

HUMAN PHYSIOLOGY

Joseph T. King, B.S., Teaching Fellow
Arthur G. Mulder, Teaching Fellow
Alice Rupp, B.A., Teaching Fellow
Maurice B. Visscher, B.A., M.S., Assistant

JOURNALISM

Genevieve Boughner, B.A., Assistant

LATIN

Emily A. Babcock, M.A., Assistant

MATHEMATICS

Russell L. Grossnickle, M.A., Teaching Assistant
Gilbert N. Trytten, B.A., Teaching Assistant
William H. McEwen, M.S., M.A., Assistant
Cecil Phipps, M.A., Assistant

MUSIC

Mary Malcolm, B.S., Assistant

PHYSICAL EDUCATION FOR MEN

Max H. Herseth, Assistant

PHYSICS

Arthur J. Ahearn, B.A., Teaching Assistant
Earl N. Clarke, B.S., Teaching Assistant
David L. Cook, B.A., Assistant
Iwao Fukushima, M.A., Assistant
Louis P. Granath, B.A., Assistant
Herbert R. Grummann, M.E., Assistant
William B. Haliday, Assistant
Sigmund Hammer, B.A., Teaching Assistant
Elmer Hutchinson, M.S., Teaching Assistant
Ernest J. Jones, B.S., Teaching Fellow
Benjamin M. Knutson, B.A., Teaching Fellow
John Kralovec, B.A., Assistant
Louis Maxwell, B.A., Assistant
Walter M. Nielsen, B.S., Teaching Fellow
Carl E. Nurnberger, B.A., Assistant
Everett D. Wells, B.S., Assistant

POLITICAL SCIENCE

Sherman Anderson, B.A., Scholar
Asher N. Christensen, B.A., Assistant
Herbert W. Hess, M.A., Assistant
Bryce E. Lehman, B.A., Assistant
Walter S. Lundeen, LL.B., Assistant
Nathan Schocket, B.A., Assistant
Byron M. Smith, B.A., Scholar
Alex Tollefson, M.A., Scholar

PSYCHOLOGY

Grace Arthur, Ph.D., Teaching Fellow
Josephine Baldwin, B.A., Teaching Assistant
Ruth Gullette, M.A., Teaching Fellow
Ella B. Osbourn Heim, B.A., Teaching Fellow
Ruth Hubbard, B.A., Teaching Assistant
Carlyle Jacobsen, B.A., Teaching Assistant
Theos A. Langlie, B.A., Teaching Assistant

Marne Lauritsen, M.A., Teaching Fellow
Grace O'Brien, B.A., Scholar
Agnes Thorson, B.S., M.A., Teaching Fellow

ROMANCE LANGUAGES

Eleanor V. Cederstrom, M.A., Assistant
Lucille Franchère, B.A., Teaching Fellow
Jennie May McMullen, M.A., Teaching Fellow
J. Henry Owens, B.A., Teaching Assistant
Rosa Seeleman, B.S., Teaching Fellow
Marian H. Wilson, B.S., Teaching Assistant

SCANDINAVIAN

Gustav S. Fryklind, M.A., Scholar

SOCIOLOGY

Maryesther Meyer, B.A., Scholar
Elizabeth C. Hayes, B.A., Scholar
Roscoe H. Larson, B.A., Assistant
Franklin R. McKeever, M.A., Teaching Assistant
Oscar M. Mehus, M.A., Teaching Assistant
Ernest J. Meili, M.A., Scholar
Henry C. Mohler, B.A., Teaching Fellow
Jessie Ravitch, M.A., Scholar

GENERAL INFORMATION

Admission as regular students.—To be admitted to regular standing in the College of Education students must be able to satisfy one of the following requirements:

a. Completion of at least the Junior College requirements of the College of Science, Literature, and the Arts, or of some other approved college at the University of Minnesota or elsewhere, during which time an introductory course in general psychology shall have been pursued.

b. The College of Education grants 90 credits to graduates of the advanced graduate course of Minnesota state teachers' colleges.

c. In special subjects such as art education, physical education, public school music, etc., where a four-year curriculum is provided, students may register in the College of Education in the freshman year, provided they have completed the requirements for admission to the University.

Admission as unclassed students.—The College of Education grants to graduates of the advanced Latin and the advanced English courses of the Minnesota state teachers' colleges, 63 credits.

Teachers of experience who are unable to meet the regular requirements for admission are admitted to the College of Education as unclassed students.

Admission with advanced standing.—Graduates of the three-year course in the state teachers' colleges of Minnesota may receive not more than 112½ credits in the College of Education.

Residence requirements.—The minimum term of residence in the College of Education is two years beginning as soon as the Junior College requirements have been fulfilled.

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 Student Personnel Committee of this college.

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.

Appointments Bureau.—Graduates of the College of Education qualifying for the University teacher's certificate will be recommended for positions for which they are qualified. Students should register with the bureau during the first quarter of the senior year. Complete instructions and blanks may be secured at the office of the dean. No fees are charged.

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.

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 12 credits in education. 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 6 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 students who are candidates for advanced degrees are advised to take Course 116-117 or 116a and Course 208 unless they have previously had the equivalent of these courses. Courses bearing numbers 200 and above are open to graduate students only.

Students working for a Master's degree with a major in school administration will be required to take the following courses unless the equivalent has been taken as undergraduate work.

Education 55—Educational Psychology, no credit
Education 208—Methods of Educational Research, 2 credits
Education 111—Educational Diagnosis, 3 credits
Education 116-117 or 116a—Statistical Methods, 3 or 4 credits

Graduate work may be pursued during summer sessions. The Master's degree may ordinarily be completed in four summer sessions. For full statement of regulations, consult the Graduate School bulletin.

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 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.

The degree of bachelor of science.—Students graduating from the College of Education will receive the degree of bachelor of science.

Candidates for this degree may major in any department listed on page 24.

Graduation with distinction.—The degree of bachelor of science *with distinction* is granted to graduates of this college who have attained special excellence in scholarship as evidenced by an average grade of "B." Candidates must be recommended to the faculty for the degree with distinction by their major department on the basis of scholarship and the degree of advancement of the courses pursued. The faculty has the final authority in making the award.

COURSES OF STUDY

GENERAL REQUIREMENTS

AMOUNT AND GRADE OF WORK

a. During his entire course the student must earn (1) 180 credit hours in addition to 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 hour the number 180 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 for a teacher's certificate; (2) 1½ honor points per credit hour in his major subject; and (3) an average of 1 honor point per credit hour in all other courses pursued during the junior and senior years.

b. Fifteen credit hours are regarded as the usual load. Students who wish to register for more than seventeen hours must show a record of 1½ honor points per credit hour for the previous quarter. Students may not carry less than 13 hours without petition.

c. A maximum of 27 credits is elective from courses in agriculture and home economics except in the special curricula in those fields.

d. No student whose absences in any course exceed 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 Student Personnel Committee.

Honor points are computed on the basis of one and one-half times the number of credit hours 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.

THE UNIVERSITY TEACHER'S CERTIFICATE

The University teacher's certificate is legally valid for two years as a first grade professional certificate. After two years of successful teaching experience in Minnesota, the certificate may become a life certificate, upon endorsement by the State Department of Education and the president of the University.

The University teacher's certificate is granted only to graduates of the College of Education. Students expecting to receive this certificate upon graduation shall be registrants in the College of Education from the beginning of the junior year. Students desiring the teacher's certificate in home economics or agriculture shall also be registrants in the College of Agriculture, Forestry, and Home Economics.

The University teacher's certificate is offered in the following subjects:

Administration and Supervision	Latin
Agriculture	Mathematics
Americanization	Natural Science
Animal Biology	Norwegian
Art Education	Physical Education for Men
Botany	Physical Education for Women
Chemistry	Public School Music
Commercial subjects	Physics
English	Political Science
French	School Psychologist
Geography	Social Studies
German	Spanish
High School Teacher-Training	Swedish
History	Teaching Subnormal Children
Home Economics	Trade and Industrial Education

All students without teaching experience, desiring a University teacher's certificate will be required to comply with the requirements of the prescribed curriculum for the University teacher's certificate in a secondary school subject, or the specific requirements of the special curricula. Such students will also be required to complete a two years' course leading to the degree of bachelor of science.

By a proper selection of courses students qualifying for the degree of bachelor of science may qualify for a certificate in more than one field.

Prescribed Course of Study for University Teacher's Certificate in a Secondary School Subject[1]

The College of Education has adopted the following prescribed course of study, totaling 25 credits, for the University teacher's certificate, and for the degree of bachelor of science.

1	Brief Course in History of Education	5 credits
	or	
101-102-103	History of Education	9 credits
3	Educational Sociology	3 credits
55	Elementary Psychology	3 credits
15	Technique of High School Instruction	3 credits
65	The High School	3 credits
16	Practice Teaching	5 credits
	Special Methods	at least 3 credits

The following courses must be taken in the order named, each being regarded as a prerequisite to all the courses which follow it:

Educational Psychology 55	Special Methods
Technique of Teaching 15	Practice Teaching 16

In addition to the teachers' course in the subject in which the student wishes to do practice teaching, he will be required to satisfy all courses required by the subject-matter department concerned as prerequisite to the

[1] These requirements do not apply to students who are registered in any of the special curricula in the College of Education.

teachers' course. (See departmental statements.)

To avoid overcrowding in practice teaching in the spring quarter all students who have completed the prerequisite courses are urged to apply for admission to practice teaching in the fall and winter quarters.

PRESCRIBED COURSE FOR UNIVERSITY TEACHER'S CERTIFICATE IN ADMINISTRATION AND SUPERVISION

It is desirable that prospective superintendents and principals of graded schools, before entering upon their duties, shall have had courses in school administration and school supervision in some recognized normal school or college. Students who wish to qualify for a certificate in administration and supervision will be required to earn 37 credits as follows:

Required courses, totaling 28 credits, include: Education 111, 116-117 or 116a, 160-161-162,* 124-125-126, †144-135-136. Elective credits, totaling 9, selected from the following: Ag. Ed. 153-154-155, Education 3, 15, 55, 65, 106-107-108, 113, 115, 119, 123, 138-139, 164, 167-168, 173, 174, 175, 180, 184-185-186, 201-202-203, 205-206-207, 218-219-220, or other courses approved by the adviser. For suggested curriculum, consult pages 25-54.

SPECIALIZED CURRICULA
ADMINISTRATION AND SUPERVISION

Major Advisers: L. J. Brueckner, Fred Engelhardt, Earl Hudelson, L. V. Koos

CURRICULUM FOR THE FIRST AND SECOND YEARS IN THE JUNIOR COLLEGE FOR STUDENTS PREPARING TO BE

a. Superintendents and elementary school principals
b. Junior and senior high school principals
c. Supervisors of instruction in elementary schools.

* Education 123 and 113 should be substituted for 161-162 by students specializing in High School Administration.

† Education 164 and 167 should be substituted for 125 and 126 by students specializing in High School Administration.

For Administration and Supervision see page 25.
For Agriculture see page 29.
For Americanization see page 30.
For Art Education see page 32.
Commercial Training (See Department of Economics)
For High School Normal Training see page 32.
For Home Economics see page 34.
For Natural Science see page 36.
For Occupational Therapy see page 39.
For Physical Education for Men see page 41.
For physical Education for Women see page 43.
For School Psychologist see page 46.
For Public School Music see page 47.
For Social Studies see page 48.
For Sociology see page 50.
For Teaching of Subnormal Children see page 51.
For Trade and Industrial Education see page 52.
For Visiting Teachers see page 54.

FIRST YEAR—JUNIOR COLLEGE

First Quarter	Credits	*Second Quarter*	Credits	*Third Quarter*	Credits
Rhetoric 1	5	Rhetoric 1	5	Rhetoric C	5
History 1	5	History 2	5	Political Science 1	5
Animal Biology 1	5	Animal Biology 2	5	French or German 1	*5
Military Science		Military Science		Military Science	
Physical Education		Physical Education		Physical Education	

SECOND YEAR—JUNIOR COLLEGE

	Credits		Credits		Credits
Public Speaking	3	Public Speaking	3	Public Speaking	3
Psychology 1	3	Psychology 2	3	Sociology 1	5
Economics 3	5	Economics 4	5	Journalism 61	
French or German 2	5	French or German 1	5	French or German	5
Military Science		Military Science		Military Science	
Physical Education		Physical Education		Physical Education	

SENIOR COLLEGE CURRICULA

1. Curriculum for school superintendents and elementary school principals
2. Curriculum for elementary school general supervisors.
3. Curriculum for high school principals.

1. Curriculum for School Superintendents and Elementary School Principals

JUNIOR YEAR

First Quarter	Credits	*Second Quarter*	Credits	*Third Quarter*	Credits
Ed. 55, Educational Psychology	3	Ed. 3, Educational Sociology	3	Ed. 111, Educational Diagnosis	3
Ed. 116, Ed. Statistics	2	Ed. 117, Ed. Statistics	2	Ed. 167, Junior H.S.	3
Ed. 134, Mental Tests	2	Ed. 135, Mental Tests	2	Ed. 136, Mental Tests	2
Pol. Sci. 11f, Municipal Government	5	Pol. Sci. 7w	5	Elective	8
Econ. 191, Public Finance	3	Econ. 192, Public Finance	3		
	15		15		16

SENIOR YEAR

First Quarter	Credits	*Second Quarter*	Credits	*Third Quarter*	Credits
Ed. 160f, Elem. School Supervision	2	Ed. 161w, Elem. School Supervision	2	Ed. 162s, Elem. School Supervision	2
Ed. 124f, School Administration	3	Ed. 125f, City School Administration	3	Ed. 126s, City School Administration	3
Ed. 119, Elem. School Curriculum	3	Ed. 174w, Pub. School Finance	3	Ed. 175s, City School Finance	3
Elective	8	Ed. 115, Practice in Supervision	3	Ed. 123 or Ed. 164f, High School Supervision	3
		Ind. 171, Administration of Ind. Ed.	2	Elective	5
		Elective	3		
	16		16		16

* Twenty credits must be secured in either French or German.

2. Curriculum for Elementary School General Supervisors

JUNIOR YEAR

First Quarter

	Credits
Ed. 55, Educational Psychology	3
Ed. 134f, Mental Tests and Mental Diagnosis	2
Ed. 118f, Problems of Junior High School English	2
Ed. 45f, Social Science for Junior High School	2
Elective	6
	15

Second Quarter

	Credits
Ed. 3, Educational Sociology	3
Ed. 44, Teaching of Arithmetic	2
Ed. 135w, Mental Tests and Mental Diagnosis	2
Ed. 4w, Children's Literature	2
Ed. 12, Participation in Teaching with Special Methods	3
Elective	3
	15

Third Quarter

	Credits
Ed. 111, Educational Diagnosis	3
Ed. 119s, Elem. School Curriculum	3
Ed. 136s, Mental Tests and Mental Diagnosis	2
Ed. 103s, History of Modern Elementary Education	3
Ed. 13, Practice Teaching with Special Methods (For 3 hrs. credit)	3
Elective	2
	16

SENIOR YEAR

First Quarter

	Credits
Ed. 160, El. School Supervision	2
Ed. 124f, Educational Administration	3
Ed. 178f, School Surveys	3
Ed. 116 or 116a, Statistical Methods	2 or 3
Elective	5
	15 or 16

Second Quarter

	Credits
Ed. 161, El. School Supervision	2
Ed. 125w, City School Administration	3
Ed. 179w, School Surveys	3
Ed. 167w, The Junior High School	2
Ed. 117, Statistical Methods	2
Elective	3
	15

Third Quarter

	Credits
Ed. 162, El. School Supervision	2
Ed. 126s, City School Administration	3
Ed. 168w, The Junior High School	2
Ed. 115s, Practice Supervision	3
Elective in Teaching of El. Sch. Subjects	3
Elective	2
	15

3. Curriculum for High School Principals

JUNIOR YEAR

First Quarter

	Credits
Ed. 55, Educational Psychology	3
Ed. 116, Educational Statistics	2
Pol. Sci. 11, Municipal Government	5
Courses in teaching major or minors or elective	5
	15

Second Quarter

	Credits
Ed. 3, Educational Sociology	3
Ed. 117, Educational Statistics	2
Pol. Sci. 7, State Government	5
Courses in teaching major or minors or elective	5
	15

Third Quarter

	Credits
Ed. 111, Educational Diagnosis	3
Ed. 167, Junior High School	3
Ed. 15, Technique	3
Courses in teaching major or minors or elective	6
	15

SENIOR YEAR

First Quarter	Credits	*Second Quarter*	Credits	*Third Quarter*	Credits
Ed. 124, Educational Administration	3	Ed. 164, Problems of H.S. Administration	3	Ed. 123, Supervision of H.S. Instruction	3
Ed. 134, Mental Tests	2	Ed. 135, Mental Tests	2	Ed. 136, Mental Tests	2
Course in Special Methods	3	Ed. 16, Practice Teaching	5	Courses in teaching major or minors or elective	10
Ed. 113, High School Curriculum	3	Ind. 171, Administration of Industrial Ed.	2		
Courses in teaching major or minors or elective	4	Ed. 102, History of Modern Secondary and Higher Education	3		
	15		15		15

This curriculum is to be taken with or without work meeting the requirements of the University teacher's certificate. If taken without, it carries with it the supervisor's certificate with special reference to the high school principalship. The student taking the curriculum and not at the same time a candidate for the University teacher's certificate is, as may be seen in the accompanying schedule of requirements, permitted to elect that portion of his work not definitely prescribed. When taken with the work meeting the requirements of the certificate, the student will fill the elective portions of the curriculum with courses that are prescribed in the major or minor subjects in which he desires certification. With work taken in junior college years it will be possible for the student to complete a major or two minors by the time of receiving his degree. In some respects for the principal the completion of two minors is preferable to the completion of a single major.

COURSES FOR THE UNIVERSITY CERTIFICATE FOR ELEMENTARY SCHOOL TEACHERS

Students who have been graduated from a two-year normal training course or its equivalent and who wish to work for the Bachelor's degree in education and the University teacher's certificate for elementary school teachers may enroll in the College of Education. The courses listed below as required presuppose a full two-year normal training course.

REQUIRED COURSES

	Credits
Ed. 53, Educational Psychology	3
Ed. 111, Educational Diagnosis	3
Ed. 3, Educational Sociology	3
Ed. 42, Fundamental Educational Theories Related to Elementary Instruction	2
Ed. 119-120, Elementary School Curriculum	4
Ed. 103, History of Modern Elementary Education	3
Ed. 160, Elementary School Supervision	3
Ed. 124, Educational Administration	3
Ed. 116, Educational Statistics	2
Ed. 4, Children's Literature	3

(Seven hours to be elected from courses listed below)

Ed. 168, The Junior High School	3
Ed. 44, The Teaching of Arithmetic	2
Ed. 43, The Teaching of English in the Elementary School	2
Ed. 45, Teaching of History and Geography	2
Ed. 181su, Technique of Elementary Instruction	3
Special methods courses in elementary and junior high school teaching	
Total required credits	36
18 credits in each of two of the following fields or such others as may be approved: English, literature, history, languages, political science, science, mathematics, geography	36
General electives	18
Total credits required for certificate	90

AGRICULTURAL EDUCATION

Major Adviser: A. V. Storm

GENERAL STATEMENT

Students who desire to teach agriculture in the high schools or other secondary schools may, upon graduation, obtain the University teacher's certificate in addition to the regular college degrees by registering in both the College of Education and the College of Agriculture, Forestry, and Home Economics in the junior and senior years. It is desirable to consult the head of the Department of Agricultural Education earlier to avoid difficulties that may arise in the program of specialization.

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 COURSES

(Required for University teacher's certificate in agriculture)

For the junior and senior years the following curriculum has been approved by the College of Agriculture, Forestry, and Home Economics, and the College of Education and is required of all students who are candidates for the University teacher's certificate in agriculture.

JUNIOR YEAR

Fall Quarter

Agr. Ed. 21f, Vocational Education, 3
Agr. Biochem. 15f,s, Principles of Animal Nutrition, 3 (Agr. Biochem. 7-8)
Agron. 121f, Cereal Crops, 3 (Agron. 1)
Agron. 131f,w, Principles of Genetics, 3 (Bot. or An. Biol. 9 cred.)
An. Husb. 11f, Types and Breeds of Livestock, 3 (An. Husb. 10)
Hort. 6f, Fruit-Growing, 3 (May be omitted if completed as a part of the general requirements)
Electives, 0 or 2

Winter Quarter

Agr. Ed. 11f,w,s, Principles of Vocational Education, 3
Agron. 122w, Corn and Potato Crops, 3 (Agron. 1)
An. Husb. 6w, Livestock-Feeding, 5 (Agr. Biochem. 15)
An. Husb. 12w, Types and Breeds of Livestock, 3 (An. Husb. 11)
Ent. 3f,w, Economic Entomology, 3 (An. Biol. 16)

Spring Quarter

Agr. Ed. 131f,w,s, Methods in Teaching High School Agriculture, 5 (See tabular statement)
Agr. Econ. 85f,s, Principles of Marketing, 3 (Agr. Econ. 6)
Agron. 11s, Farm Machinery, 3
Agron. 123s, Forage and Fiber Crops, 3 (Agron. 1)
Hort. 32s, Vegetable-Growing, 3. (May be omitted if completed as a part of the general requirements)
Electives, 0 or 3

SENIOR YEAR

Fall Quarter

Agr. Ed. 41f,w,s, Apprentice Teaching, 2 (See tabular statement)
Agron. 102f,w, Farm Management II: Organization, 3 (Agron. 1, Agr. Econ. 6, Soils 4)
Dy. Husb. 6f, Judging Dairy Cattle, 1 (An. Husb. 10)
Dy. Husb. 101f, Milk Production, 5 (Dy. Husb. 1)
Agr. Ed. 42f,w,s, Teaching, 3 (See tabular statement)
Agr. Ed. 75f,s, Visual Presentation, 3 (Agr. Ed. 11)

Winter Quarter

Agr. Ed. 154f,w, Rural Education and Community Life 3 (Agr. Ed. 11)
Agr. Econ. 84w, Prices of Farm Products, 3 (sr. class. or 13 cred. in econ. and farm mgt. and 5 cred. in other soc. sciences)

Or

Sociology 14f,w,s, Rural Sociology, 3 (sr. class. or Sociol. 1)
Agron. 103w,s, Farm Management II: Operation, 3 (Agron. 102)
Vet. 9w, Veterinary Studies, 3
Pl. Path. 1f,w, Plant Pathology, 5 (Bot. 9 cred.)

Spring Quarter

Agr. Ed. 151w,s, Organization and Management, 5 (Agr. Ed. 11, 21)
Agr. Eng. 40f,s, Mechanical Training, 3
Vet. 10s, Veterinary Studies, 3 (Vet. 9)
Electives, 6

AMERICANIZATION TRAINING

GENERAL STATEMENT

Students registering in this course will be required to have completed the freshman and sophomore years in the course in Americanization training or their equivalent in the College of Science, Literature, and the Arts. All students desiring the University teacher's certificate for Americanization work will be required to secure credits in the following courses in the College of Education. Such students must also be registered in the College of Education.

JUNIOR STUDIES

Required	Credits	Electives
American People—Older Immigrants from Europe	3	Supervised Americanization Work Immigrant Woman
Newer Immigrants from Europe	3	Race Leaders and Programs
Americanisms and Assimilation	3	Labor Problems
Americanization Methodology	..	Statistics
Methods of Americanization	3	Elementary Dietetics
126, Organization of Americanization Work	3	Housing Problems
Ed. 3, Educational Sociology	3	Home Management
Ed. 55, Educational Psychology	3	Social Psychology
Ed. 15, Technique of Teaching	3	History of Education
or		
Am. 127, Technique of Teaching Adults	3	
General Economics	5, 5	Physical Anthropology
Aliens' Viewpoints: special lectures by race leaders	0	Political and Social Ethics (10 credits in any social science; jr., sr., grad.)

SENIOR STUDIES

Required	Credits	Electives
American Negro	3	Negro and Immigrant Adjustments
Government and the Immigrant	4	Slavic Culture
Race Leaders and Programs		Slavic Oral Language
(If not previously elected)	3, 3	Genetics and Eugenics
Ed. 16, Practice Teaching	5	Social Statistics
or substitute		Seminars in Intensive Race Studies
Supervised Americanization Work	3,3,3	Socialism
Teachers' Course	..	Child Welfare
or substitute		Philippine Peoples
Am. 125, Methods of Americanization Work	3	Municipal Problems
		Mental Diagnosis

Students desiring a special certificate to teach in home workers' classes will be required to take the following additional courses:

No.	Credits	Title	Offered to	Prerequisite courses
70w	3	Food Preparation	Soph.,jr.,sr.	Gen. zool.; gen. chem., desired
71s	3	Elementary Dietetics	Soph.,jr.,sr.	70, gen. physiol. desired
72f	3	Home Management Problems	Jr.,sr.	70, 71, gen. econ. or parallel

Students desiring to secure a special certificate to teach in the evening classes or community center classes will be required to take the following additional courses:

For Men	For Women
See courses in Physical Education for Men	See courses in Physical Education for Women

Vocational Education, Civics

ART EDUCATION

Major Adviser: Ruth Raymond

The following special curriculum in art education qualifies the student to teach art in grades or high schools, and to supervise art instruction. Art courses are open at the beginning of the freshman year to those registering in the College of Education.

1. Major subject—art, including the following minimal requirements:
   - 18 credits in design
   - 18 credits in drawing
   - *12 credits in handicrafts
   - † 5 credits in art history and appreciation
   - 3 credits in teacher's course in art
   - 6 credits in practice teaching
2. Minor subjects—education, with the following requirements:
   - 3 credits in educational psychology
   - 5 credits in history of education
   - 3 credits in educational sociology
   - 3 credits in technique of teaching
   - 3 credits in secondary education

   See Teacher's Course and Practice Teaching above.
3. Minor subjects—18 (minimal number) credits chosen from any department whose courses are accredited in the College of Education.
4. Required supporting courses:
   - 15 credits in rhetoric
     (The 9-credit course in rhetoric for technical students may be substituted)
   - 6 credits in general psychology
   - 3 credits in textiles
   - 10 credits in history
     If high school history of ancient, medieval, and modern periods is not offered for entrance)
   - 10 credits in science
     (If minor subject is home economics or trade education)
5. Electives, which are recommended, to be in a modern language, a science, or a social science, if the minor subject has not involved one of these departments.

HIGH SCHOOL NORMAL TRAINING

Major Adviser: George Selke

The special curriculum for persons preparing to teach normal training in Minnesota high schools is organized from the beginning of the freshman year. Students may begin on this curriculum upon entrance to the University. Students will find in this curriculum the desirable courses necessary to complete their four-year course leading to the degree.

Courses 42, 43 listed in the curriculum outlined below will be found described under the Department of Theory and Practice of Teaching in

* Courses 10f and 11w in Trade and Industrial Education (see page 73) may be chosen to fulfill a portion of this requirement.

† These credits may be chosen from the following courses: Art Ed. 70, Art Ed. 53, 54, Home Economics 51, and Greek 42, 43, 44, 45.

this bulletin, page 71. All other courses are described under the proper departmental statements in the bulletins of the College of Science, Literature, and the Arts, and the College of Education.

Freshman Year

Fall Quarter			Winter Quarter			Spring Quarter		
No.	Title	Credits	No.	Title	Credits	No.	Title	Credits
1	Animal Biology	5	2	Animal Biology	5	4	Human Physiol.	5
A	Fresh. English	5	B	Fresh. English	5	C	Fresh. English	5
29fT	Fundamental Prin. of Design	2	A.E.1	Fundamental Prin. of Design	2	E.E.2	Fundamental Prin. of Design	2
49	Phys. Ed.	0	50	Phys. Ed.	0		Phys. Ed.	0
	Elective	4		Elective	3		Elective	3

Sophomore Year

1	Gen. Psych.	3	2	Gen. Psych.	3	1	Introduction to Sociology	5
41	Pub. Speak.	3	42	Pub. Speak.	3	43	Pub. Speak.	3
or			or			or		
11	Exposition		12	Description		13	Narration	
1	Hist. of Modern World	5	2	Hist. of Modern World	5	1	Am. Govt.	5
35T or			32	Personal Hygiene	3	or		
37T or				Phys. Ed.	0	30T	Principles of Geography	
38T	Art Education	2		Elective	3		Art Ed.	2
	Phys. Ed.	0					Phys. Ed.	0
	Elective	3						

Junior Year

44	Am. Lit.	3	45	Am. Lit.	3	8	Shakespeare	4
5	American Hist.	5	6	American Hist.	5	42	Practice Teach. with Special Methods	5
43	Play and Playground	1	66,67	Interpret. Danc.	2	111	Ed. Diag.	3
	Elective	5		Elective	6	44	Play and Playground	1
							Elective	3

Senior Year

Fall Quarter			Winter Quarter			Spring Quarter		
No.	Title	Credits	No.	Title	Credits	No.	Title	Credits
119	Elemen. School Curriculum	3	161	Superv. of Elem. Sch. Instruc.	2	162	Superv. of Elem. Sch. Instruc.	2
43	Field Prob. in H. S. Training Departments	3	3	Educational Sociology	3	14	Rural Sociology	3
59	Music Appreciation	1	60	Music Appreciation	1	61	Music Appreciation	1
38f	Art. Ed. Pottery	2	60,61	Art Ed.—Comm. and Indus. Design	2	5	General Econ.	3
60	Minor Sports Technique	1	61	Minor Sports Technique	1	52s	Art Hist. and Appreciation	2
40	Child Training	3		Elective	3	164	Fundamentals of Agriculture	3
				Suggested elective			Elective	3
				Hygiene of the Family			Suggested elective	
							Food Preparation in Relation to Social Work	

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 and all students who are candidates for the University teacher's certificate 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 who expects to obtain the University endorsement for a 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 listed under any one of the 5 lines of specialization described below.

REQUIREMENTS FOR THE UNIVERSITY TEACHER'S CERTIFICATE 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. Psych. 55f,w,s. Ed. Psych., 3 (Psych. 1-2) or Agr. Ed. 11f,w,s, Principles of Vocational Education, 3.

H. E. Ed. 40f, Child-Training, 3 (Prev. Med. 52 or parallel), Psych. 1-2.

Hist. and Philos. of Ed. 5s, Public Ed. in U.S. 3 (Psych. 1-2)

H. E. Ed. 42f,w,s, Special Methods of Teaching Home Economics, 5 (H.E. 13, 22, Psych. 1-2, Ed. Psych. 55 or Agr. Ed. 11)

SENIOR YEAR

H.E. Ed. 46, 47, 48, or 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: Garment-Making, Dressmaking, Textiles, Foods and Cookery, Food Economics, Drawing and Design, and Advanced Design.

C. Home practice in foods and cookery following courses H.E. 21 and 22 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 TEACHERS' CURRICULUM

Junior Year

Econ. 1w,s, Principles of Economics, 5.
H. E. 37f,s, Health Care of the Family (Bact. 51) Physiol. 4.
H. E. 52f,w,s, Art History and Appreciation, 3 (H. E. 51).
H. E. 53f,w,s, Advanced Design, 4 (H. E. 51).
Rhetoric 22f,w,s, Public Speaking, 5 (Rhet. 3).
H. E. 23f,w, Nutrition I, 5 (H. E. 2, Bact. 51, Agr. Biochem. 3).
H. E. 108f,w,s, Nutrition II, 5 (H. E. 23).
2. *Electives.*—Enough electives should be selected to make up, with those listed in 1 and 2 above, from 15 to 17 credit hours each quarter. Full work for the year consists of 48 credit hours.

Senior Year

H. E. 17f,w,s,su, Advanced Clothing Construction, 3 (H. E. 13, 52, 53).
H. E. 36f,w,s, Home Management: Operation and Maintenance, Lect., 3 (H. E. 22).
H. E. 35f,w,s, Home Management: Operation and Maintenance, Laboratory, 6 (H. E. 22, Home Practice in Foods and Cookery, Prev. Med. 52, and H. E. 40 prereq. or parallel, 34 parallel.
H. E. 45w,s, Home Economics Survey, 2.
H.E. 103f,w,s, Dietetics, (H. E. 108).
H. E. 123w,s, Clothing Economics, 2 (H. E. 12, Econ. 5).
H. E. 111f,w,s, Home Management: House Planning and Equipment, 5 (H. E. 52, 53).
Econ. 121, Economics of Consumption, 3 (Econ. 5).

TEACHERS' CURRICULUM IN FOODS AND HOME MANAGEMENT

Students specializing in this course may omit the following subjects from the Teachers' Curriculum in Home Economics:

Senior Year

H. E. Econ. 49f,w, Observation and Teaching, 8 (42, Ed. 55 or Agr. Ed. 11).

They shall add the following subjects to the Teachers' Curriculum in Home Economics:

H. E. 25w, Experimental Cookery, 3 (H. E. 22).
H. E. 109s, Advanced Nutrition, 5 (H. E. 108).
H. E. Educ. 47f,w, Observation and Teaching, 8 (H. E. 34, 35, 42).

CURRICULUM IN TEXTILES AND CLOTHING

Students specializing in this curriculum may omit the following subjects from the General Teachers' Curriculum in Home Economics:

Junior Year

H. E. 23f.w, Nutrition I, 5 (H. E. 21, Bact. 51, Agr. Biochem. 3).
H. E. 108f,w,s, Nutrition II, 5 (H. E. 23).

Senior Year

H. E. Ed. 49f.w,s, Observation and Teaching, 8 (H. E. Ed. 42, Ed. Psych. 55 or Agr. Ed. 11).
H. E. 103, Dietetics, 5 (H. E. 108).

They shall add the following subjects to the Teachers' Curriculum in Home Economics:

Junior Year

H. E. 55f, Decorative Needlework and Other Crafts, 3 (H. E. 51, 53, or parallel).

Senior Year

H. E. 18w,s, Commercial Clothing Manufacture, 4 (H. E. 17).
H. E. Ed. 48f,w,s, Observation and Teaching (H. E. Ed. 42, Ed. Psych. 55 or Ag. Ed. 11).
H. E. 122w,s, Advanced Textiles, 3 (H. E. 3, Agr. Econ. 1).

CURRICULUM IN RELATED ART

Students specializing in this course may omit the following subjects from the Teachers' Curriculum in Textiles and Clothing:

Senior Year

H. E. Ed. 48f,w,s, Observation and Teaching of Textiles and Clothing.
H. E. 18w,s, Commercial Clothing Manufacture.
H. E. 122w,s, Advanced Textiles.
Econ. 126, Economics of Consumption (Econ. I).

They shall add the following courses:

Junior Year

Art Educ. 7, 8, 9; Still Life 3; 6, 7, 8, 9; Sketch 3; and 32; 4, 5, 6.
H. E. 58w, Costume Design, 3 (H. E. 13, 53, recommended 55).

Senior Year

Art Ed. 29, 30, 31; Sketch 3; 7, 8, 9.
H. E. 57s, Weaving and Other Crafts, 3 (H. E. 3, 51, 53 or 11).
H. E. 54, Interior Design, 3 (H. E. 52, 53, 131).
H. E. Ed. 49f,w,s, Observation and Teaching of Related Art, 8 (H. E. Ed. 42-53 or 11).
H. E. Ed. 43, Organization and Methods for Related Art Teaching, 3 (H. E. Ed. 42, 52, 53, 131 or 11).

CURRICULUM IN HOME ECONOMICS EXTENSION

Students having had two or more years of experience in teaching and who wish to go into Home Economics Extension work, should take the Teachers' Curriculum in Home Economics and add the following courses as electives:

Junior Year

Agr. Eng. 34w, Household Mechanics, 4 (Agr. Eng. 23 or equiv.).
20w, Home Economics Entomology, 3 (An. Biol. 6 cred.).
14f,w,s, Rural Sociology, 3 (1 or sr. class.).
Agr. Ed. 75w,s, Visual Presentation, 3 (Ag. Ed. 11).

Senior Year

H. E. 44w, Home Economics Extension Work, 3 (H. E. Ed. 42, 49 or parallel).

NATURAL SCIENCE

Advisers: H. A. Erikson, I. W. Geiger, J. A. Smith

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. 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, animal biology, physics. (On account of the mathematics requirements, students majoring in physics may satisfy the requirement by offering but 25 hours.) In the program above the word *major* means any one of these four subjects.
2. Completion of 15 hours, from one to five natural sciences: chemistry, physics, botany, animal biology, geology. This course is designated a *minor*.
3. Completion of introductory courses in two of three of the courses 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 of the Junior College of the College of Science, Literature, and the Arts except in the case of students majoring in physics. Such students should take Mathematics 1, 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 requirements of the Junior College by the end of the sophomore year. The following sample curricula are offered as showing distribution of courses:

FOR THOSE MAJORING IN NATURAL SCIENCE ASIDE FROM PHYSICS

Fall Quarter	Credits	Winter Quarter	Credits	Spring Quarter	Credits
English	5	English	5	English	5
Natural science	5	Natural science	5	Natural science	5
For. language	5	For. language	5	For. language	5
For. language	5	Social science	5	Social science	5
Major	5	Major	5	Major	5
Psychology	3	Psychology	3	Natural science	5
Electives	3	Electives	3	Major	5
Major	5	Major	5	Elective	5
Natural science	5	Elective	5	History of Ed.	5
Ed. Psychology	3	Ed. Sociology	3	Elective	5
Elective	3	Elective	3	Practical Teaching	3
Natural science	5	Natural science	5	Electives	8
Technique	3	High Sch. Sci. (Ed. 48)	3		
High School (Ed. 65)	3	Special method	3		
Electives	5	Elective	5		

FOR THOSE MAJORING IN PHYSICS

Fall Quarter	Credits	Winter Quarter	Credits	Spring Quarter	Credits
English	5	English	5	English	5
Natural science	5	Natural science	5	Foreign language	5
Mathematics 1	5	Mathematics 7	5	Mathematics 30	5
Physics 1 and 2	4	Physics 21-22	4	Physics 41-42	4
Foreign language	5	Foreign language	5	Foreign language	5
Mathematics 50	5	Mathematics 50	5	Mathematics 51	5
Psychology	3	Psychology	3	Electives	3
Physics 31-32	4	Physics 102	3	Physics 104	3
Natural science	5	Natural science	5	Natural science	5
Educational psychology	3	Educational sociology	3	History of Education	5
Electives	5	Electives	5	Electives	3
Physics 106	3	Natural science	5	Natural science	3
H. S. (Ed. 65)	3	H. S. Sci. (Ed. 38)	3	Practice Teaching	5
Technique	3	Special method	3	Electives	5
Elective	5	Electives	5		

FIVE-YEAR COURSES

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.

FIFTH YEAR SEQUENCES

Education

Major:

No.	Title	Credits
106f-107w-108s	Advanced Educational Psychology	9
111f-112w	Educational Diagnosis	4
102w	History of Modern Secondary Education	3
208f	Methods of Educational Research	2
		18
	Thesis	

Minor:
106f-107w-108s

Botany

No.	Title	Credits
Major:		
113-114	Advanced Taxonomy	6
118	Cytology	3
131	Field Ecology	5
141	Physical Phases of Plant Physiology	5
		19
	Thesis	

Minor:
131 and 141

Chemistry

Prerequisite requirements for graduate work:

Courses 35, 36, 37, Organic (15 credits), in addition to introductory courses in General, Qualitative, and Quantitative Chemistry.

Major:

140-141-142	Physical Chemistry	9 to 15
103-104-105	Advanced Inorganic	9
		18

Minor:
103-104-105

Physics

Major:

101-103-105	Theoretical Physics	12
142f	Electrical Measurements	3
132w	Applied Optics	3
122	Pyrometry	3
		21

Minor:
142-132-122

Animal Biology

Major:

109-110	General Physiology	10
181-182	Embryology	6
183	Genetics and Eugenics	3
		19
	Thesis	

Minor:
181-182 or 181-182-183

OCCUPATIONAL THERAPY

Major Adviser: R. O. Beard

Freshman Year

Fall Quarter			Winter Quarter			Spring Quarter		
Course		No. Credits	Course		No. Credits	Course		No. Credits
Rhetoric English	A	5	Rhetoric Eng.	B	5	Rhetoric Eng.	C	5
Animal Biology	1	5	Animal Biology	2	5	Relationship of Hospital to Social Worker	157	1
French	1 or 3	5	French	2 or 9	5 to 3	French	3 or 10	5 to 3
or			or			or		
German	1 or 15	5 to 4	German	2 or 31	5 to 3	German	3 or 32	5 to 3
Preliminary Hygiene	4	0	Ethics of Nursing	11	1	Hosp. and Hosp. Economics	159	1
						History and Development of Arts and Crafts	72	2
		15-14			16-14			14-12

Sophomore Year

Fall Quarter

Course	No.	Credits
Sociology	1	5
Psychology	1	3
Fundamental Principles of Design	1	3
Sketch Drawing, etc.	7	1
Clay-Modeling	35	1
Elements Prev. Med.	53	3
		16

Winter Quarter

Course	No.	Credits
Prin. and Pract. of Social Service	151	3
Psychology	2	3
Fundamental Principles of Design	2	3
Sketch Drawing, etc.	8	1
Cardboard and Paper Construction	32	1
Occupational Hygiene and Disease	73	2
		13

Spring Quarter

Course	No.	Credits
Psychology	3	3
Fundamental Principles of Design	3	3
Sketch Drawing, etc.	9	1
Occupational Therapy	158	3
Electives		4 to 5
		14 to 15

Junior Year

Fall Quarter

Course	No.	Credits
Sociology	51	3
History	21	5
Prin. of Harmony in Form and Color	20	3
Still Life	4	1
Composition	10	1
Elem. Weaving, Basketry, etc.	37	2
		15

Winter Quarter

Course	No.	Credits
Sociology	52	3
Educational Psychology	55	3
History	22	5
Prin. of Harmony in Form and Color	21	3
Still Life	5	1
Composition	11	1
		16

Spring Quarter

Course	No.	Credits
Educational Sociology	3	3
Technique of Teaching	15	3
The High School	65	3
Prin. of Harmony in Form and Color	22	3
Still Life	6	1
Composition	12	1
		14

Summer Quarter

Advanced Basketry	39	3
Advanced Weaving	40	3
Field Work		3 to 6*

Senior Year

Fall Quarter

Course	No.	Credits
Sociology	60	3
Practice Teaching	16	5
Art History and Appreciation	70	2
Allied Crafts	38	1
Elementary Pottery	41	2
Methods of Elem. Woodwork Ind.	10	2
		15

Winter Quarter

Course	No.	Credits
Educational Diagnosis	111	4
Physiology	4	5
Mental Hygiene	61	1
Bookbinding	33	2
Application of Design in Needle Work	45	2
		14

Spring Quarter

Course	No.	Credits
Technique of Teaching Adults	128	3
Application of Design to Fabrics	44	2
Metal Work	46	2
Types of Art Instruction	84	1
Field Work		6 to 8
		14-16

* During the third year (summer quarter) and in the fourth year opportunities will be given for practice work in the hospitals of the Twin Cities. This work will receive from 3 to 6 credits according to the hours a week devoted to it.

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 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.

CURRICULUM FOR MEN STUDENTS MAJORING IN PHYSICAL EDUCATION

Major Adviser: L. T. Keller

Freshman Year

No.	Title	Credits F	Credits W	Credits S	Prerequisite courses
Eng. A-B-C	Freshman English	5	5	5	None
An. Biol. 1-2	General Zoology	5	5	..	None
	Foreign Language	5	5	5	None
Sociol. 1	Introd. to Sociology	..	..	5	None
Mil. Sci. 1-2-3	First Year Basic Course...	..	..	..	None
Phys. Ed. 1-2-3	Freshman Physical Educ. ..	..	..	..	None
Phys. Ed. 4	Freshman Hygiene	..	..	..	None
		15	15	15	

NOTE.—If four years of one language are presented at entrance, none will be required. If three years of one language presented, 5 credits required if in same language. If two years of one language presented, 10 credits required if in same language. If less than two years of one language presented, 15 credits required. If a student registers for less than 15 credits of language, he may begin one of the subjects which would otherwise start in the sophomore year.

Sophomore Year

No.	Title	Credits F	Credits W	Credits S	Prerequisite courses
Chem. 1-2-3	General Inorg. Chem.	4	4	4	None
Psych. 1-2	General Psychology	3	3	..	None
Anat. 3	Human Anatomy	..	..	4	An. Biol. 1-2
Phys. Ed. 10-11-12	Minor Sports	2	2	2	Phys. Ed. 1-2-3
Phys. Ed. 7-8-9	Advanced Leaders	1	1	1	Phys. Ed. 1-2-3
	Social Science Elective.....	5	5	..	
Mil. Sci. 4-5-6	Second Yr. Basic Course...	..	..	..	Mil. Sci. 1-2-3
	General electives	..	..	4	
		15	15	15	

NOTE.—If one unit of chemistry is presented at entrance, Chem. 4-5 should be substituted for Chem. 1-2-3.

Suggested electives: Economics 1-2 or 3-4, Public Speaking 41-42 or 45, History 1-2, Political Science 1, Physiology 59, English, Sociology.

Junior Year

No.	Title	Credits F	Credits W	Credits S	Prerequisite courses
Bact. 1	General Bacteriology	5	..	..	Biol. 1-2, Chem. 1-2-3 or 4-5
Physiol. 57-58	Human Physiology	..	4	4	Biol. 1-2, Chem. 1-2-3 or 4-5
Anat. 160	Physical Development of Childhood	2	..	..	None
Phys. Ed. 19-20-21	Gymnastics	1	1	1	Phys. Ed. 1-2-3
Phys. Ed. 22-23	Kinesiology	2	2	..	Anat. 4
Phys. Ed. 24	Technique of Gymnastic Teaching	..	..	2	Phys. Ed. 22-23
Phys. Ed. 30	Athletic Training and First Aid	..	..	2	None
Prev. Med. 80	Educational Hygiene	..	2	..	An. Biol. 1-2, Psych. 1-2
Ed. 1	History of Education	5	..	..	Psych. 1-2
Ed. 55	Educational Psychology ...	..	3	..	Psych. 1-2
	Elective	..	3	6	
		15	15	15	

Senior Year

No.	Title	Credits F	Credits W	Credits S	Prerequisite courses
Prev. Med. 53	Elements of Preventive Medicine	3	..	..	Psych. 1-2, Bact. 1
Phys. Ed. 28	Physical Examination and Normal Diagnosis	2	..	..	Physiol. 57-58
Phys. Ed. 29	Orthopedic and Remedial Gymnastics	..	2	..	Phys. Ed. 22-23, 28
Phys. Ed. 30	History of Physical Education	2	..	..	Ed. 1
Phys. Ed. 31	Principles of Physical Education	..	3	..	Phys. Ed. 10-11-12; 24; 31
Phys. Ed. 32	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	None
Phys. Ed. 43-44-45	Practice Teaching	2	2	2	Phys. Ed. 10-11-12, 24, Ed. 55
Ed. 3	Educational Sociology	..	3	..	Psych. 1-2
Ed. 65	The High School	..	..	3	Psych. 1-2
	Elective	3	3	3	
		15	15	15	

Suggested electives: Elementary Pathology, Elementary Symptomatology, Preventive Medicine 50, 54, 59, 60, 61, courses in education and in the social sciences.

COURSES FOR MEN STUDENTS MINORING IN ATHLETIC COACHING

No.	Title	Credits F	Credits W	Credits S	Prerequisite courses
Phys. Ed. 1-2-3	Freshman Phys. Ed.	..	..	..	
Phys. Ed. 4	Freshman Hygiene	..	..	..	
Phys. Ed. 10-11-12	Minor Sports	2	2	2	
Phys. Ed. 27	Scouting	..	..	2	
Phys. Ed. 30	Athletic Training	..	..	2	
Phys. Ed. 35	Athletic Organization and Administration	..	2	..	
Phys. Ed. 37	Football	3	..	..	
Phys. Ed. 38	Basket-Ball	..	2	..	
Phys. Ed. 39	Track Athletics	..	..	2	
Phys. Ed. 42	Baseball	..	..	2	
Anat. 3	Human Anatomy	..	..	4	

NOTE.—All candidates for the teacher's certificate with minor recommendation in athletic coaching, must take Physical Education 30 and 35 and Anatomy 3. 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 examination and advice to all on entrance; plans systematically to keep in close touch with them during their first two years of residence; conducts yearly consultations with, and examines when necessary, all upper class students; gives courses in hygiene; organizes neuro-muscular 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 Women's Athletic Association in encouraging and organizing athletic sports; holds regular office hours for the purpose of consultation with all students who desire its advice.

Work in this department is required of all newly entering students (see Courses 1-2-3 and 4), and of all sophomores, who are permitted as free a choice among the sophomore courses as their physical condition permits (see "sophomore" courses; students who cannot swim must register for Course 22-23 during sophomore year). Physical examinations or consultations are required annually of all students.

Six credits toward the degree can be gained by taking courses in exercises (Courses 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, $2 a quarter. Maximum fee paid by a student in physical education, $3.50 a quarter.

The special four-year professional course described below is designed to prepare graduates for the responsible direction of physical education activities. 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.

CURRICULUM FOR WOMEN STUDENTS MAJORING IN PHYSICAL EDUCATION

Major Adviser: J. Anna Norris

Freshman Year

No.	Title	Credits F	Credits W	Credits S	Prerequisite courses
English A-B-C	Freshman English*	5	5	5	None
Chem. 14-15	Gen. Inorg. Chemistry‡....	5	5	..	None
Farm Eng. 23	General Physics§	..	..	5	None
History 1-2	Modern World*	5	5	..	None
Sociology 1	Introduction to Sociology*..	..	..	5	None
Phys. Ed. 1, 3	Elem. Physical Training...	0	..	0	None
Phys. Ed. 4	Preliminary Hygiene	0	..	..	None
Phys. Ed. 22s	Elem. Swimming	..	..	0	None
Phys. Ed. 37-38-39‖	Freshman Major Sports....	0	0	0	None
Phys. Ed. 49f-50w	Freshman Major Gymnastics	0	0	..	None
		15	15	15	

Sophomore Year

No.	Title	Credits F	Credits W	Credits S	Prerequisite courses
An. Biol. 1-2†	General Zoology*	5	5	..	None
Anat. 3s	Human Anatomy¶	..	..	4	An. Biol. 1-2
Psych. 1-2†	General Psychology*	3	3	..	None
Prev. Med. 2w	First Aid¶	..	1	..	An. Biol. 9 cr.
Bact. 51f,w,s	General Bacteriology*	..	..	5	Chem. 10 cr., Biol. 10 cr.
Pub. Sp. 41f-42w	Public Speaking*	3	3	..	Rhet. A-B-C or 4-5-6
Phys. Ed. 28f	Advanced Swimming	0	..	..	Phys. Ed. 22 or equivalent
Phys. Ed. 43-44-45	Play and the Playground..	1	1	1	Phys. Ed. 3 qtrs.
Phys. Ed. 51-52	Soph. Major Gymnastics....	½	½	..	Phys. Ed. 49-50
Phys. Ed. 56w-57s	Swim. with Technique.....	..	½	½	Phys. Ed. 28 or equivalent
Phys. Ed. 63-64-65	Major Sports with Tech. ..	1	1	1	Phys. Ed. 37-38-39
Ed. 55	Educational Psychology	..	..	3	Psych. 1-2
	Elective	3	..	..	
		16½	15	14½	

NOTE.—It is suggested that the elective course be in Sociology 6, Modern Social Reform Movements.

* For description of course see bulletin of College of Science, Literature, and the Arts.

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

‡ For description of course see bulletin of College of Chemistry.

§ For description of course see bulletin of College of Agriculture.

¶ For description of course see bulletin of College of Medical School.

‖ The second or third quarter is open to students who have not taken the preceding quarter.

NOTE.—If one year of chemistry is presented at entrance the student may take instead of Course 14-15 the more intensive Course 4-5.

If one year of physics is presented at entrance no physics will be required.

Junior Year

No.	Title	Credits F	Credits W	Credits S	Prerequisite courses
Agr. Biochem. 3f,w,s,su	Types of Carbon Compounds	6	..	..	Chem. 10 cr.
Physiol. 58-59	Human Physiology	..	4	4	Ag. Bioch. 3, Farm Eng. 23, Anat. 3
Ed. 1	History of Education	5	..	..	Psych. 1-2
Ed. 3	Educational Sociology	3	..	..	Psych. 1-2
Phys. Ed. 54-55	Gym. for Junior Majors.	½	½	..	Phys. Ed. 51-52
Phys. Ed. 58-59	Adv. Folk Dancing with Technique	..	1	1	Phys. Ed. 6 qtrs.
Phys. Ed. 60-61	Minor Sports with Tech.	1	..	1	Phys. Ed. 6 qtrs.
Phys. Ed. 66-67-68	Elem. Interp. Dancing	1	1	1	Phys. Ed. 6 qtrs.
Phys. Ed. 75	History of Phys. Ed.	..	1	..	
Phys. Ed. 80-81	Kinesiology	4	4	..	Anat. 3, Farm Eng. 23
Phys. Ed. 82	Physical Examination	..	..	2	Phys. Ed. 80-81
Phys. Ed. 83	Tech. of Gym. Teach.	..	..	3	Phys. Ed. 54-55, 80-81
	Elective	..	..	3	
		15½	16½	15	

Senior Year

No.	Title	Credits F	Credits W	Credits S	Prerequisite courses
Ed. 65	The High School	3	..	..	
Phys. Ed. 69-70-71	Advanced Int. Dancing with Technique	1	1	1	Phys. Ed. 66-67-68
Phys. Ed. 84	Principles of Gym.	3	..	..	Phys. Ed. 55, 82
Phys. Ed. 85-86	Principles of Phys. Ed.	..	2	1	Phys. Ed. 45, 59, 61, 65, 69, 84
Phys. Ed. 87	Personal and School Hygiene	..	..	3	Physiol. 57-58
Phys. Ed. 88-89-90	Orthopedic and Remedial Gymnastics	1	1	1	Phys. Ed. 83
Phys. Ed. 91f	Principles of Dancing	2	..	..	Phys. Ed. 59, 68
Phys. Ed. 92f-93w-94s	Practice Teaching in Playground, Gymnastics, Major Sports	1	2	1	Phys. Ed. 45, 61, 65, 84
Phys. Ed. 95s	Prac. Teaching in Dancing and Swimming	..	..	1	Phys. Ed. 57, 70, 91
Phys. Ed. 97w	Organization and Administration	..	3	..	Phys. Ed. 75
	Electives	4	5	6	
		15	14	13	

COURSE FOR WOMEN STUDENTS MINORING IN PHYSICAL EDUCATION

No.	Cr.	Title	Offered to	Prerequisite courses
Phys. Ed. 1-2-3	0	Elem. Phys. Training	Required of all new students	None
Phys. Ed. 4	0	Prelim. Hygiene	Required of all new students	None
Phys. Ed. 22-23	0	Elem. Swimming* ...	Soph.	None
Phys. Ed. 33-34	0	Basket-Ball and Base-ball	Fr., jr., sr.	Permission of director
Phys. Ed. 43-44-45	3	Play and Playground.	Jr., sr.	Phys. Ed. 6 qtrs.
Phys. Ed. 51-52	1	Gym. for Sophomore Majors	Jr. minors	Phys. Ed. 1-2-3
Phys. Ed. 54-55	1	Gym. for Junior Majors	Sr. minors	Phys. Ed. 51-52
Phys. Ed. 64-65	2	Major Sports with Technique	Jr., sr.	Phys. Ed. 33-34
Phys. Ed. 80	4	Kinesiology	Jr., sr.	An. Biol. 1-2, Anat. 3
Phys. Ed. 83	3	Technique of Gymnastic Teaching ...	Sr.	Phys. Ed. 80, 54-55
Anatomy 3	4	Human Anatomy ...	Soph., jr.	An. Biol. 1-2
Prev. Med. 50	3	Public and Personal Health	Jr., sr.	An. Biol. 1-2; Psych. 1-2
Education 1	5	History of Education	Jr., sr.	6 cred. in psych.
Education 3	3	Educational Sociology	Jr., sr.	6 cred. in psych.
Education 11	3	Technique of Teaching	Jr., sr.	Ed. 45
Education 55	3	Educational Psych...	Jr., sr	6 cred. in ed.
Education 65	3	The High School....	Jr., sr.	6 cred. in psych.

SCHOOL PSYCHOLOGIST

Major Adviser: M. E. Haggerty

Students who wish to qualify for a certificate for school psychologist will be required to complete the work for a Master's degree with educational psychology as a major.

The regular Junior College requirements must be fulfilled.

The following courses are recommended since some of them are prerequisites to required courses in the Senior College:

	Credits
Animal Biology 1 and 2	10
Mathematics 65	5
Chemistry	10
Sociology 1	5
Psychology 1 and 2	6
Psychology 4 and 5 (Laboratory)	4
Human Physiology 4	5

SENIOR COLLEGE

In addition to the required courses for the juniors and seniors listed below the candidate must earn a total of 24 credits selected from the following electives:

Psychology 124f (Psychology of Learning) 3 credits; Psychology 121f-122w (Neuro-Psychology) 6 credits; Psychology 114w-115s (Human Behavior) 6 credits; Psychology 125f-126w (Psychology of Individual Differences) 6 credits; Sociology 55 (The Occurrence of the Socially Inadequate) 3 credits; Sociology 52 (Elementary Case Work) 3 credits; Anatomy 134 (Physical Development of Childhood) 2 credits; Education 167f (Junior High School) 3 credits; Education 3 (Educational Sociology) 3 credits.

Junior Year

Fall Quarter			Winter Quarter			Spring Quarter		
No.	Title	Credits	No.	Title	Credits	No.	Title	Credits
55f	Ed. Psych.	3	144w	Psychology, Abnormal	3	145s	Psychology	3
	Electives	12	50w	Prev. Medicine	3	111	Ed. Diagnosis	3
				Electives	9	113s	H. S. Curriculum	3
						119f	Elementary School Curriculum	3
							Electives	3

Senior Year

134f	Mental Tests and Diagnosis	2	135w	Mental Tests and Diagnosis	2	136s	Mental Tests and Diagnosis	2
116f	Statistical Methods	2	117w	Statistical Methods	2	118s	Statistical Methods	2
106f	Adv. Ed. Psych.	3	107w	Adv. Ed. Psych.	3	108s	Adv. Ed. Psych.	3
124f	Ed. Admin.	3		Electives	8	64s	Vocational Psych.	2
	Electives	5				183s	An. Biology	3
							Electives	3

Graduate Year

149f	Psycho-Educational Clinic	2	150w	Psycho-Educational Clinic	2	151s	Psycho-Educational Clinic	2
184f	Mental Deficiency	2	185w	Mental Deficiency	2	186s	Mental Deficiency	2
201f	Ed. (Seminar)	2	202w	Ed. (Seminar)	2	203s	Ed. (Seminar)	2
	Electives	3		Electives	3		Electives	3
	Thesis	0		Thesis	0		Thesis	0

PUBLIC SCHOOL MUSIC

Major Adviser: T. P. Giddings

First Year

No.	Title	Credits F	Credits W	Credits S	Prerequisite courses
Eng. A-B-C	Rhetoric	5	5	5	None
Hist. 11-12-13	Med. Hist.	3	3	4	None
Mu. 1-2-3	Harmony	3	3	3	None
Mu. 7-8-9	Ear-Training	1	1	1	None
Mu. 16-17-18	Piano	2	2	2	None
*Mu. Mu.Elec.	Voice or other instrument	2	2	2	None

Second Year

Psych. 1-2	Gen. Psych.	3	3	..	None
Physics 9	Acoustics	..	..	3	None
Ed. 29-30-31	Grade School Methods	3	3	3	None
Ed.(Mu)71-72-73	Class Instr. Teaching	1	1	1	None
Mu. 103-104-105	Analysis	1	1	1	Mu. 1-2-3
Mu. 112-113-114	Ensemble	2	2	2	None
Mu. 19-20-21 or	Piano (6 credits) or				
Mu. 50-51-52	Organ (6 credits)	2	2	2	Fr. Prac. Music
‡Mu. Mu.Elec.	Voice or other instrument	2	2	2	Fr. Prac. Music

* Must elect 6 credits in some one of the following: (a) Voice 28-29-30; (b) Violin 22-23-24; (c) Other Orchestral Instrument 34-35-36.

‡ Must elect 6 credits in some one of the following: (a) Voice 31-32-33; (b) Violin 25-26-27; (c) Other Orchestral Instrument 37-38-39.

Third Year

Ed. (Mu) 74-75-76	Advanced Class Instrument Teaching	1	1	1	71-72-73
Ed. 32-33-34	High School Methods.....	3	3	3	75-76-77
Mu. 106-107-108	Hist. of Music	3	3	3	1-2-3, 4-5-6
Mu. 115-116-117	Adv. Ensemble	2	2	2	112-113-114
Ed. 3,55, 1	Ed. Soc., Ed. Psych., Hist. of Ed.	3	3	3	
Ed. 51-52-53	Instrumentation	1	1	1	None
Mu. 40-41-42 or 43-44-45	Orchestra or Chorus.....	1	1	1	
§Mu. Mu.Elec.	Piano, voice or other instrument	2	2	2	Soph. Prac. Music

Fourth Year

Ed. 64-65-66	Orchestra-Conducting	2	2	2	
Ed. 81-82-83	Observing and Teaching..	2	2	2	78-79-80
Ed. 54-55-56	Adv. Instrumentation.....	1	1	1	51-52-53
Mu. 40-41-42, 43-44-45	Orchestra or Chorus.....	1	1	1	
¶Mu. Mu.Elec.	Piano, voice or other instrument	2	2	2	Jr. Prac. Music

MINOR IN PUBLIC SCHOOL MUSIC

Mu. 1-2-3	Harmony	3	3	3	None
Mu. 7-8-9	Ear-Training	1	1	1	None
Ed. 29-30-31	Grade School Methods ...	3	3	3	None
Ed. 51-52-53	Instrumentation	1	1	1	None
Ed. 64-65-66	Orchestra-Conducting	2	2	2	None

Thirty-six credits in Practical Music are required for graduation.

SOCIAL STUDIES

Major Adviser: A. C. Krey

Two facts make it desirable for students to secure training in more than one of the social sciences including history. The first of these facts is the divided program which teachers in Minnesota high schools are required to follow. Relatively few beginning teachers find it possible to devote themselves wholly to the teaching of one high school subject. The second fact is the increasing demand in high school for courses in "social science" which is a composite course involving the elements of political science, economics, and history. A more elementary course of similar nature is being offered in junior high schools. Two possible ways of preparing to meet the situation are recommended:

§ Must elect 3 credits in some one of the following: (a) Voice 68-69-70; (b) Violin 62-63-64; (c) Other Orchestral Instrument 74-75-76.

¶ Must elect 3 credits in some one of the following: (a) Voice 71-72-73; (b) Violin 65-66-67; (c) Other Orchestral Instrument 77-78-79.

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 36 credit hours (see statement under History). Political Science, 1, 7 and 11 or 15. Economics 3-4. Sociology 1, 6, and 14.
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 3-4, 143-144 and if possible 161 and 191-192. Political Science 1, 7, 11 or 15 and one course on foreign governments or relations. Sociology 1, 6, 14, and either 51, 52 or 53, 60 and either 100, 120, or 122. History 5-6 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.

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 degrees of bachelor of arts and master of arts is recommended.

Freshman Year

Rhetoric-English	15
Language	10(norm.)
Science	10
History 1-2	10
	45

Sophomore Year

History 5-6	10
Psychology	6
Group	15
Political Science 1 and 7	10
	41

Junior Year

Economics 3-4	10
History 105 or 133 and 119 or 120	10
Sociology 1, 6 and 14	11
Education 1, 3 and 55	11
	42

Senior Year

Economics 143-144	8
Political Science 11 and 15	10
Sociology 51, 52 or 53, 60, 100	9
History, intensive course	5
Education 15, 25 and 113	9
	41

Graduate Year

Economics 161 and 191-192	9
Political Science course numbered over 100	5
Sociology 110 and 120 or 122	6
Education 16 and 5 credits to be chosen from Courses 101, 102, 124, 116-117, 134-135-136 and 167	10
	30

Thesis in one of the departments with such additional work as may be necessary for the satisfactory preparation of the thesis.

SOCIOLOGY

Major Adviser: R. L. Finney

MAJOR IN SOCIAL THEORY (36-37 hrs.)

	Course No.	Name of Course
Major Sequences	1	Introduction to Sociology
	14	Rural Sociology
	6	Modern Social Reform Movements
	and 53	Elements of Criminology
	or 45	Social Statistics
	51	Occurrence of the Socially Inadequate
	119	The Family
	or 120	Social Progress
	100	Social Psychology
	101	Social Organization
	102	Social Control
	110	Community Organization and Social Work in Small Towns and Country
	114	Rural Social Institutions
	or 140	History of Social Theory
	121	Advanced Statistical Methods
	or 141	Contemporary Social Theory

MAJOR IN APPLIED SOCIOLOGY (36-37 hrs.)

1	
14	
45	
51	
52	Elementary Case Work
60	Child Welfare
90	Elementary Field Work
91	Elementary Field Work
100	
112	The Rural Social Survey
or 122	Methods of Social Investigation
119	
or 134	Legal Protection of the Child
110	
or 114	
or 128	Principles of Administration Applied to Social Work
or 130	Advanced Case Work

MINOR SOCIOLOGY

1
6
or 14, and 4 other courses (19-20 hrs.)

TEACHERS OF SUBNORMAL CHILDREN

Major Adviser: J. G. Rockwell

The arrangement with the city schools of Minneapolis and St. Paul provides for a limited number of cadetships open to students only during the regular college year. Each cadetship will require that the student devote part of his time to study at the University and part to field service in the subnormal classes of the Minneapolis and St. Paul schools. Each cadetship will pay a stipend of $60 a month. Students desiring to apply for a cadetship are required to file their applications with Mr. W. F. Webster, superintendent of schools, Minneapolis, or Mr. E. C. Hartwell, superintendent of schools, St. Paul, and with Mr. M. E. Haggerty, dean of the College of Education, University of Minnesota.

Students who complete the freshman and sophomore years of this course, and who have had two years of teaching experience in elementary schools, and who complete a minimum of six credits in starred courses of the junior and senior years, will qualify for a special teaching certificate good for one year 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 course in practice teaching and handwork to qualify them for this special certificate.

Unclassed students with proper prerequisites may pursue such courses as they are qualified, on the basis of previous training and experience, to carry in the junior and senior years.

Freshman Year

Fall Quarter			Winter Quarter			Spring Quarter		
No.	Title	Credits	No.	Title	Credits	No.	Title	Credits
A	Fresh. English	5	B	Fresh. English	5	C	Fresh. English	5
1	An. Biol.	5	2	An. Biol.	5	1	Introduction to Sociology	5
1f	Art Education	3	2w	Art Education	3	3s	Art Education	3
	Elective	2		Elective	2		Elective	2

Sophomore Year

1	Psychology	3	2	Psychology	3	3	Ed. Sociology	3
4	Psychology Lab.	2	5	Psychology Lab.	2	H.E.57	Weaving on Table Looms	3
1	History	5	2	History	5	10	Meth. Elem. Grade Woodwork	3
37	Art Education	2	32	Art Education	1		Elective	6
	Elective	3	11	Meth. Prim. Grade Woodwork	2			
				Elective	3			

Junior Year

184	Mental Deficiency	2	185	Mental Deficiency	2	186	Mental Deficiency	2
134	Mental Tests	2	135	Mental Tests	2	136	Mental Tests	2
31	Phys. Ed.	0	32	Phys. Ed.	0	33	Phys. Ed.	0
151	Elem. Methods	2	152	Elem. Methods	2	153	Elem. Methods	2
	Elective	8		Elective	8		Elective	8

Senior Year

149	Psycho-Ed. Clinic	3	150	Psycho-Educational Clinic	3	151	Psycho-Educational Clinic	3
51	Sociology	3	52	Elem. Case Work	3	60	Child Welfare	3
17	Practice Teaching	2	17	Practice Teaching	2	17	Practice Teaching	2
	Elective	7		Elective	7		Elective	7

FOUR-YEAR CURRICULUM TRADE AND INDUSTRIAL EDUCATION

Major Adviser: H. J. Smith

(Required of all, 115 credits. Additional specified groups, each 18 credits. Elective with limits on shopwork, 47 credits. Total 180.)

Fall Quarter	Credits	Winter Quarter	Credits	Spring Quarter	Credits
Eng.Af, Rhet. (no prereq.)	5	Eng.Bw, Rhet. (prereq., Af)	5	Eng.Cs, Rhet. (prereq., Bw)	5
Ind.40f, Occup. Analy. (no prereq.)	2	Ind.41w, Job Analy. (no prereq.)	2	Ind.42s, Select. of Rel. Material (prereq., 40f)	2
Ind.20f, Ind. History (no prereq.)	2	Ind.30w, Graphic Presentation	2	Soc.1s, Introd. to Soc. (no prereq.)	5
Shopwork	6	Drawing	3	Drawing	3
		Shopwork	3		
Econ.3f, Prin. of Econ. (no prereq.)	5	Econ. 4w, Prin. of Econ. (no prereq.)	5	Ind.25s, Lit. of Voc. Ed. (no prereq.)	2
Psych.1f, Gen. Psych. (no prereq.)	3	Psych.2w, Gen. Psych. (no prereq.)	3	Ed.Psych.55s, Ed. Psych. (prereq., Psych. 12)	3
Ind.60f, Soc. Agencies in Ind. Ed. (no prereq.)	2	Shopwork	4	Ind.61w, Soc. Sig. of Ind. Ed. (prereq., Ind. 60)	2
Shopwork	2	Electives	3	Electives	8
Electives	3				
Econ.161f, Labor Problems and Trade Unionism (prereq., Econ.3-4)	3	Ind.70, Meth.—Shop Subjects (prereq., Ind. 41)	2	15s. Tech. of Teach. (prereq., Ed. 55)	3
Ed.Psych.111f, Ed. Diag. (prereq., Ed. 55)	2	Ed.3w, Ed. Soc. (prereq., Soc. 1)	3	Ind.66, Meth., Related Subjects (prereq., Ind. 42)	2
Drawing	2	Ed.Psych.112w, Ed. Diag. (prereq., 111f)	2	Ed.103s, Hist. of Mod. Elem. Ed. (prereq., 6 cr. in Psych. and 6 cr. in Hist.)	3
Ed. 124f, Ed. Adm. (prereq., 10 or in Ed.)	3	Drawing	2	Electives	7
Electives	5	Electives	6		
Ind.50f, Prac. Teaching (prereq., 11 and Ind. 65, 66, or 67)	2	Ind.51w, Prac. Teach. (prereq., 50f)	2	Ind.52s, Prac. Teach. (prereq., 50w)	2
Ind.171f, Admin. of All-Day Schools	2	Ind.172w, Admin. of Evening Schools (prereq., 171)	2	Ind.173s, Adm. of Part-Time Schools (prereq., 172)	2
Electives	11	Electives	11	Electives	11

ELECTIVE GROUPS

Each student will be required to elect one of the eight groups designated below.

1. *Manual Training or General Industrial Training Teachers for Towns of All Sizes*

	Credits
Shop courses, varied (woodwork, printing, electricity, sheet metal, machine shop practice, etc.)	8
Drawing courses (mechanical or architectural)	2
Ind. 80, General Industrial Training	2
Ind. 13, Organ. and Super. of Manual Training	3
Ed. 65, The High School (Cr. 167 Jr. H. S.)	3
	18

2. *Teachers of Special Shop Subjects for Boys or Girls*

	Credits
Shop courses, *intensive* (any trade, men or women)	8
Related Drawing	2
Related Science	2
Related Mathematics	2
Related Hygiene and Safety	2
Ed. Psy. 64, Voc. Psychology	2
	18

3. *Teachers of Related Subjects*

	Credits
Physics 21, Heat	3
Physics 41, Magnetism and Electricity	3
Chem. 1, General Inorganic Chemistry	4
Special Methods, (math., drawing, physics, chem., hygiene and safety, art)	3
	18

4. *Teachers of Non-Vocational Subjects*

	Credits
Ind. 65, Methods, Non-Vocational Subjects	2
Special Methods (Eng., social science, geography, etc.)	4
Ed. 134-135-136, Mental Tests	6
Amer. 128, Teaching Adults	3
Soc. 100, Social Psychology	3
	18

5. *Co-ordinators and Directors of Part Time Schools and Classes*

	Credits
Ed. Psych. 116, Statistical Method in Ed.	2
Econ. 167, Industrial Relations	3
Econ. 168, Personal Management	3
Soc. 100, Social Psychology	3
Soc. 102, Social Control	3
Ind. 65, Methods, Non-Vocational Subjects	2
	18

6. *Directors of Day and Evening Industrial Schools*

	Credits
Ed. 164, High School Administration	3
Ed. Psych. 116, Statistical Method in Ed.	2
Ed. 160f, Supervision of Elementary School Instruction	2
Ed. Psych. 64, Vocational Psychology	3
Econ. 167, Industrial Relations	3
Soc. 100, Social Psychology	3
Soc. 102, Social Control	3
	18

7. *Supervisors of Industrial Education for Cities and States*

	Credits
Ind. 80, General Industrial Training	3
Ed. Psych. 116, Statistical Method in Ed.	2
Ed. Psych. 64, Vocational Psychology	2
Ed. 125-126, City School Administration	6
Ed. 160, Supervision of Elementary School Instruction	2
Ed 65, The High School	3
	18

8. *Directors, Assistants, and Field Workers in Vocational Advisement and Placement*

	Credits
Ed. Psych. 64, Vocational Psychology	2
Ed. Psych. 134, 5-6, Mental Tests	6
Ed. Psych. 116, Statistical Method in Ed.	2
Ed. 160f, Superv. of Elementary School Instruction	2
Econ. 167, Industrial Relations	3
Soc. 100, Social Psychology	3
	18

SHOP WORK AND DRAWING CREDITS ALLOWED

Shop work and drawing credits of collegiate grade, earned in the University of Minnesota or accepted in transfer from approved schools and colleges may be allowed to the extent of not more than 20 credits in addition to the 15 credits in shop work and 10 credits in drawing specified in the curriculum.

UNDERGRADUATE CURRICULUM FOR VISITING TEACHERS

Major Adviser: L. J. Brueckner

Freshman Year

	Credits
English A-B-C	15
History 5-6 or Language	10
An. Biology	10
Sociology 1	5
Pol. Science 1	5
	45

Sophomore Year

	Credits
History 21-22	10
Economics 3-4	10
Psychology 1-2	6
Pol. Science 7	5
Sociology 6, 45	8
	39

Junior Year

	Credits
Education 15	3
Education 1, 3, and 55	11
Sociology 51, 52, 53, 70, 90, 91	16
Home Economics 70-71-72	9
	39

Senior Year

	Credits
Educational Psychology 184-185-186	6
Five credits from 101, 102, 124, 116-117, 134-135-136, 167	5
Economics 161-162 or Psychol. 144-145	6
Sociology 60, 92, 128, 130, 134, 138-139	18
Sociology 153-154-155	9
	44

DESCRIPTION OF COURSES

EDUCATION—GENERAL COURSES

Graduate conference.—All graduate students majoring in education are required to meet with the department staff every alternate Monday evening from 7:15 to 9:00 for conference regarding subjects of original investigations. This work carries no credit.

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.*

208. 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.

ADMINISTRATION AND SUPERVISION

65. The High School. For high school teachers in training. Recent growth in secondary education; types of reorganization; types of programs of study; types of high schools; plant; costs; standardization.

113-114. High School Curriculum. A study of types of programs of study, curricula, subjects of study, constants, variables, electives, distribution of subject-matter by years and units.

115. Practice in Supervision. Problems and practice in the supervision of instruction in the elementary schools of Minneapolis and St. Paul.

119. Elementary School Curriculum. A study of the principles underlying the organization of subject-matter for courses in the elementary school, including an examination of curricula, syllabi, and school texts in the light of their function in the teaching and administration of the curriculum.

119T-120T. Elementary School Curriculum. (Same as above for teachers.)

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. Students admitted to the course through conference with instructor.

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.

124. Educational Administration. The present status and tendencies in the organization and administration of state and city school systems with interpretations.

125-126. City School Administration. For superintendents and principals. Detailed study of the principles and practice of city school administration.

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.

160. Principles of Supervision. 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.

161a. 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.

161b. Elementary School Supervision. The adjustment of the curriculum to the abilities of pupils in the elementary school; methods of classifying pupils according to achievement and intelligence.

162a. Supervision of English in the Elementary Schools. Improvement of instruction in oral and silent reading; the results of scientific investigation in reading; use of standardized and informal tests; remedial work; some consideration of spelling and writing.

162b. 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.

162c. 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.

164. High School Administration. A study of elimination from school, secondary vocational education, the marking system, classification of students, high school library, social organization and extra-curricular activities, community relationships, teaching schedule, building, costs.

167-168. Junior High School. A study of the special purposes of this institution and the appropriate reorganizations to achieve them; the history of the movement.

174. Public School Finance. A critical study of problems of federal and state aid to public schools; sources, methods, principles, needed reforms. Students are strongly advised to take as preparatory or in conjunction with this course Economics 191f-192w, Public Finance, and Education 126f-127w, Methods of Educational Research. (Not offered 1924-25.)

175. City School Finance. Study of the problems of school support peculiarly related to the city district; municipal school funds, sources and expenditures; analysis of unit costs, comparative cost accounting systems, budgets, financial records and reports.

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.

205-206-207. Seminar in Educational Administration.

215-216-217. Seminar in Public Education in the United States. Research course devoted to intensive study of certain factors determining the problem of public education in the United States. The following may be considered typical problems: school support, school supervision, administrative units.

218-219-220. Seminar in Secondary School Problems.

AGRICULTURAL EDUCATION

COLLEGE OF EDUCATION

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.

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.

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.

42. Teaching. 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.

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.

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.

82. Agricultural Extension Field Work. Actual field practice 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.

121. Teachers' Course, Home and School Gardening. A lecture and laboratory course designed to give teachers the preparation necessary for the proper planning, management, and supervision of home and school gardens. (Not offered in 1924-25.)

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.

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.

153. Consolidated Rural Schools. To prepare principals to meet the problems of organization and management peculiar to consolidated rural schools, such as building arrangements, curriculum adjustments, transportation of pupils, and home project work.

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 1924-25.)

155. Consolidated Rural School Problems. Opportunities for intensive study and research in special problems of administration and supervision of village and consolidated rural schools. (Not offered in 1924-25.)

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. (Not offered in 1924-25.)

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.

176. Problems in Visual Education. Special attention to use of visual aids in teaching agriculture. The development of proper visual methods by means of research.

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

FUNDAMENTAL PRINCIPLES OF DESIGN

1-2-3. Fundamental Principles of Design. Elementary problems involving space-breaking with parallel lines; emphasis on value relations; applications to problems developed in the handicrafts. The decorative use of nature material. Inspiration from nature, not imitation of nature forms.

20-21-22. Principles of Harmony in Form and Color. Color theories of Munsell, Wilson, and Sargent, discussed and exemplified, with analysis of color harmonies and orginal work therein. Application of color harmonies in original designs throughout the year, with reference to execution in handicraft and by commercial processes. Prerequisite: 90 hours credit in design, except in specially arranged cases.

50w-51s. Commercial and Industrial Design. 50. Advertising design and lettering; 51, design for industry. Subject-matter appropriate for high school art-teaching, with emphasis on governing principles. Prerequisite: 18 credits in design except in specially arranged cases.

53w-54s. Design for the Consumer. 53. Problems of house-planning, decoration, and furnishings; 54. problems of costume-selecting and designing. Subject-matter appropriate for art-teaching in high schools, emphasis on governing principles. Art history an important part of courses. Prerequisites: 18 credits in design.

55-56-57. Fundamental Art Principles (for public school teachers of subjects other than art). (Offered in summer 1925.)

DRAWING

4,5,6. Still Life. Drawings from objects in charcoal and pencil. Emphasis on value relations, form, and perspective.

7,8,9. Sketch-Drawing from the Posed Figure in Charcoal and Pencil. Action and memory drawings. Emphasis on action, form, and value relation.

10-11-12. Composition. Drawing from imagination. Stimulation by poetry and music. The medium: charcoal.

23,24,25. Water Color. Drawings from objects. Emphasis on form, color, and technical handling.

26,27,28. Charcoal, Pencil, Pen Technique. Drawings from objects in these mediums.

29-30-31. Sketch from Pose.

60f,61w,62s. Advanced Water Color.

63,64,65. Advanced Techniques.

66,67,68. Advanced Sketch.

HANDICRAFTS

32. Cardboard and Paper Construction. Subject-matter for public school work.

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.

35. Clay-Modeling. Representation of familiar objects, and illustrative modeling. (Not offered in 1924-25.)

37,38. Elementary Weaving, Basketry, and Allied Crafts, with reference to use in the grades and in occupational therapy.

39. Advanced Basketry.

40. Advanced Weaving.

41. Elementary Pottery. Hand building.

42w-43s. Advanced Pottery. Work on wheels, casting, firing, and glazing.

44s. Application of Design to Fabrics by means of block printing, stenciling, batik, and other dyeing processes.

45w. Application of Design in Needlecraft. Problems appropriate for public school work. Peasant stitches.

46s. Metal Work. Fundamental processes of shaping, sawing, saw-piercing, riveting, and soldering.

ART HISTORY AND APPRECIATION

70. Art of the Italian Renaissance. (Not offered in 1924-25.)

TEACHER-TRAINING

80,81,82. Types of Art Instruction. Specific problems of art-teaching in relation to practice teaching in Minneapolis public schools. Includes attendance upon art supervisor's meetings.

83. Teacher's Course in Art. Survey of art-teaching practices. Study of governing principles. History and philosophy of art-teaching. Making of outlines for public school application.

86,87,88. Practice Teaching in Art.

EDUCATIONAL PSYCHOLOGY

55. Educational Psychology. A survey of fundamental facts of human behavior, involved in educational activities. Open to juniors and seniors.

57. Ontogenetic Psychology. With emphasis on the activities of the preschool child.

106-107-108. Advanced Educational Psychology. Advanced work in genetic psychology, origin and nature of human organism, development and control of instincts. Methods of measuring rate of learning; study of typical learning experiments. Study of group and individual differences, and their relations to educational practice.

111. Educational Diagnosis. 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.

111T-112T. Educational Diagnosis. Same as above for teachers.

116a. Elementary Statistical Methods. Designed to supply the immediate statistical technique necessary for the pursuit of studies in education.

116. Statistical Methods in Education. A study of statistical methods as applied to educational investigation. This course or 116a is ordinarily required of all candidates for advanced degrees.

117-118. 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.

130s. Vocational Psychology. Methods of judging vocational interests and aptitudes, psychological analysis of learning or the acquisition of skill, transfer of training, motives and incentives. Intended for students especially interested in vocational and industrial education and training.

134-135-136. Mental Tests and Mental Diagnosis. Study of mental variation in children, its nature, degrees, causes, and effects. A laboratory course in the study of individual differences by means of individual and group mental tests. A critical study of group tests. Technique of classification of students by means of mental tests.

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 191w or 106-107-108.

143-144-145. Individual Mental Examination. For teachers of subnormal 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.

149-150-151. Psycho-Educational Clinic. Conducted in co-operation with the Department of Sociology and the Medical School clinics in pediatrics and nervous and mental diseases. Students will receive systematic instruction in giving psychological examinations and in scientific interpretation of data.

153-154-155. Research Problems. Intended for properly prepared students who desire to pursue special investigation in the field of educational psychology.

184-185-186. 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.

191w. Systematic Educational Psychology. Advanced course covering the field of psychology as related to education. Open to seniors and graduate students. Not open to students who receive credit for Educational Psychology 106-107-108.

192. The Psychology of Behavior Problems in Children.

193. Speech Disorders of Public School Children.

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. (Not offered in 1924-25.)

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

1. Brief Course in History of Education. Current school problems and educational theories in the light of their history. Emphasis upon secondary education, and those aspects of education of most immediate concern to high school teachers.

3. Educational Sociology. A study of education as a means of solving social problems and directing the evolution of institutions.

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.

101. 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.

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.

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.

114. Philosophy of Education. A discussion of philosophically formulated ideals of education with an attempt to reach a positive philosophy of educational values.

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.

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.

187. Seminar in Educational Sociology. The sociological foundations of educational theory will be discussed, with the investigation of specific problems.

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

40. Child-Training. Application of modern science in rearing, training, and educating children. Emphasis is placed on the physical care of the baby; infant-feeding; infant diseases; early training; obligation of the home; obligation of the nation.

42. Special Methods of Teaching Home Economics. Curricula, equipment, methods of teaching for home economics. Required of all students preparing to teach.

43. 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.

46. Observation and Teaching: Related Art. A course similar to 47, but dealing with the teaching of related art.

47. Observation and Teaching: Foods and Home Management. Observation of teaching in regular classes; criticism and discussion of class practice, lesson plans, methods, results, and examinations; preparation

of lesson plans, and directed teaching of foods and cookery, and home management.

48. Observation and Teaching: Textiles and Clothing. A course similar to 47, but dealing with the teaching of textiles and clothing.

49. Observation and Teaching: General Home Economics. A combination of 47 and 48 giving the student experience in teaching both fields of work. Required of students in the general teaching course. Those who have completed 46, 48, or 49 may register and receive 2 credits.

141. Problems in Home Economics Education. Problems of administration and supervision of home economics, study of curricula for the day, part-time and evening schools, consideration of the home project, the hot lunch, and other related work.

PHYSICAL EDUCATION FOR MEN

1-2-3. Freshman Physical Education. Mass activities, corrective exercise, apparatus work, swimming, athletics, games, and efficiency test.

4. Freshman Hygiene. Fall quarter A-H; Winter quarter I-R; Spring quarter S-Z.

7-8-9. Advanced Leaders. One hour of instruction; two hours leading squads in Physical Education 1-2-3 or 16-17-18 under supervision.

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.

13-14-15. Corrective Work. By petition in place of Physical Education 1-2-3.

16-17-18. Drill Substitution. By petition in substitution for Military Science.

19-20-21. Gymnastics. Gymnastic marching, calisthenics, light and heavy apparatus work, and tumbling.

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.

24. Technique of Gymnastic Teaching. Lectures and quizzes on terminology, and technique of teaching.

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.

29. Orthopedic and Remedial Gymnastics.

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.

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.

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.

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 gymnasia and fields. Athletic management.

35. Athletic Organization and Administration. Discussion of place of athletics in physical education program; organization for athletic control; schedule-making; construction and maintenance of athletic fields; purchase and care of equipment; eligibility problems; management of contests; financial accounting; insignia and awards.

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.

38. Basket-Ball. Lecture 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.

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.

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.

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

1-2-3. Elementary Physical Training. Lighter forms of gymnastics, apparatus work, orthopedic exercise, folk dancing, indoor and outdoor games. Individual health consultations. Shower bath fee, $2.50 per quarter.

4. Preliminary Hygiene. One lecture a week. The most essential aspects of the care of personal health.

7-8-9. Sophomore Physical Training. Floor work, apparatus, and indoor and outdoor games.

10-11-12. Sophomore Orthopedic Gymnastics. For those not able to take regular class work.

13-14-15. Sophomore Interpretive Dancing. An art and a phase of physical education designed to develop a sense of beauty and body control through rhythmic movements prompted by the imagination.

16-17-18. Sophomore Games and Folk Dancing. Suitable in strength for C-D girls. Conducted outdoors when weather permits.

19-20-21. Sophomore Major Sports. Hockey in autumn, basket-ball in winter, baseball in spring. Suitable in strength for A-B girls.

22-23. Sophomore Elementary Swimming. 22, Elementary. 23, Low intermediate.

28-29. Sophomore Advanced Swimming. 28, High intermediate. 29, Advanced.

31. General Swimming. For both beginners and advanced swimmers and divers. Shower bath tickets may be bought of the matron. No registration necessary.

37-38-39. Freshman Major Sports.

43-44-45. Play and the Playground. Graded games, folk dances, and track for school and playground, two hours. A consideration of the nature and function of play and practical conduct of playground, one hour. Written abstract of prescribed reading.

32-33-34. Hockey, Basket-Ball, and Baseball. Hockey in autumn, basket-ball in winter, baseball in spring.

49-50. Gymnastics for Freshmen. An introduction to gymnastics, marching, and apparatus work.

51-52. Gymnastics for Sophomores. Gymnastics, marching, and apparatus work.

54-55. Gymnastics for Juniors. Gymnastics, marching, and apparatus work.

56-57. Swimming with Technique. Description of strokes, methods of teaching, practice in teaching and life-saving.

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.

60-61. Minor Sports with Technique. Description and methods of teaching, one hour; practical work, two hours.

63-64-65. Major Sports with Technique. Hockey, practice and technique, two hours. Basket-ball, discussion and demonstration, one hour. Baseball, one hour technique, two hours practice.

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.

69-70-71. Advanced Interpretive Dancing with Technique. Technique and methods of teaching one hour, practical work, two hours.

75. History of Physical Education. A historical survey of physical education beginning with that of Greece and including contemporary developments.

76. Physical Diagnosis and Prophylaxis. A consideration of certain diseases and injuries, their symptoms, significance, and prevention. Approaches from the standpoint of guidance for the teacher.

80-81. 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 gymnastic movements and their efforts.

82. Physical Examination. Study of all the important anthropometric measurements, and practical application of them in the laboratory.

83. Technique of Gymnastic Teaching. Lectures and quizzes on terminology, and technique of teaching. Practice in teaching within departmental groups.

84. Principles of Gymnastics. A study of the biological and educational aspects of physical training, with reference to its place in education. Principles of progression are studied. The practical work, 3 periods a week, will represent an application of the lecture work.

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.

87. Personal and School Hygiene. Deals with the correlation of physical education with daily habits of living, and a study of the health problems related to the life of the school child.

88-89-90. Orthopedic and Remedial Gymnastics. Lectures, demonstrations, individual work with cases. Discussion held relative to the various defects met with and treatment outlined.

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.

92,93,94,95,96. Practice Teaching. Includes practice teaching in gymnastics, major sports, organized games, interpretive dancing, swimming. University, University High School, public schools, and municipal playgrounds afford the practice material. All students required to teach on municipal playground during two weeks of summer vacation, preferably after junior year.

97. Organization and Administration. Problems of city and state supervision, construction and equipment, adaptation to environment, the teacher's instructional and non-instructional burden, professional ethics.

PREVENTIVE MEDICINE AND PUBLIC HEALTH

50. Public and Personal Health. Discusses the cause of disease 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.

53. Elements of Preventive Medicine. Susceptibility, resistance, and immunity to disease; methods of spread and the prevention of communicable and degenerative diseases; importance of heredity and environment; protection of food, water, and milk.

54. Public Health Methods and Practice. School health work; supervision of water and milk supplies; epidemiology; sanitation; vital statistics; health services; industrial clinics; health education; state and local health organizations at work. (Not offered in 1924-25.)

58. Maternal and Child Hygiene. The maternal welfare program; importance of breast feeding, origin and 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.

59. Social Hygiene. Relation to public health. Sex development to age of twelve; adolescence; sex incorrigibility. Methods of education in schools. Responsibility of public health nurse. Prevention and control of venereal disease; clinics; follow-up system.

60w. The Tuberculosis Problem. History of tuberculosis movement and campaign in the United States. Early diagnosis and sanatorium treatment. Tuberculosis in children. The psychology of tuberculosis; supervision of returned sanatoria patients. State program for the eradication of tuberculosis; legislation.

61. Mental Hygiene. History of movement, factors underlying mental disease; diagnosis of feeble-mindedness and border-line cases; institutional treatment; insanity; its relation to social work and to the institution; the importance of psychiatric nursing. Psychology 1-2. 12 hours; 1 credit.

80. Educational Hygiene. Intended for teachers interested in health education. Consideration of hygiene of physical and mental growth, health supervision of school children, teaching of health subjects, and sanitation of the school plant. Prerequisites: Biology 1-2; Psychology 1-2. 36 hours, 3 credits.

PUBLIC SCHOOL MUSIC

51-52-53. Instrumentation. (Junior, three quarters.) Theoretical study of orchestral and band instruments. Observation of local organizations for timber and color.

54-55-56. Advanced Instrumentation. (Senior, three quarters.) Examination, revision, and scoring of material suitable for school orchestra of more advanced orchestral organizations. Detailed study of bowing, fingering, score-reading, phrasing, and interpretation.

64-65-66. Orchestra-Conducting. (Fourth year, three quarters.) Devoted to the theory and practice of general principles of conducting. Technique of the baton and elements of interpretation.

81-82-83. Observing and Teaching. (Senior year, three quarters.) Observation and practice teaching in the high schools, city, and University, under supervision.

29. Grade School Methods. First term. Piano class-teaching. Practical methods of teaching piano classes, and theory underlying the methods. Practice teaching with the class and with classes of children. This is also a good course in practical schoolroom teaching.
30. Grade School Methods. Second term. Methods of teaching vocal music in the kindergarten and in the first five grades. Theory and practice of teaching combined in class work. Students required to observe and teach classes in the Minneapolis public schools three hours weekly.
31. Grade School Methods. Third term. Same as above for grades six, seven, eight, also a short course in voice-training for child and adult.
32. High School Methods. First term. Organization of junior high and high school music. Methods and material used in the chorus, glee clubs, of the modern high school. Pupils will be required to observe in the Minneapolis high schools.
33. High School Methods. Second term. Students will learn to apply methods of high school music teaching by practical work with the class itself. They will be required to teach in the Minneapolis high schools three hours weekly.
34. Voice. A practical course in class voice-teaching, in the use and care of the child voice, the changing voice, the adult voice. Testing and classification of voices in upper grades and high schools. Voices of all ages will be used for demonstration.

71-72-73. Class Instrument-Teaching. Fall quarter, beginner's classes in violin, viola, cello, and bass; winter quarter, beginner's classes in flute, oboe, clarinet, and bassoon; spring quarter, beginner's classes in all brass and percussion instruments.

74-75-76. Advanced Class Instrument Teaching. Practical orchestral routine augmenting University High School Orchestra, under baton of the director and members of class in Orchestra-Conducting, 64,65,66.

SCHOOL LIBRARY ADMINISTRATION

7. School Library Organization and Routine. Instruction in making and using simple library records, keeping books in order and repair, with practice in preparing books for the shelves, mending, etc. One hour class work, three hours practice work.
8. Choice and Use of Reference Materials for a School Library. Study of reference books, periodicals, documents, etc., useful in a school library. A few lessons are included on the principles of classification, and on the making of a simple author and title catalog. Two hours' class work, three hours' practice work in library.
9. Book Selection for the High School Library. Aims to give practical acquaintance with a variety of literature for adolescents. Two hours' class work, three hours' practice work in library.

THEORY AND PRACTICE OF TEACHING

GENERAL METHODS

15. Technique of High School Instruction. Types of classroom exercises; preparation of teaching plans; hygiene of instruction; methods of treating individual differences; classroom management; the professional ethics of teaching; supervised study; marking systems; etc.; observation of high school work.
16. Practice Teaching.* Teaching under supervision in the University High School and in the Minneapolis city schools, in the regular secondary school subjects. The course calls for one period daily at the school where the work is assigned.
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.

SPECIAL METHODS

18. Teachers' Course in Animal Biology. Nature study.
19. Teachers' Course in Botany. A course dealing with the principles and methods of teaching botany in high schools.
20. Teachers' Course in Chemistry. A consideration of the fundamental principles of chemistry with practical reference to the teaching of chemistry in the high school. Discussion of such topics as training of the teacher, laboratory equipment, etc.
21. Teachers' Course in English. Methods of teaching English in high schools. Required of all students preparing for a teacher's certificate in English. (Not offered in 1924-25.)
22. Teachers' Course in French. Methods of teaching French in high schools, courses of study, textbooks, etc. Lectures, observations, and reports. Open to juniors and seniors qualifying for a certificate to teach French as a major or minor subject. Credit in education only.
23. Teachers' Course in Geography. Open to juniors and seniors qualifying for a certificate to teach geography in high schools.
24. Teachers' Course in German. Discussion of aims and methods of teaching German in secondary schools; reading and reports; arrangement of courses of study and discussion of texts based upon aims; visiting classes. The use of language tests.
25. Teachers' Course in History. Open only to students who have 18 credits in history, including one intensive course. Deals chiefly with the practical problems of teaching history and government in the

* Arrangements for practice teaching should be made with directors as follows:
Agricultural Education—A. V. Storm
Home Economics—Clara Brown
All other subjects—C. W. Boardman

Applications for practice teaching should be made before the close of the quarter immediately preceding the quarter in which the practice teaching is to be done.

secondary schools. Students planning to teach government must have 9 credits in political science.

26. Teachers' Course in Latin. Class drills and discussion of various problems connected with secondary school work in Latin.
27. Teachers' Course in Mathematics. For students preparing to become teachers of secondary school mathematics. Lectures, readings, discussions, methods of presentation, assignments, lesson plan, examinations, plans of beginning courses in elementary algebra and plane geometry.
28. Junior High School Mathematics. Mathematics in the junior high school. Lectures, readings, discussions, methods of presentation, assignments, lesson plans, etc. (Not offered in 1924-25.)
35. Teachers' Course in Norwegian. For students who expect to teach Norwegian in the high schools.
36. Teachers' Course in Physics. Intended to embrace fundamental conceptions of methods of teaching high school physics. Special emphasis put upon laboratory side of subject. One year of college physics will be considered as a prerequisite for this course.
37. Social Science for Senior High Schools. Selection and organization of content, preparation and presentation of data, and methods of teaching. Required of all students whose major is social science.
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. Open to students preparing to teach natural science. Required for practice teaching in science.
39. Social Science for Junor High Schools.
40. Teachers' Course in Spanish. Methods of teaching Spanish in the high schools. Courses of study, textbooks, etc. Lectures, observation, and reports. Open to juniors and seniors qualifying for a certificate to teach Spanish as a major or minor subject. Credit in education only.
41. Teachers' Course in Swedish. For students who expect to teach Swedish in the high schools.
42. Fundamental Educational Theories Relating to Instruction in the Elementary School. A study of current educational concepts as related to problems of the elementary school. (Not open to students who have had Ed. 160.)
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.
44. Children's Literature. A study of the nature and purposes of literature in the elementary school; bases of selecting materials for intensive and extensive reading; critical examination and evaluation of new literary materials for children's use.
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.

46. Practice Teaching with Special Methods. 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. (Not open for credit to graduates of two-year normal school courses.)

47. Field Problems in High School 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. (Not offered in 1924-25.)

48w. Teachers' and Supervisors' Course in Arithmetic for Lower Grades. The course emphasizes arithmetical history as related to present practices, courses of study, methods of teaching, motivation, games, projects, problems, integers, and common fractions.

49s. Teachers' and Supervisors' Course in Arithmetic for Intermediate and Upper Grades. The course emphasizes arithmetical history as related to present practices, courses of study, methods of teaching, motivation, projects, problems, and all topics included in intermediate and upper grades and junior high school.

50w-s. Normal School Teaching and Administration. Emphasis is placed on historical development, the present status, and problems of future development. Study is made of curriculums, departmental organizations, practice teaching, and costs. Emphasis is also placed on supervision of instruction.

51. The Teaching of English in the Junior High School. Practical methods for classroom presentation of literature and composition in the junior high school. Projects in composition and literature. Group method for large classes. Place of grammar, punctuation, spelling. Survey of the literature on the subject.

52-53-54. Teachers' Course in English and Practice Teaching. A combination of the Teachers' Course in English with practice teaching. Arrangements must be made with the instructor at the beginning of the fall quarter.

COURSES OPEN TO GRADUATE STUDENTS

118. Problems in Junior High School English. Study of the problems in teaching, reading, literature, and composition in upper grammar grades and junior high schools.

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 high school subject-matter and to high school classroom procedure.

195. Problems of High School English Teaching. An intensive study of various means of adapting subject content to high school pupils; observations; classroom experiments; conferences with classroom teachers; pupil advisory work; submisson of proposals of special methods.

222-223-224. Seminar in the Technique of High School Instruction.

225-226-227. Seminar in Elementary School Problems.

METHODS COURSES IN AMERICANIZATION

128. Technique of Teaching Adults. Methods of teaching adults—the foreign-speaking, the illiterate, the fatigued—in keeping with the dignity of mature years, and the mental processes of mature minds of foreigners.

129. Methods of Americanization. Practical methods of Americanization in use in the United States, together with facts and conditions of their success and failure.

131-132-133. Supervised Americanization Work. Practical field work among foreign peoples in our vicinity.

TRADE AND INDUSTRIAL EDUCATION

Ind.10. Methods, Elementary Wood Work. This course is primarily a methods course. A very important part of the course is demonstration work by the students. The course also involves uses and care of tools, tool processes, and uses and care of wood-working machinery.

Ind.11. Methods, Primary Grade Wood Work. This course is designed primarily for primary grade teachers and teachers of subnormal children. The course consists of lectures and shop work. The shop work is divided into three parts: *flat piece* work, *assembled* and movable parts, and toy furniture.

Ind.12. Methods, Elementary Electric Wiring. This course consists of bell wiring, elementary inside electrical wiring, fundamental electrical laws, blue print reading and estimating. Methods of presenting this work to a class is a very important part of the work.

Ind.14. Methods, Mechanical Drawing. A very important part of the course is the demonstration work by the students. The course consists of conventions, perspective, isometric, orthographic, working drawings and tracing and blue printing.

Ind.20. Industrial History. Lectures, quizzes, and required readings. Evolution of arts, industry, tools, processes, and production to 1800; evolution in economic and social conditions; culmination of the industrial revolution in America—resultant agricultural, industrial, economic, and social problems; twentieth century outlook and opportunities; implications for practical education.

Ind.25. Literature of Industrial Education. Acquaintance and methods of use. Survey of useful books, reports, periodicals, and special bulletins. Students made familiar with reference facilities. Individual term assignments to teach sources, note-taking, organization, and the preparation of papers.

Ind.30. Graphic Presentation. Study of typical methods of graphic representation of data. The use of simple educational and social materials for drill in the interpretation and statement of facts and conditions.

Ind.40. Occupational Analysis. Necessity for, and types of, analyses, survey of those available. Individual work upon a chosen occupation—breakups, classification of materials, and their organization for teaching purposes. (Not offered in 1924-25.)

Ind.41. Job Analysis. Relation to occupational analysis. Jobs reduced to operations. These examined for skills, physical demands, information, time study, fatigue and safety factors, and teaching order. Individual work, under guidance, within any field familiar to a student. Class criticism.

Ind.42. Selection of Related Materials. Makes definite use of occupation analyses prepared in Courses Ind.40 and Ind.41. Content of related courses determined and arranged. Reference materials collected and application charts prepared. (Not offered in 1924-25.)

Ind.50-51-52. Practice Teaching. Three quarters required. During each quarter the group to meet for not less than four two-hour periods for lectures and the making of lesson plans. Instructor to visit persons enrolled (at their places of employment) to criticize and help and to determine grade of ability. Students not on the part time basis to be assigned to practice work in the University High School, Dunwoody Industrial Institute, or the public schools of the Twin Cities.

Ind.60. Social Agencies in Education. An evaluation of various social agencies that make educational contributions; their status, aims, achievements, and deficiencies; their relationships and possible fields of co-operation. The special significance of social agencies to vocational education under public support and control.

Ind.61. Social Significance of Industrial Education. A study of the basic facts of economics and sociology which support efforts in the organization and administration of industrial education. Review of the movements which contributed to its introduction and development. Its social value and results.

Ind.65. Methods, 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, and course planning.

Ind.66. Methods, Related Subjects. Theory, practices, and problems of related instruction; application charts in mathematics, drawing, science, and safety; group-study and unit-course preparation; usable methods and the means of supervision. Both incidental and scheduled teaching considered.

Ind.70. Methods, Shop Subjects. Various methods of conducting shop classes, with and without reference to production work; lesson plans, grading, reports, and records; the assigning of jobs and shop management; standards of workmanship.

Ind.80. General Industrial Training. Organization and supervision of the industrial offering for grades and high school in typical Minnesota towns. Aims of the work, offerings, and schedules, teaching fitness, equipment, methods, and management. Consideration of the unifying opportunities within a department and a school.

Ind.150-151-152. Seminar in Vocational Education. Survey of studies in the field, individual and group investigation, reports, and criticisms. Required of all students writing theses in this special field.

Ind.171. Administration of Industrial Education—Day Schools. National, state, and local organization and support of day industrial schools; adaptable types, buildings, and equipment, promotion and advertising, co-operative agreements and relationships, supervision of instruction, student placement. General versus unit course organization. Relation to part time and evening instruction.

Ind.172. Administration of Industrial Education—Evening Schools. Development of the after training of adults; agencies and scope of the movement; state supervision, 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. Costs.

Ind.173. Administration of Industrial Education—Part Time Classes. A study of the new movement for part time education. Social and economic background, methods of organizing classes, a study of the special student groups, courses of study. Typical schools, comparative state legislation and plans. Minnesota's problems.

NOTE.—Shop courses in wide variety are offered in the College of Engineering. An agreement between the Dunwoody Industrial Institute and the University makes it possible for credit work to be done at Dunwoody, *if registration is made at the University.* Candidates for degrees should keep in mind the fact that 45 credits is the limit set for shop and drawing work.

The Bulletin *of the* University *of* Minnesota

The College of Education
Part II
Announcement of Program for the Year 1924-1925

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

1924

JULY

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1925

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UNIVERSITY CALENDAR

1924-25

1924			
September	18	Thursday	Payment of fees closes, except for new students
September	18-20		Entrance examinations
September	22-26		Examinations for removal of conditions Physical examinations for all new students Registration period,[2] colleges of Science, Literature, and the Arts, Agriculture, Forestry, and Home Economics, and Education
September	22	Monday	First semester evening extension classes begin[3]
September	25-26		Registration days[2] for all colleges not included above
September	26	Friday	Payment of fees for new students closes
September	29	Monday	Fall quarter begins, 8:30[1] a.m.
October	23	Thursday	Senate meeting, 4:30 p.m.
November	1	Saturday	Home Coming Day; classes dismissed the third and fourth hours
November	4	Tuesday	Election Day; a holiday
November	11	Tuesday	Armistice Day; a holiday
November	27	Thursday	Thanksgiving Day; a holiday
December	4	Thursday	State Day Convocation
December	17-20		Final examination period
December	18	Thursday	Commencement Convocation Senate meeting, 4:30 p.m.
December	20	Saturday	Fall quarter ends, Christmas vacation begins, 5:20 p.m.
1925			
January	5	Monday	Christmas vacation ends, winter quarter begins, 8:30[1] a.m.
January	30	Friday	First semester evening extension classes close
February	2	Monday	Second semester evening extension classes begin[3]
February	12	Thursday	Lincoln's Birthday; a holiday
February	19	Thursday	Charter Day Convocation Senate meeting, 4:30 p.m.

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

[2] Registration subsequent to the date specified will necessitate the approval of the college concerned.

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

March	16-19		Final examination period
March	21	Saturday	Winter quarter ends, spring vacation begins, 5:20 p.m.
March	30	Monday	Spring vacation ends, spring quarter begins, 8:30[1] a.m.
April	10	Friday	Good Friday; a holiday
May	14	Thursday	Cap and Gown Day Convocation
May	21	Thursday	Senate meeting, 4:30 p.m.
May	29	Friday	Second semester evening extension classes close
May	30	Saturday	Memorial Day; a holiday
June	10-13		Final examination period
June	13	Saturday	Spring quarter closes, 5:20 p.m.
June	14	Sunday	Baccalaureate service
June	15	Monday	Fifty-third annual commencement
June	19-20		Summer Session first term begins, registration and payment of fees
June	22	Monday	Classes begin, 8:00 a.m.
July	4	Saturday	Independence Day; a holiday
August	1	Saturday	First term Summer Session closes
			Registration and payment of fees for second term closes
August	3	Monday	Second term classes begin
September	5	Saturday	Second term Summer Session closes

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 and peculiar circumstances shall justify the appropriate committee of the college concerned permitting registration at a later date.

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

COLLEGE OF EDUCATION

PROGRAM

GENERAL COURSE

No.	Title	Hour	Day	Room	Instructor
208f	Methods in Ed. Research ..... (2 cred.; grad.)	I, II	S	113Ed	Mr. Haggerty

ADMINISTRATION AND SUPERVISION

Major Advisers: L. J. Brueckner, Fred Engelhardt, L. V. Koos

No.	Title	Hour	Day	Room	Instructor
65f,w	The High School ..... (3 cred.; jr., sr.; prereq., Ed. 55)	II	TThS	205Ed	Mr. Koos, Mr. Powers
65s	The High School ..... (3 cred.; jr., sr.; prereq., Ed. 55)	III	TThS	205Ed	Mr. Koos, Mr. Powers
113f	High School Curriculum ..... (4 cred.; sr., grad.; prereq., 10 hrs. in education including Ed. 55)	IX VIII	M TTh	112Ed	Mr. Koos
115f,w.s	Practice Supervision ..... (3 cred.; sr., grad.)	Ar	Ar	Ar	Mr. Brueckner, Mr. Peik
119s	Elementary School Curriculum .... (3 cred.; sr., grad.; prereq., 1, 3)	I	MWF	ArEd	Mr. Peik
119Tf-120Tw	Elementary School Curriculum .... (4 cred.; sr., grad.; prereq., 1, 3)	I, II	S	113Ed	Mr. Peik
121w	Educational Advising of Women and Girls ..... (3 cred.; jr., sr., grad.; prereq., 15 qtrs. cred. in ed. and psy.)	Ar	Ar	Ar	Miss Blitz
123s	Supervision of High School Instruction ..... (3 cred.; sr., grad.; prereq., 10 hrs. in education)	VIII	MTTh	ArEd	Mr. Koos
124f	Educational Administration ..... (3 cred.; sr., grad.; prereq., 10 hrs. in education)	IX	MWF	205Ed	Mr. Engelhardt
124aw	Educational Administration ..... (2 cred.; sr., grad.; prereq., 10 hrs. in education)	III, IV	S	ArEd	Mr. Peik
124as	Educational Administration ..... (2 cred.; sr., grad.; prereq., 10 hrs. in education)	III, IV	S	ArEd	Mr. Peik
125w-126s	City School Administration ..... (6 cred.; sr., grad.; prereq., Ed. 124, 111)	IX	MWF	205Ed	Mr. Engelhardt
127s	The City School Superintendent .. (2 cred.; sr., grad.; prereq., 10 hrs. in education)	I, II	S	ArEd	Mr. Peik
160f	Principles of Supervision ..... (2 cred.; sr., grad., prereq., 15 or equivalent)	III, IV	S	ArEd	Mr. Brueckner

No.	Title	Hour	Day	Room	Instructor
161bf	Elementary School Supervision .... (2 cred.; sr., grad.; prereq., 15 or equivalent)	VIII, IX	W	ArEd	Mr. Peik
161aw	Supervision: Uses of Ed. Tests in Improving Instruction ..... (2 cred.; sr., grad.; prereq., 15 or equivalent)	III, IV	S	ArEd	Mr. Brueckner
162as	Supervision of English in the Elementary School ..... (2 cred.; sr., grad.; prereq., 15 or equivalent)	III, IV	S	ArEd	Mr. Brueckner
164w	High School Administration ..... (3 cred.; sr., grad.; prereq., 10 hrs. in education including Ed. 55)	VIII	MTTh	ArEd	Mr. Koos
167w-168s	Junior High School ..... (4 cred.; sr., grad.; prereq., 10 hrs. in education including Ed. 55)	IX, X	W	Ar	Mr. Powers
175s	City School Finance ..... (3 cred.; sr., grad.; prereq., 124, 125)	IX	MWF	205Ed	Mr. Engelhardt
178f-179w	School Surveys ..... (6 cred.; sr., grad.)	VIII	MWF	ArEd	Mr. Engelhardt
205f-206w-207s	Seminar in Ed. Admin. ..... (6 cred.; grad.; prereq., 124, 125-126, 160-161-162)	Ar	Ar	Ar	Mr. Engelhardt
218f-219w-220s	Seminar in Secondary School Problems ..... (6 cred.; grad.)	IX, X	Th	111Ed	Mr. Koos

AGRICULTURAL EDUCATION

Major Adviser: A. V. Storm

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Room	Instructor
11f	Principles of Vocational Education (3 cred.; jr., sr.;§ no prereq.)	I	MWF	24Ad	Mr. Selke
11w	Principles of Vocational Education (Same as 11f)	II	TThS	317Ad	Mr. Selke
11s	Principles of Vocational Education (Same as 11f)	I	MWF	317Ad	Mr. Selke
21f	Vocational Education ..... (3 cred.; jr., sr.; no prereq.)	III	TThS	307Ad	Mr. Mayne
41f	Apprentice Teaching ..... (2 cred.; jr., sr.;§¶ prereq., 131)	Ar	Ar	Ar	Mr. McIntosh, Mr. Nylin
41w	Apprentice Teaching ..... (Same as 41f)	Ar	Ar	Ar	Mr. McIntosh, Mr. Lathrop, Mr. Nylin

§ Offered only to those preparing to teach.

¶ Registration limited. Students are admitted to this course only when approved by Mr. McIntosh.

No.	Title	Hour	Day	Room	Instructor
41s	Apprentice Teaching ..... (Same as 41f)	Ar	Ar	Ar	Mr. McIntosh, Mr. Lathrop, Mr. Nylin
42f	Teaching ..... (3 cred.; jr., sr.§¶; prereq., 41, Agron. 121, 122, 123)	Ar	Ar	Ar	Mr. McIntosh, Mr. Nylin
42w	Teaching ..... (Same as 42f)	Ar	Ar	Ar	Mr. McIntosh, Mr. Lathrop, Mr. Nylin
42s	Teaching ..... (Same as 42f)	Ar	Ar	Ar	Mr. McIntosh, Mr. Lathrop, Mr. Nylin
75f,s	Visual Presentation ..... (3 cred.; jr., sr.; prereq., 11)				
	Lect.	VI	M	317Ad	
	Lab.	VI, VII	WF	317Ad	
81s	Extension Work ..... (3 cred.; jr., sr.; prereq., 6 cred. in farm mgt., 6 cred. in farm corps, 15 cred. in an. ind., 6 cred. in agr. educ.)	VI	MWF	317Ad	Mr. Storm, Mr. Peck
82f,w,s	Agricultural Extension Field Course (3 to 10 cred.; jr., sr.; prereq., 81††)	Ar	Ar	317Ad	Mr. Storm, Mr. Peck
131w,s	Methods in Teaching High School Agriculture ..... (5 cred.; jr.,** sr.;§ prereq., 11)	III	MTWThF	317Ad	
151w,s	Organization and Management .... (5 cred.; sr.; prereq., 11, 21)	IV	MTWFS	317Ad	Mr. Storm, Mr. Lathrop
153s	Consolidated Rural Schools..... (3 cred.)	Ar	Ar	Ar	Mr. Selke
171w,s	Problems in Procedure ..... (3 cred.; sr.; prereq., 131, 41, 42 or equiv.)	Ar	Ar	Ar	
176s	Problems Visual Education ..... (3 cred.; jr., sr.; prereq., 75)	Ar	Ar	Ar	
191f-192w-193s	Seminar in Agricultural Education (6 cred.; sr.; prereq., Ag. Ed. 11 cred.)	Ar	Ar		Mr. Storm, Mr. Lathrop

ART EDUCATION

Major Adviser: Ruth Raymond

FUNDAMENTAL PRINCIPLES OF DESIGN

No.	Title	Hour	Day	Room	Instructor
1f-2w-3s	Fund. Principles of Design ..... (9 cred.; no prereq.)				
	Sec. 1	(II) III (IV)	TThS	404F	Miss Raymond, Mrs. Hanley

§ Offered only to those preparing to teach.

¶ Registration limited. Students are admitted to this course only when approved by Mr. McIntosh.

†† Broad curriculum approved by the Agricultural Education Division and a position approved by the Agricultural Extension Division are also prerequisites to this course.

** Open to juniors on the approval of the chief of the division.

No.	Title	Hour	Day	Room	Instructor
1f	Fund. Principles of Design ..... (3 cred.) Sec. 2	II (III) (IV)	TThS	406F	Mrs. Hanley
20f-21w-22s	Principles of Harmony in Form and Color ..... (9 cred.; soph., jr., sr.; prereq., 2, 3)	(I) II (III)	TThS	401F	Mr. Hilpert, Miss Sutorius
50w-51s	Commercial and Industrial Design (6 cred.; jr., sr.; prereq., 1, 2, 3, 4, 5, 7, 8, 9, or arranged)	VI (VII) (VIII)	MWF	402F	Mr. Hilpert
53f	*Design for the Consumer* ..... (3 cred.; jr., sr.; prereq., 1, 2, 3, 7, 8, 9, and 20, 21, 22 or 50, 51)	*Not offered in 1924-25*			
54w	Design for the Consumer ..... (See 53f)	VI	MWF and ar		Miss Raymond
55f-56w-57s	*Fundamental Art Principles* ..... (6 cred.; all; no prereq.)	*Not offered in 1924-25*			
	DRAWING				
4f,5w,6s	Still Life Drawing ..... (3 cred.; all; no prereq.) (Limited to 20)	(I) (II) (III) (IV)	W	404F	Mrs. Hanley, Miss Sutorius
7f,8w,9s	Sketch ..... (3 cred.; no prereq.) (Limited to 25)	I, II, III, IV VI, VII	F MW	401F 401F	Mrs. Hanley Miss Sutorius, Miss Raymond
10f,11w,12s	Composition ..... (3 cred.; all; no prereq.) (Limited to 25) Sec. 1	II, III (IV)	M	406F	Miss Raymond, Mrs. Hanley
23f,24w,25s	Water Color ..... (3 cred.; soph., jr., sr.; prereq., 4f, 5w, 6s) (Limited to 20)	(I) II, III (IV)	M	406F	Mr. Hilpert
26f,27w,28s	Charcoal, Pencil, Pen Techniques .. (3 cred.; soph., jr., sr.; prereq., 4f, 5w, 6s) (Limited to 20)	II, III (IV)	W	406F	Mrs. Hanley
29f-30w-31s	Sketch from Pose ..... (3 cred.; soph., jr., sr.; prereq., 7, 8, 9)	(I) (II) (III) (IV) (VI) (VII)	F MW	402F 401F	Mr. Hilpert, Mrs. Hanley
60f,61w,62s	Advanced Water Color	Ar	Ar	Ar	Mr. Hilpert
63f,64w,65s	Advanced Techniques	Ar	Ar	Ar	Mrs. Hanley
66f,67w,68s	Advanced Sketch	Ar	Ar	Ar	Mr. Hilpert
	HANDICRAFTS				
32w	Cardboard and Paper Construction (1 cred.; all; no prereq.) (Limited to 20)	VII (VIII)	MW	404F	Miss Ross
33w	Bookbinding ..... (2 cred.; all; no prereq.) (Limited to 20)	VI, VII (VIII) (VI) VII, VIII	TTh TTh	406F	Miss Ross, Miss Sutorius
35f	*Clay-Modeling* ..... (1 cred.; all; no prereq.)	*Not offered in 1924-25*			
37f	Elementary Weaving, Basketry ... (2 cred.; all; no prereq.)	(V) VI (VII)	TTh	406F	Miss Ross, Miss Sutorius

No.	Title	Hour	Day	Room	Instructor
38f	Allied Crafts ..... (1 cred.; all; no prereq.) (Limited to 15)	(VI) VII (VIII)	W	406F	Miss Ross, Miss Sutorius
39su	Advanced Basketry	Ar	Ar		Miss Ross
40su	Advanced Weaving	Ar	Ar		Miss Ross
41f	Elementary Pottery ..... (2 cred.; all; no prereq.) (Limited to 15)	(VI) VII (VIII)	MF	411F	Miss Ross, Miss Sutorius
42w	Advanced Pottery ..... (2 cred.; all; prereq., 38) (Limited to 10)	(V) VI (VII)	MWF	411F& kiln room	Miss Ross, Miss Sutorius
43s	*Advanced Pottery Continued* ..... (2 cred.; soph., jr., sr.; prereq., 38, 46)	*Not offered in 1924-25*			
44s	Application of Design to Fabrics .. (2 cred.; all; prereq., 29, 30)	VI, VII (VIII)	TTh	404F	Miss Ross
		(VII) VIII	TTh	406F	Miss Sutorius
45w	Application of Design in Needlecraft ..... (2 cred.; soph., jr., sr.; prereq., 29, 30, 31)	(VI) (VII) VIII	MWF	406F	Miss Ross
46s	Metal Work ..... (2 cred.; soph., jr., sr.; prereq., 29, 30, 31)	(VII) VIII	MWF	411F	Miss Ross, Miss Sutorius
	ART HISTORY AND APPRECIATION				
70	*Art of the Italian Renaissance* ... (2 cred.; soph., jr., sr.; prereq., 9 cred. in design)	*Not offered in 1924-25*			
	TEACHER-TRAINING				
80f,81w,82s	Types of Art Instruction ..... (3 cred.; jr., sr.; prereq., 12 cred. in design, 12 cred. in drawing, 6 cred. in handicraft)	(VII) (VIII)	TTh	403F	Miss Raymond
		IV	S	402F	Mrs. Hanley
83s	Teacher's Course in Art ..... (3 cred.; jr., sr.; prereq., 12 cred. in design, 12 cred. in drawing, 6 cred. in handicraft)	VI (VII) (VIII)	MWF	402F	Miss Raymond
86f,87w,88s	Practice Teaching in Art	VI, VII, VIII	TTh	Public schools	Miss Raymond, Mrs. Hanley

EDUCATIONAL PSYCHOLOGY

Major Advisers: M. E. Haggerty, W. S. Miller

No.	Title	Hour	Day	Room	Instructor
55f	Educational Psychology ..... (3 cred.; jr., sr.; prereq., 6 cred. in psychology)	I	MWF	Psy	Mr. Miller
55w,s	Educational Psychology ..... (See 55f)	I	MWF	Psy	Mr. Miller

NOTE.—Hours in parentheses are laboratory hours and may be adjusted in individual cases.

NOTE.—Handicraft courses are especially recommended to those desiring training for occupational therapy or other forms of social service.

NOTE.—*Courses for public school teachers.*—Courses equivalent to parts of those listed above in design, drawing, and the handicrafts will be offered on Saturday mornings; if there is sufficient demand. Those interested should consult with the Art Education faculty.

No.	Title	Hour	Day	Room	Instructor
55Tw-56Ts	Educational Psychology (for teachers) ..... (4 cred.; jr., sr.; prereq., 6 cred. in psychology)	III, IV	S	Psy	Mr. Olson
57f	Ontogenetic Psychology ..... (3 cred.; jr., sr.; prereq., 6 cred. in psychology)	IX X	TTh T	Psy	Mr. Rockwell
106f-107w-108s	Advanced Educational Psychology (9 cred.; jr., sr., grad.; prereq., 55 or equiv.)	III	MWF	Psy	Mr. Van Wagenen
111s	Educational Diagnosis ..... (3 cred.; jr., sr., grad.; prereq., 55 or equiv.)	II	MWF	Psy	Mr. Van Wagenen
111Tf-112Tw	Ed. Diagnosis (for teachers) ..... (4 cred.; jr., sr., grad.; prereq., 55 or equiv.)	I, II	S	Psy	Mr. Van Wagenen
116af	Elementary Statistical Methods ... (3 cred.; jr., sr., grad.)	IX III, IV	F S		Mr. Olson
116f	Statistical Methods in Education .. (2 cred.; sr., grad.)	IX, X	T	Psy	Mr. Van Wagenen
117w-118s	Advanced Statistical Methods in Education ..... (4 cred.; sr., grad.; prereq., 126)	IX, X	T	Psy	Mr. Van Wagenen
130s	Vocational Psychology ..... (2 cred.; jr., sr.; prereq., Psy. 1, 2 or 6 and 4 additional credits in economics, education, or psychology)	IX, X	F	115Psy	Mr. Paterson
134f-135w-136s	Mental Tests and Mental Diagnosis (6 cred.; sr., grad.; prereq., 55 or equiv.)	VII, VIII	MW	Psy	Mr. Miller
138w-139s	Experimental Educational Psychology ..... (4 cred.; sr., grad.; prereq., 55 or equiv.)	IX, X	WF	Psy	Mr. Rockwell
143f-144w-145s	Individual Mental Examination .. (6 cred.; sr., grad.; prereq., 55 or equiv.)	I, II	S	Psy	Mr. Rockwell
149f-150w-151s	Psycho-Educational Clinic ..... (2 to 6 cred.; jr., sr., grad.; prereq., Ed. 134-135-136 or equiv.)	2:00-4:00	MWF	MH	Mr. Rockwell
153f-154w-155s	Research Problems ..... (Ar.; sr., grad.; prereq., consult instructor)	Ar	Ar	Ar	Mr. Haggerty, Mr. Miller, Mr. Van Wagenen
184f-185w-186s	Mental Deficiency ..... (6 cred.; jr., sr., grad.; prereq., 55 or equiv.)	III, IV	S	Psy	Mr. Rockwell
191w	Systematic Ed. Psychology ..... (4 cred.; sr., grad.; prereq., 12 credits in psy. and ed. psy.) (Not open to students receiving credit for Ed. Psy. 106-107-108)	III	MTThF	Ar	Mr. Rockwell
192f	The Psychology of Behavior Problems in Children ..... (2 cred.; jr., sr., grad.; prereq., 15 cred. in psy. and ed.)	III, IV	S	Psy	Mr. Blanton

No.	Title	Hour	Day	Room	Instructor
193s	Speech Disorders of Public School Children) ..... (2 cred.; jr., sr., grad.; prereq., 15 cred. in psy. and ed.)	III, IV	S	Psy	Mr. Blanton
197f-198w-199s	*Seminar: Problems of Subnormality* (6 cred.; jr., sr., grad.)	*Not offered in 1924-25*			
201f-202w-203s	Seminar in Ed. Psychology ..... (No cred.; grad.)	IX, X	M	Ed	Mr. Haggerty, Mr. Miller, Mr. Rockwell, Mr. Van Wagenen

HISTORY AND PHILOSOPHY OF EDUCATION

Major Adviser: Miss Alexander

No.	Title	Hour	Day	Room	Instructor
1f	Brief Course in History of Education ..... (5 cred.; jr., sr.; prereq., 6 cred. in psychology)				
	Sec. 1	II	MTWThF	210OL	Miss Alexander
	2	IV	MTWFS	210OL	
1w,s	Brief Course in History of Education ..... (See 1f)	II	MTWThF	210OL	Miss Alexander
3f	Educational Sociology ..... (3 cred.; jr., sr.; prereq., 6 cred. in psychology)				
	Sec. 1	II	MWF	208OL	Mr. Finney
	2	III	MWF	208OL	Mr. Finney
3w,s	Educational Sociology ..... (See 3f)	III	MWF	210OL	Mr. Finney
5s	Public Education in the U. S. .... (Offered at U Farm) (3 cred.; jr., sr.; prereq., 6 cred. in psychology)	VIII	MWF	Ar	Miss Alexander
101f	Found. of Mod. Ed. ..... (3 cred.; jr., sr., grad.; prereq., 6 cred. in psychology and 6 cred. in history)	VIII	MWF	208OL	Miss Alexander
102w	Hist. of Mod. Secondary and Higher Education ..... (3 cred.; jr., sr., grad.; prereq., 6 cred. in psychology and 6 cred. in history)	VIII	MWF	208OL	Miss Alexander
103s	Hist. of Mod. Elem. Education .. (3 cred.; jr., sr., grad.; prereq., 6 cred. in psychology, and 6 cred. in history)	VI	MWF	208OL	Miss Alexander
187f,w,s	Seminar in Educational Sociology .. (2 cred.; grad.; prereq., Ed. 1 or 101-102-103 and 3)	I, II	M	206OL	Mr. Finney

HOME ECONOMICS EDUCATION

Mayor Adviser: Wylle B. McNeal

No.	Title	Hour	Day	Room	Instructor
40f	Child-Training ..... (3 cred.; jr., sr.; prereq., H.E. 37, Psy. 1-2)				
	Sec. 1	IV	MWF	203HE	Miss Binzel
	2	V			
42f,w,s	Special Methods of Teaching Home Economics ..... (5 cred.; jr., sr.; prereq., H.E., 13, 22, Psy. 1-2, Agr. Ed. 11 or 55)	VIII	MTWThF	313HE	Miss Clara Brown, Miss Rivers
43w	Organ. & Methods for Related Art Teaching ..... (3 cred.; jr., sr.; prereq., H.E. 42 or parallel 52, 131 or parallel)	III	TThS	309HE	Miss H. Goldstein
46f,w	Observation and Teaching: Related Art ..... (8 cred.; sr.; prereq., 42, 43 or parallel H.E. 13 and 53)				
	Lect.	IX	TTh	213HE	Miss Harriet Goldstein
	Teaching	Ar	Ar	Ar	Miss Stoddard
47f,w	Observation and Teaching: Foods and Home Management ..... (8 cred.; sr.; prereq., H.E. 34, 35, 42)				
	Lect.	IX	TTh	313HE	Miss Rivers
	Teaching	Ar	Ar	Ar	Miss Nickee, Miss Solze
48f,w	Observation and Teaching: Textiles and Clothing ..... (8 cred.; sr.; prereq., H.E. 42 and 53)				
	Lect.	IX	TTh	213HE	Miss Clara Brown
	Teaching	Ar	Ar	Ar	Miss Keever, Miss Sell
49f,w	Observation and Teaching: General Home Economics ..... (8 cred.; sr.; prereq., H.E. 42)				
	Lect.	IX	TTh	213HE	Miss Clara Brown
	Teaching	Ar	Ar	Ar	Miss Rivers, Miss Amidon
141s	Problems in Home Economics Education ..... (3 cred.; sr., grad.; prereq., 42)	VI	MWF	Ar	Miss McNeal, Miss Clara Brown

PHYSICAL EDUCATION FOR MEN

Major Advisers: Mr. L. J. Keller, Fred Leuhring

No.	Title	Hour	Day	Room	Instructor
1f-2w-3s	Freshman Physical Education ..... (No cred.; fr.; no prereq.)				
	Sec. 1	II	TTh	A	Mr. Taylor and others
	2	III	TTh	A	
	3	VI	TTh	A	
	4	VII	TTh	A	
	5	VIII	TTh	A	

No.	Title	Hour	Day	Room	Instructor
4f	Freshman Hygiene				
	(No cred.; fr.; A-H inclusive; no prereq.)				
	Sec. 1	II	T	301F	Dr. Cooke
	2	III	W	301F	and others
	3	IV	S	301F	
	4.	IV	T	301F	
4w	Freshman Hygiene				
	(See 4f; fr.; I-R inclusive)				
	Sec. 1	II	T	301F	Dr. Cooke
	2	III	W	301F	and others
	3	IV	S	301F	
	4	IV	T	301F	
4s	Freshman Hygiene				
	(See 4f; fr.; S-Z inclusive)				
	Sec. 1	II	T	301F	Dr. Cooke
	2	IV	T	301F	and others
	3	II	S	301F	
7f-8w-9s	Advanced Leaders				
	(3 cred.; soph.; jr.; sr.; prereq., 1-2-3)				
	Sec. 1	IV	T	A	Mr. Taylor
		II	TTh		
	2	IV	T	A	
		III	TTh		
	3	IV	T	A	
		VI	TTh		
	4	IV	T	A	
		VII	TTh		
	5	IV	T	A	
		VIII	TTh		
	6	II	MWF	A	
	7	III	MWF	A	
	8	IV	MWF	A	
10f-11w-12s	Minor Sports				
	(6 cred.; soph., jr., sr.; prereq., 1-2-3)				
	Lect.	IV	S	A	Mr. Keller
	Lab.	IV	MWF		
13f-14w-15s	Corrective Work				
	(No cred.; by petition only; no prereq.)				
	Sec. 1	II	TTh	A	Mr. Iverson
	2	III	TTh		
	3	IV	TS		
16f-17w-18s	Drill Substitution				
	(No cred.; by petition only; no prereq.)				
	Sec. 1	II	MWF	A	Mr. Iverson
	2	III	MWF		
	3	IV	MWF		
19f-20w-21s	Gymnastics	III	MWF	A	Mr. Keller,
	(3 cred.; jr., sr.; prereq., 1-2-3)				Mr. Taylor
22f-23w	Kinesiology	VII	TTh	A	Mr. Keller
	(4 cred.; jr., sr.; prereq., 1-2-3, Anat. 4)				

No.	Title	Hour	Day	Room	Instructor
24s	Technique of Gymnastic Teaching (2 cred.; jr., sr.; prereq., 22-23, Anat. 4)	VII	TTh	A	Mr. Keller
28f	Physical Examination and Normal Diagnosis ..... (2 cred.; sr.; prereq., Physiol. 57-58)	I	MWF	A	Dr. Cooke
29w	Orthopedic and Remedial Gymnastics ..... (2 cred.; sr.; prereq., 22-23-24, 29)	I	MWF	A	Dr. Cooke
30s	Athletic Training ..... (2 cred.; sr.; prereq., none)	I	MWF	A	Dr. Cooke
31f	History of Physical Education .... (2 cred.; sr.; prereq., Ed. 1)	II	MWF	A	Mr. Keller
32w	Principles of Physical Education .. (3 cred.; sr.; prereq., 31, 10-11-12, 23-24)	II	MWF	A	Mr. Keller
33s	Organization and Administration of Physical Education ..... (3 cred.; sr.; prereq., 32)	II	MWF	A	Mr. Luehring
35w	Athletic Organization and Administration ..... (2 cred.; jr., sr.; no prereq.)	III	TTh	A	Mr. Luehring
37f	Football Coaching ..... (3 cred.; sr.; no prereq.)				
	Lect.	VI	MWF	A	Mr. Spaulding
	Lab.	Ar	Ar		
38w	Basket-Ball ..... (2 cred.; sr.; no prereq.)	VI	MWF	A	
39s	Track Athletics ..... (2 cred.; sr.; no prereq.)	VI	MWF	A	
42s	Baseball ..... (2 cred.; sr.; no prereq.)	VII	MWF	A	
43f-44w-45s	Practice Teaching ..... (6 cred.; sr.; prereq., 10-11-12, 22-23-24, Ed. 55)	Ar	Ar	A	Mr. Keller

PHYSICAL EDUCATION FOR WOMEN

Major Adviser: J. Anna Norris

No.	Title	Hour	Day	Room	Instructor
1f-2w-3s‡	Elementary Physical Training .... (No cred.; required of all new students; no prereq.)				
	Sec. 1	IV	MWF	3,151,163WGm	Ar
	2	VI	MWF	3,151,163WGm	Ar
	3	VII	MWF	3,151,163WGm	Ar
	4	VIII	MWF	3,151,163WGm	Ar
	5	III	TThS	3,151,163WGm	Ar
4f	Preliminary Hygiene ..... (No cred.; required of all new students; no prereq.)				
	Sec. 1	I	M	201WGm	Dr. Norris
	2	II	T	201WGm	
	3	III	W	201WGm	
	4	IV	T	201WGm	
	5	VI	Th	201WGm	

‡ The third quarter is open to students who have not taken the preceding quarters.

No.	Title	Hour	Day	Room	Instructor
7f-8w-9s‡	Sophomore Physical Training	IV	TS	153WGm	Ar
	(No cred.; soph.; prereq., 1-2-3)				
10f-11w-12s*	Sophomore Orthopedic Gymnastics	IV	TS	3WGm	Dr. Tolg
	(No cred.; soph.; prereq., 1-2-3)	VI	TTh	3WGm	Miss Denny
13f,s-14w	Sophomore Interpretive Dancing ..	VIII	TTh	151WGm	Miss Baker
	(No cred.; soph.; prereq., 1-2-3)				
13f-14w-15s	Sophomore Interpretive Dancing ..	IX	TTh	153WGm	Miss Baker
	(See 13f,s-14w)				
13s	Sophomore Interpretive Dancing ..	VII	TTh	153WGm	Miss Baker
	(See 13f,s-14w)				
16f-17w-18s*	Sophomore Games and Folk Dancing	III	MF	151WGm	Miss Clayton
	(No cred.; soph.; prereq., 1-2-3)				
19f-20w-21s*	Sophomore Major Sports				
	(No cred.; soph.; prereq., 1-2-3)				
	Sec. 1	VI	TTh	151WGm	Miss Clayton
	2	VII	TTh	151WGm	Miss Clayton
22f,s-23w¶	Sophomore Elementary Swimming				
	(No cred.; soph.; prereq., 1-2-3)	IV	MW	51WGm	Miss Coxe
	Sec. 1	VII	MW	51WGm	
	2	Fall and spring only			
	3	III	ThS	51WGm	Miss Sias
	4	IV	TS	51WGm	Miss Sias
	5	VII	TTh	51WGm	Miss Coxe
	6	VIII	TTh	51WGm	Miss Coxe
	7	III	MW	51WGm	Miss Coxe
28f-29w-28s¶	Sophomore Advanced Swimming ..				
	(No cred.; soph.; prereq., 1-2-3, swimming test)				
	Sec. 1	VIII	MW	51WGm	Miss Coxe
	2	II	TTh	51WGm	Miss Coxe
37f-38w-39s	Freshman Major Sports	I	TTh	151WGm	Miss Kissock, Miss Hazelton
	(No cred.; fr. majors in Phys. Ed.)				
43f-44w-45s	Play and the Playground	VI (fall & w)	TTh	Ar	
	(3 cred.; jr., sr.; prereq., 6 quarters)	VII (fall & w)	T		
		VI (spring)	TTh	151WGm	Miss Kissock
49f-50w	Gymnastics for Freshmen	V (fall)	W	153WGm	Miss Clayton
	(No cred.; fr. majors in Phys. Ed.; no prereq.)	VII ½ (w)	MWF		
51f-52w	Gymnastics for Sophomores	II	MW	153WGm	
	(1 cred.; soph. majoring or jrs. minoring; prereq., 1-2-3)				
54f-55w	Gymnastics for Juniors	VII	TTh	153WGm	Miss Sias
	(1 cred.; jrs. majoring and srs. minoring; prereq., 51-52)				
56w-57s	Swimming with Technique	VII (winter)	MW	51WGm	Miss Coxe
	(1 cred.; soph., jr.; prereq., Phys. Ed. 28)	III (spring)	TF	51WGm	Miss Coxe
58w-59s	Advanced Folk Dancing with Technique	I	MWF	151WGm	Miss Baker
	(2 cred.; jr.; prereq., 6 qtrs.)				

‡ The third quarter is open to students who have not taken the preceding quarters.
* The second or third quarter is open to students who have not taken the preceding quarters.
¶ No student may register for more than two quarters of swimming without permission.

No.	Title	Hour	Day	Room	Instructor
60f	Minor Sports with Technique	II	TTh	153WGm	Miss Kissock,
	(1 cred.; jr.; prereq., 6 qtrs.)	VI	T		Miss Hazelton
61s	Minor Sports with Technique	II	MWF	153WGm	Miss Hazelton,
	(See 60f)				Miss Clayton
63f-64w-65s	Major Sports with Technique	I (f, w)	TThF	151WGm	Miss Kissock
	(3 cred.; soph., jr.; prereq., 37)	I (s)	TTh		
		VII (s)	T		
66f-67w-68s	Interpretive Dancing	III	MWF	151WGm	Miss Baker
	(3 cred.; jr.; prereq., 6 qtrs.)				
69f-70w-71s	Advanced Interpretive Dancing with Technique				
	(2 cred.; sr.; prereq., 66-67-68)				
	Lect.	IV	M	151WGm	Miss Baker
	Lab.	IV	TS		
75w	History of Physical Education ..	VI	T	201WGm	Miss Hazelton
	(1 cred.; jr., sr.; prereq., Ed. 1)				
76w	Physical Diagnosis and Prophylaxis	I, II	W		Dr. Barron
	(2 cred.; sr.; prereq., Physiol. 57-58)				
80f-81w	Kinesiology	VI	M	201WGm	Miss Denny
	(8 cred.; jr.; prereq., Anat. 3, Farm En. 23)	III	TThS		
82s	Physical Examination	VII	MTF	201WGm	Dr. Tolg
	(2 cred.; jr.; prereq., 80-81)				
83s	Technique of Gymnastic Teaching	III	TThS	Ar	Miss Baker
	(3 cred.; jr.; prereq., 54-55, 80-81)	VI	TThF	201WGm	
84f	Principles of Gymnastics				
	(3 cred.; sr.; prereq., 54-55, 82)				
	Lab.	I	MWF	201WGm	Miss Baker
	Lect.	III	TS		
85w-86s	Principles of Physical Education ..	III (w)	ThS	201WGm	Miss Baker
	(2 cred. w.; 1 cred. s.; prereq., 84, 91)	IV (s)	W		
87s	Personal and School Hygiene	VII	MWF	201WGm	
	(3 cred.; sr.; prereq., Physiol. 57-58)				
88f-89w-90s	Orthopedic and Remedial Gym	VII (fall)	MTTh	3WGm	Dr. Tolg
	(3 cred.; sr.; prereq., 83)	VII (w)	MT	3WGm	Dr. Tolg
		Lab. hr.	Ar		
	Spring Lect.	VII	Th	3WGm	Dr. Tolg
		Pract. teach.	Ar		
91f	Principles of Dancing	VII	WF	151WGm	Miss Baker
	(2 cred.; sr.; prereq., 66-67-68)				
92f,w,s	Practice Teaching in Playground ..	Ar	Ar	Ar	
	(1 cred.; sr.; prereq., 43-44-45)				
93f,w,s	Practice Teaching in Gymnastics ..	Ar	Ar	Ar	
	(1 cred.; sr.; prereq., 84)				
94f,w,s	Practice Teaching in Major Sports	Ar	Ar	Ar	
	(1 cred.; sr.; prereq., 63-64-65)				
95f,w,s	Practice Teaching in Swimming ..	Ar	Ar	Ar	
	(½ cred.; sr.; prereq., 56-57)				
96f,w,s	Practice Teaching in Dancing	Ar	Ar	Ar	
	(½ cred.; sr.; prereq., 69, 91)				
97w	Organization and Administration ..	IV	WF	201WGm	Dr. Norris
	(3 cred.; sr.; prereq., 85)				

COURSES FOR WHICH NO REGISTRATION IS REQUIRED

No.	Title	Hour	Day	Room	Instructor
31f,w,s	General Swimming ..... (No registration required; all; no prereq.)	IX	MTWF	51WGm	No instructor
32f-33w-34s	Hockey, Basket-Ball, and Baseball (No registration required; fr., jr., sr.; no prereq.)	IX	MTWTh		Miss Kissock, Miss Hazelton, Miss Clayton

PUBLIC SCHOOL MUSIC

Major Adviser: T. B. Giddings

No.	Title	Hour	Day	Room	Instructor
29-30-31	Grade School Methods ..... (9 cred.; jr., sr.; no prereq.)	4:00-5:40	F	117Ed	Mr. Giddings
32-33-34	High School Methods ..... (9 cred.; jr., sr.; prereq., 29-30-31)	4:00-5:40	W	117Ed	Mr. Giddings
51f-52w-53s	Instrumentation ..... (3 cred.; jr., sr.)	VIII	W	Ar	Mr. Pepinsky
54f-55w-56s	Advanced Instrumentation ..... (3 cred.; jr., sr.)	VIII	T	Ar	
64f-65w-66s	Orchestra-Conducting ..... (6 cred.; jr., sr.)	VIII, IX	Th	Ar	Mr. Pepinsky
71-72-73	Class Instrument Teaching ..... (3 cred.; soph.; no prereq.)				Mr. Pepinsky
74-75-76	Advanced Class Instrument Teaching ..... (3 cred.; jr.; prereq., 71-72-73)	VII	MW	Mu	Mr. Pepinsky
81f-82w-83s	Observation of Teaching ..... (6 cred.; jr., sr.; prereq., 32-33-34)	VIII	T	Ar	

THEORY AND PRACTICE OF TEACHING

Major Advisers: Leo J. Brueckner, Earl Hudelson

GENERAL METHODS

No.	Title	Hour	Day	Room	Instructor
15f,w,s	Technique of High School Instruction ..... (3 cred.; jr., sr.; prereq., Ed. 55)	III	MWF	205Ed	Mr. Hudelson
16f,w,s	Practice Teaching ..... (5 cred.; sr., grad.; prereq., Ed. 15 and Special Methods Course)	Ar	Ar	Ar	Mr. Boardman
17s	Practice Teaching of Subnormal Children ..... (2 cred.; jr., sr.)	Ar	Ar	Ar	Mr. Boardman

SPECIAL METHODS

18s	Teachers' Course in Animal Biology (3 cred.; jr., sr., grad.; prereq., An. Biol. 1-2, Ed. 15)	V, VI, VII	TTh	213AB	Mr. Sigerfoos
19f,s	Teachers' Course in Botany ..... (5 cred.; jr., sr.; prereq., 18 cred. in botany and Ed. 15)	VII	MTWThF	210P	

No.	Title	Hour	Day	Room	Instructor
20s	Teachers' Course in Chemistry .... (3 cred.; jr., sr.; prereq., gen. chem. and qual. chem. and Ed. 15)	III	MWF	315C	Mr. Geiger
22f	Teachers' Course in French ..... (3 cred.; jr., sr.; prereq., 13-14-15 and 1 conv. comp. course, 1 literary course and Ed. 15)	II	MWF	111Ed	Miss Violet
23f	Teachers' Course in Geography .. (3 cred.; jr., sr.; prereq., Geog. 114 and Ed. 15)	I	MWF	ArP	
24f,s	Teachers' Course in German ..... (3 cred.; jr., sr.; prereq., 52 and 55 and Ed. 15)	II	MWF	112Ed	Miss Hubman
25f,s	Teachers' Course in History ..... (3 cred.; jr., sr.; prereq., see statement, Ed. 15)	VIII	MWF	111Lib	Mr. Krey
26f,w	Teachers' Course in Latin ..... (3 cred.; jr., sr.; prereq., any 2 of Courses 51-53 or equiv. and Ed. 15)	I	MWF	101Ed	Miss Denneen
27f,w	Teachers' Course in Mathematics .. (5 cred.; jr., sr.; prereq., Math. 50 and Ed. 15)	II	MTWFS	102Ed	Mr. Haerter
35s	Teachers' Course in Norwegian .... (3 cred.; sr., grad.; prereq., Scand. 4-5, or 10-11-12 and Ed. 15)	Ar	Ar	206F	Mr. Bothne
36s	Teachers' Course in Physics ..... (3 cred.; jr., sr.; prereq., see statement, Ed. 15)	VII	MWF	8Ed	Mr. Rollefson
37f	Social Science for Senior High Schools ..... (3 cred.; jr., sr.; prereq. in each of the following: political science, economics, sociology, either American History or Modern European History and Ed. 15)	VIII	MWF	204Ed	Mr. Tohill
38w	Methods and Problems in Secondary School Science ..... (3 cred.; jr., sr.; consult instr.)	VII	MWF	112Ed	Mr. Smith
39f	Social Science for Junior High Schools ..... (2 cred.; jr., sr.)	I, II	S	Ar	Mr. Clarke
40w	Teachers' Course in Spanish ..... (3 cred.; jr., sr.; prereq., 35-36 and 1 conv. comp. course, 1 literary course, and Ed. 15)	II	MWF	111Ed	Miss Violet
41w	Teachers' Course in Swedish ..... (3 cred.; sr., grad.; prereq., Scand. 10-11-12 or 4-5 and Ed. 15)	Ar	Ar	206F	Mr. Stomberg
42w	Fundamental Educational Theories Relating to Instruction in the Elementary School ..... (2 cred.; jr., sr.)	I, II	S	101Ed	Mr. Selke

No.	Title	Hour	Day	Room	Instructor
43f	The Teaching of English in the Elementary School ..... (2 cred.; jr., sr.; prereq., Ed. 37f)	III, IV	S	101Ed	Mr. Selke
44w	Children's Literature ..... (2 cred.; jr., sr.; prereq., Ed. 37f)	III, IV	S	101Ed	
45s	Teaching of Geography and History in the Elementary School ..... (2 cred.; jr., sr.; prereq., Ed. 37f)	III, IV	S	101Ed	
46f,w,s	Practice Teaching with Special Methods ..... (5 cred.; jr., sr.)	Ar	Ar	Ar	Mr. Selke
47f	*Field Problems in High School Training Departments* ..... (2 cred.; jr., sr.)	*Not offered in 1924-25*			
48w	Teachers' and Supervisors' Course in Arith. for Lower Grades .... (2 cred.; jr., sr., grad.; prereq. 15 cred. in education)	I, II	S	Ar	Mr. Brown
49s	Teachers' and Supervisors' Course in Arith. for Intermed. and Upper Grades ..... (2 cred.; jr., sr., grad.; prereq., 15 cred. in education)	I, II	S	Ar	Mr. Brown
50w-s	Normal School Teaching and Administration ..... (4 cred.; jr.; sr., grad.; prereq., 15 cred. in education)	III, IV	S	Ar	Mr. Brown
51f	The Teaching of English in the Junior High School ..... (2 cred.; jr., sr.)	I, II	S	206Ed	Miss Smith
52f-53w-54s	Teachers' Course in English and Practice Teaching ..... (9 cred.; jr., sr.; prereq., Ed. 15)	II	MWF	206Ed	Miss Inglis
	COURSES OPEN TO GRADUATE STUDENTS				
193f	Foundations of Secondary School Methods ..... (3 cred.; sr., grad.; prereq., Ed. 15)	VIII	MWF	Ar	Mr. Hudelson
195w	Problems of High School English Teaching ..... (2 cred.; sr., grad.; prereq., Ed. 15 and 21)	III, IV	S	112Ed	Mr. Hudelson
222f-223w-224s	Research Problems in Secondary Education ..... (2 cred.; grad.; prereq., Ed. 15 and 113)	Ar	Ar	Ar	Mr. Hudelson
225f-226w-227s	Seminar in Elementary School Problems	IX, X	T		Mr. Brueckner
	METHODS COURSES IN AMERICANIZATION				
128f,s	Technique of Teaching Adults .... (3 cred.; jr., sr.; prereq., 3 courses in Americanization)	I	MWF	12F	
129w	Methods of Americanization ..... (3 cred.; jr., sr., grad.; prereq., 128)	I	MWF	12F	Mr. Jenks

For methods courses in Art Education and Manual Training see respectively departmental announcements for Art Education and Trade and Industrial Education.

No.	Title	Hour	Day	Room	Instructor
131f-132w-133s	Supervised Americanization Work (9 cred.; jr., sr., grad.; prereq., 128)	VI	T and Ar	12F	

TRADE AND INDUSTRIAL EDUCATION

Major Advisers: H. J. Smith, Charles Prosser

No.	Title	Hour	Day	Room	Instructor
Ind.10f	Methods, Elem. Woodwork ..... (2 cred.; all; no prereq.)	IX, X	TTh	24Ed	Mr. Stockwell
Ind.11w	Methods, Primary Grade Woodwork (2 cred.; all; no prereq.)	VII, VIII	TTh	24Ed	Mr. Stockwell
Ind.12w	Methods, Elem. Electric Wiring .. (2 cred.; all; no prereq.)	IX, X	TTh	24Ed	Mr. Stockwell
Ind.14s	Methods, Mech. Draw.	IX, X	TTh	115Ed	Mr. Stockwell
Ind.20	Industrial History	Ar	Ar		Mr. Tohill
Ind.25w	Literature of Industrial Educ. ... (2 cred.; all; no prereq.)	IX, X	W	208OL	Mr. Smith
Ind.30f	Graphic Presentation ..... (2 cred.; all; no prereq.)	IX, X	W	208OL	Mr. Smith
Ind.40	*Occupational Analysis*	*Not offered in 1924-25*			
Ind.41s	Job Analysis ..... (2 cred.; all; prereq., Ind. 40)	IX, X	Th	208OL	Mr. Bass
Ind.42	*Selection of Related Materials*	*Not offered in 1924-25*			
Ind.50f-51w-52s	Practice Teaching ..... (6 cred.; jr., sr.; prereq., 66, 70, or 80)	Ar	Ar	Ar	Mr. Smith
Ind.60f	Social Agencies in Education ..... (2 cred.; jr., sr.; no prereq.)	IX, X	T	208OL	Mr. Prosser
Ind.61w	Social Significance of Industrial Education ..... (2 cred.; jr., sr.; prereq., Ind. 60)	IX, X	T	208OL	Mr. Prosser
Ind.65w	Methods, Non-Vocational Subjects (2 cred.; all; no prereq.)	III, IV	S	208OL	Mr. Smith
Ind.66f	Methods, Related Subjects ..... (2 cred.; jr., sr.; prereq., 40 and 41 or 42)	III, IV	S	208OL	Mr. Smith
Ind.70w	Methods, Shop Subjects ..... (2 cred.; jr., sr.; prereq., 40)	IX, X	M	208OL	Mr. Craigo
Ind.80s	General Industrial Training ..... (2 cred.; all; no prereq.)	III, IV	S	208OL	Mr. Smith
Ind.150f-151w-152s	Seminar in Vocational Education .. (6 cred.; graduates only)	7:30-9:30 p.m.	T	208OL	Mr. Prosser
171f	Admin. of Indus. Educ.—Day Schools ..... (2 cred.; jr., sr., grad.; no prereq.)	IX, X	Th	208OL	Mr. Craigo
172w	Admin. of Indus. Educ.—Evening Schools ..... (2 cred.; jr., sr., grad.; prereq., 171)	IX, X	Th	208OL	Mr. Bass
173s	Admin. of Indus. Educ.—Part-Time Classes ..... (2 cred.; jr., sr., grad.; prereq., 172)	IX, X	T	208OL	Mr. Prosser

ANIMAL BIOLOGY

REQUIREMENTS OF THE DEPARTMENT

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: General Physiology, Histology, Entomology, General Embryology, Ornithology, and Human Physiology (Medical Physiology, Course 4).

No.	Title		Hour	Day	Room	Instructor
1f-2w†	General Zoology					
	(10 cred.; all; no prereq.)					
	Sec. 1	Lab.	III, IV	MWF	101AB	Ar
	(Limit, 150)	Lect.	III	TThS		
			IV	T	313AB	Ar
	Sec. 2	Lab.	VI, VII	MWF	101AB	Ar
	(Limit, 150)	Lect.	VI, VII	TTh	313AB	Ar
1w-2s†	General Zoology					
	(See 1f-2w)					
	Sec. 1	Lab.	I, II	MWF	101AB	Ar
		Lect.	I	T		
			II	TThS	313AB	Ar
1s-(2su† or 2w†)	General Zoology					
	(See 1f-2w)	Lab.	VI, VII, VIII	WF	101AB	Ar
		Lect.	VI, VII	MTh	313AB	Ar
5f-6w-7s†	General Zoology					
	(12 cred.; pre-medical and pre-dental students; no prereq.)					
	Sec. 1	Lab.	I, II	TS	101AB	Ar
	(Pre-dental)	Lect.	I	MWF	313AB	Ar
	Sec. 2	Lab.	III, IV	TS	101AB	Ar
	(Pre-medical)	Lect.	IV	MWF	313AB	Ar
		Lab.	(Spring: III, IV	WF	313	
		Lect.	IV	MTS)		
14f-15w-16s†	General Zoology		See College of Agriculture bulletin			
	(9 cred.; Agr., For., H.E.; no prereq.)					
21s	Introd. to General Physiology		VI, VII, VIII	MW	10AB	
	(5 cred.; fr., soph., jr., sr.; prereq., 1-2 Chem. or phys. desirable)		VI, VII, VIII, IX	F		
22s	General Ecology		VI, VII, VIII	MW	401AB	Mr. Chapman
	(5 cred.; fr., soph., jr., sr.; prereq., 1-2)		VI, VII, VIII, IX	F		
23f	Introd. Entomology		VI, VII	MTWThF	204, 211AB	Mr. Oestlund
	(5 cred.; soph., jr., sr.; prereq., 1-2)					
24f	Introd. Animal Parasitology		VI, VII, VIII			
	(5 cred.; soph., jr., sr.; prereq., 1-2)			MWF	202AB	Mr. Riley
25w	Histology		III, IV	MTWFS	201, 211AB	Mr. Downey
	(5 cred.; soph., jr., sr.; prereq., 1-2)					

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

( ) Numbers in parentheses do not refer to the year 1924-25.

No.	Title	Hour	Day	Room	Instructor
26w	Comp. Anatomy ..... (5 cred.; soph., jr., sr.; prereq., 1-2)	III, IV	MTWFS	211, 213AB	Mr. Nachtrieb
31f	General Physiology ..... (5 cred.; soph., jr., sr.; prereq., 15 cred. in an. biol. or 10 cred. in an. biol. and 10 cred. in chem. or phys.)	VI, VII, VIII VI, VII, VIII, IX	MW F	10AB	Mr. Lund
32w	General Physiology ..... (5 cred.; soph., jr., sr.; prereq., as for 31)	VI, VII, VIII VI, VII, VIII, IX	MW F	10AB	Mr. Lund
33s	Principles of Animal Behavior .... (5 cred.; soph., jr., sr.; prereq., 15 cred. in an. biol. or 10 cred. in an. biol. and 10 cred. in chem. or phys. or psy.)	VI, VII, VIII VI, VII, VIII, IX	MW F	10AB	Mr. Lund
37f-38w-39s†	General Entomology ..... (9 cred.; soph., jr., sr.; prereq., 1-2)	I, II	MWF	204AB	Mr. Oestlund
44f,s	Animal Parasites ..... (3 cred.; fr., soph., jr., sr.; prereq., 1-2)	VI, VII, VIII	WF	202AB	Mr. Riley
45w	Insects and Disease ..... (3 cred.; fr., soph., jr., sr.; prereq., 1-2)	VI, VII, VIII	WF	202AB	Mr. Riley
46w-47s†	Ornithology ..... (6 cred.; soph., jr., sr.; prereq., 1-2)	VI, VII, VIII	MW	314AB	Dr. Roberts
51s	Organology ..... (5 cred.; soph., jr., sr.; prereq., 25)	III, IV	MTWFS	201, 211AB	Mr. Downey
52f	Cytology and Technique ..... (5 cred.; soph., jr., sr.; prereq., 1-2)	III, IV	MTWFS	201AB	Mr. Nachtrieb
75s	Nature Study ..... (3 cred.; jr., sr.; prereq., 20 cred. incl. 1-2)	VI, VII, VIII	TTh	213AB	Mr. Sigerfoos
107s	Protozoology ..... (3 cred.; jr., sr., grad.; prereq., 15 cred. incl. 1-2)	I, II	MWF	211, 213AB	Mr. Sigerfoos
109f-110w-111s	General Physiology ..... (15 cred.; jr., sr., grad.; prereq., 20 cred. in an. biol.)	VI, VII, VIII VI, VII, VIII, IX	MW F	10AB	Mr. Lund
117f-118w-119s†	Ecology of Insects ..... (9 cred.; jr., sr., grad.; prereq., 15 cred. incl. 1-2)	VI, VII, VIII	TTh	401AB	Mr. Chapman
124su	Advanced Ecology ..... (5 cred.; jr., sr., grad.; prereq., 117-118-119)	Ar	Ar	Ar	Ar
125f-126w-127s†	Advanced Entomology ..... (9 cred.; jr., sr., grad.; prereq., 1-2 and 37-38-39)	Ar	Ar	204AB	Mr. Oestlund

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

No.	Title	Hour	Day	Room	Instructor
130w	Biology of Aphididae ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. incl. 1-2)	III, IV	MWF	204AB	Mr. Oestlund
139f-140w†	Histol. and Develop. of Insects ... (6 cred.; jr., sr., grad.; prereq., 1-2 and 37-38-39)	II, III and ar	TTh	324Ad(F)	Mr. Riley
144f-145w-146s	Animal Parasites and Parasitism .. (9 cred.; jr., sr., grad.; prereq., 1-2 and 5 add. cred.)	VI, VII, VIII	WF	202AB	Mr. Riley
149f-150w-151s†	Blood of Vertebrates ..... (9 cred.; sr., grad.; prereq., histol. and embryol.; reading knowledge of French and German)	VII, VIII	Ar	201, 211AB	Mr. Downey
154w-155s†	Hematology ..... (6 cred.; jr., sr., grad.; prereq., histol. embryol.)	VI, VII, VIII	TTh	201, 211AB	Mr. Downey
181f-182w†	Embryology ..... (6 cred.; jr., sr., grad.; prereq., 1-2 and 52 or equiv.)	VI, VII	MWF	201, 211AB	Mr. Nachtrieb
183s	Genetics and Eugenics ..... (3 cred.; jr., sr., grad.; prereq., 1-2 and 5 other cred. in an. biol. or botany)	IV	MWF	211AB	Mr. Nachtrieb
197f-198w-199s	Problems ..... (9 or 18 cred.; sr., grad.; prereq., 1-2 and special requirements)	Ar	Ar	Ar	Ar

ENTOMOLOGY AND ECONOMIC ZOOLOGY

No.	Title	Hour	Day	Room	Instructor
3f,w	Economic Entomology ..... (3 cred.; soph., jr., sr.; prereq., an. biol. 9 cred.)	VI, VII, VIII	WF	306Ad	Mr. Ruggles
4w	Economic Vertebrate Zoology..... (3 cred.; jr., sr.; prereq., an. biol. 9 cred.)	Ar	Ar	Ar	Mr. Washburn
8f	Varieties and Habits of Fur-Bearing Animals ..... (3 cred.; soph., jr., sr.; prereq., an. biol. 9 cred.)	Ar	Ar	Ar	
150f,su	Insecticides and Their Action..... (3 or 6 cred.; jr., sr.; prereq., 37-38-39, Agr. Biochem. 7-8, or equiv.)	Ar	Ar	Ar	
197f,w,s,su	Introduction to Research ..... (5 or more cred.; sr.; prereq., 37-38-39 or 44-45 and other work as prescribed by the division)	Ar	Ar	Ar	Mr. Riley, Mr. Ruggles, Mr. Washburn, Mr. Chapman, Mr. Knight, Mr. Oestlund

† The entire course must be complete before credit is given for any quarter.

ANTHROPOLOGY

Major Advisers: A. J. Jenks,* W. D. Wallis

MAJOR SEQUENCE

At least 24 credits selected from the following courses: 80, 108, 110, 112, 113, 121, 161; Educational Psychology 111; History 121-122, 166. In addition, Psychology 125-126 is required. (Prerequisites: 15 credits from the biological sciences, 15 credits from the social sciences; Anthropology 51 (or 1) and two other courses.)

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

No.	Title	Hour	Day	Room	Instructor
51f,w,s	Introd. to Anthropology ..... (5 cred.; jr., sr.; prereq., 10 cred. of a science and 10 cred. of a social science)	VI	MTWThF	15F	Mr. Wallis
53w	Cultural Anthropology ..... (3 cred.; jr., sr.; prereq., 51)	II	TThS	15F	Mr. Wallis
54s	Cultural Anthropology ..... (3 cred.; jr., sr.; prereq., 51)	II	TThS	15F	Mr. Wallis
55f,w	Human Migrations with Special Reference to Immigration ..... (3 cred.; jr., sr.; prereq., 51)	II	MWF	15F	Mr. Clarke
62	*Ethnology* ..... (3 cred.; jr., sr.; prereq., 51)	*Not offered in 1924-25*			
80f	The American Indian ..... (3 cred.; jr., sr.; prereq., 51)	II	MWF	12F	Mr. Wallis
108	*Philippine Peoples* ..... (3 cred.; jr., sr.; prereq., 51)	*Not offered in 1924-25*			
110f	Physical Anthropology ..... (3 cred.; jr., sr.; prereq., 51)	II	TThS	12F	Mr. Wallis
112f	The American Negro..... (3 cred.; jr., sr.; prereq., 51)	III	MWF	15F	Mr. Clarke
113w	Older and Newer Immigrants ..... (3 cred.; jr., sr.; prereq., 51)	III	MWF	15F	Mr. Clarke
121w	Advanced Phys. Anthrop. ..... (3 cred.; jr., sr.; prereq., 51 and 110)	Ar	Ar	12F	Mr. Wallis
161s	Primitive Religion ..... (3 cred.; jr., sr.; prereq., 51)	II	MWF	15F	Mr. Wallis
204-205-206	Seminar ..... (Grad.)	Ar	Ar	Ar	Mr. Wallis

ARCHITECTURE

COLLEGE OF ENGINEERING AND ARCHITECTURE
JUNIOR COLLEGE COURSES

No.	Title	Hour	Day	Room	Instructor
21f-22w†-23s	Free-Hand Drawing ..... (6 cred.; soph., jr., sr., prereq., soph. standing)				
	Sec. 1	II, III	MWF	417E	Mr. Young
	2	VII, VIII	MWF		

* Absent on leave in 1924-25.

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

No.	Title	Hour	Day	Room	Instructor
31f-32w†-33s	Elements of Architecture ..... (15 cred.; soph., jr.; prereq., soph. standing)				
	Lect.	IV	T		Mr. R. T. Jones
			S	320E	Mr. Forsythe
	Sec. 1 Lab.	VI, VII, VIII			
			MWF	309E	Mr. Dawson
	2	II, III, IV	MWF	309E	
61f-62w-63s	Shades and Shadows ..... (6 cred.; soph.; prereq., Math. 5)				
	Sec. 1 Lab.	II, III	T	309E	Mr. Forsythe
	2	I, II (f, w)	Th	309E	
		II, III (s)			

SENIOR COLLEGE COURSES

14f-15w-16s	History of Architecture	IV (f)	MF	305E	
	(6 cred.; jr., sr.; prereq., 31-32-33)	IV (w, s)		320E	Mr. Forsythe
17f-18w-19s	History of Architecture	III (f)	T	320E	Mr. Mann
	(6 cred.; jr., sr.; prereq., 14-15-16)		Th	305E	
		III (s)	TTh	135E	
34-35-36f,w,s	Architectural Design ..... (12 cred.; jr., sr.; prereq., 31-32-33, 23)	VI, VII, VIII	MTThF	402E	Mr. Robertson
51f-52w-53s	Building Construction ..... (6 cred.; soph., jr., sr.; prereq., 31-32-33)	III	MW	320E	Mr. R. T. Jones
81f	Color and Design ..... (2 cred.; stud. of dram.; no prereq.)	VI, VII, VIII	TTh	417E	Mr. Burton
134-135-136f,w,s	Interior Decoration Design ..... (24 cred.; sr.; prereq., 34-35-36)	VI, VII, VIII,	MTWThF	317E	Mr. Arnal
		I, II, III	S		
163s	History of Sculpture and Painting (2 cred.; jr., sr.; prereq., 14-15-16)	II	MTh	320E	Mr. Burton
182w-183s	Decoration and Allied Arts ..... (6 cred.; sr.; prereq., 17-18-19)	IV	MWF	319E	Mr. Mann

ASTRONOMY

No.	Title	Hour	Day	Room	Instructor
11f§*	Descriptive Astronomy ..... (5 cred.; 3d qu. fr., soph., jr., sr.; no prereq.)	III	MTThFS	124F	Mr. Beal
11w§*	Descriptive Astronomy ..... (See 11f)				
	Sec. 1	III	MTThFS	124F	Mr. Beal
	2	IV	MTWFS	124F	Mr. Leavenworth
11s§*	Descriptive Astronomy ..... (See 11f)				
	Sec. 1	I	TWThFS	124F	Mr. Beal
	2	III	MTThFS	124F	Mr. Leavenworth

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

* Courses 11-25 and 51-52-53 cover much the same field. Students are not advised to take both 51-52-53 and 11-25.

§ Does not satisfy the Junior College requirement for science.

No.	Title	Hour	Day	Room	Instructor
25w§*	Stellar Astronomy ..... (3 cred.; jr., sr.; prereq., 11)	II	TThS	124F	Mr. Beal
25s§*	Stellar Astronomy	IV	MWF	124F	Mr. Leavenworth
51f-52w-53s‡*	General Astronomy ..... (10 cred.; jr., sr.; prereq., Math. 5, 6, 7, or phys. sci. and Math. 6)	II	MWF	124F	Mr. Leavenworth
62f	Elements of Practical Astron. .... (3 cred.; jr., sr.; prereq., Astron. 4 or 11 or 51, and Math. 6, 7)	III (f, s)	MWF and ar MWF (w)	123F	Mr. Leavenworth
101f-102w-103s	Practical Astronomy ..... (9 or 18 cred.; jr., sr., grad.; prereq., Astron. 4 or 11 or 51, and Math. 50)	III	MWF	123F	Mr. Leavenworth
111f-112w-113s	Celestial Mechanics ..... (9 cred.; sr., grad.; prereq., Math. 51)	Ar	Ar	123F	Mr. Beal
140w	Method of Least Squares ..... (3 cred.; jr., sr., grad.; prereq., Math. 51)	II	TThS	123F	Mr. Leavenworth

BACTERIOLOGY

MEDICAL SCHOOL

No.	Title	Hour	Day	Room	Instructor
51f,w,s	General Bacteriology ..... (5 cred.; jr., sr.; prereq., chem. 10 cred. and biol. 10 cred.)	VI, VII, VIII	MWF	MH	Ar
101f	Special Bacteriology for Medical Students ..... (4 cred.; jr., sr.; prereq., 1)	I, II	MWF	MH	Ar
103s	Special Bacteriology for Students of Agriculture ..... (4 cred.; jr., sr.; prereq., 1)	III, IV	TThS	MH	Ar
105f	Industrial Bact. ..... (3 cred.; jr., sr.; prereq., 1)	II, III, IV	TTh	MH	Ar
114s	Higher Bacteria ..... (3 cred.; jr., sr.; prereq., 101 or 103)	VII, VIII	TTh	MH	Ar
116w	Immunity ..... (3 cred.; jr., sr.; prereq., 101 or 103)	VII, VIII	TTh	MH	Ar
117s	Pathogenic Protozoa ..... (3 cred.; jr., sr.; prereq., 101 or 103)	VII, VIII	TTh	MH	Ar
118f	Morphology and Taxonomy of Bacteria ..... (3 cred.; jr., sr.; prereq., 101 or 103)	VII, VIII	TTh	MH	Ar

* Courses 11-25 and 51-52-53 cover much the same field. Students are not advised to take both 51-52-53 and 11-25.

§ Does not satisfy the Junior College requirement for science.

‡ Satisfies the Junior College requirement for science.

No.	Title	Hour	Day	Room	Instructor
119f-120w	Bacteriological Chemistry ..... (4 cred.; jr., sr.; prereq., 101 or 103; Physiology 100, 101, 102 or Agric. Biochem. 111-112)	VI, VII, VIII	TTh	MH	Ar
121	The common fermentations ..... (3 cred.)	VI, VII	TTh		
150f-151w or 150w-151s	Advanced Bacteriology ..... (Cred. ar.; jr., sr.; prereq., see instructor)	VII, VIII	TTh	MH	Ar

BOTANY

REQUIREMENTS OF THE DEPARTMENT

For a teacher's certificate.—Major recommendation, 31 credits in botany as follows: Courses 1-2, 7, 21, 22, and either 12 and 13 or 62 and 63; Course 51 advised.

Minor recommendation in botany 20 credits as follows: Courses 1-2, 7, and either 21 or 22; Course 51 advised.

No.	Title	Hour	Day	Room	Instructor
1f-2w†	General Botany ..... (10 cred.; all; no prereq.)				Mr. Huff
	Sec. 1 Lab.	I, II	MWF	212,214,220P	
	Quiz	I	T	212,214,220P	
	Lect.	II	TThS	210P	
	2 Lab.	VI, VII	MWF	212,214,220P	
	Quiz	VII	Th	210P	
	Lect.	VI, VII	T	210P	
		VI	Th	210P	
1w-2s†§	General Botany ..... (See 1f-2w)				Mr. Huff
	Lab.	III, IV	MWF	212,214,220P	
	Quiz	IV	T	212,214,220P	
	Lect.	III	TThS	210P	
1s-(2f)†	General Botany ..... (See 1f-2w)				Mr. Huff
	Lab.	I, II	TThS	212,214,220P	
	Quiz	I	W	212,214,220P	
	Lect.	II	MWF	210P	
(1s)-2f†	General Botany ..... (See 1f-2w)				Mr. Huff
	Lab.	I	W	212,214,220P	
	Quiz	I, II	TThS	212,214,220P	
	Lect.	II	MWF	210P	
7s	Taxonomy of Flowering Plants .... (5 cred.; all; prereq., 2)				
	Lab.	VI, VII	MWF	212,214,220P	Mr. Rosendahl
	Quiz	V	W	210P	
	Lect.	VIII	MF	210P	
12f	Morphology of Algae ..... (3 cred.; all; prereq., 2)	I, II	TThS	213AB	Miss Tilden

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

§ Students who wish to take both this course and Eng. Aw (III W) may make special arrangements with the instructor.

( ) Numbers in parentheses do not refer to the year 1924-25. See Course Numbering, page 104, S. L. and A. bulletin.

No.	Title	Hour	Day	Room	Instructor
13	*Morphology of Fungi* ..... (3 cred.; all; prereq., 2)	*Not offered in 1924-25*			
21s	Elementary Ecology ..... (5 cred.; all; prereq., 2)	III,IV	MTWFS	G	
22f,s	Elementary Plant Physiol. ..... (5 cred.; all; prereq., 2)	III,IV	MTWFS	G	Mr. Harvey
51f	Histological Methods ..... (3 cred.; jr., sr.; prereq., 15 cred.)	I, II	MWF	213AB	Mr. Rosendahl
62w	Bryophytes and Pteridophytes .... (3 cred.; jr., sr.; prereq., 15 cred.)	III, IV	MWF	Ar	Mr. Huff
63s	Gymnosperms and Angiosperms ... (3 cred.; jr., sr., grad.; prereq., 7 or 62)	VI, VII, VIII	TTh	Ar	Mr. Butters
101f	Elementary Biometry ..... (3 cred., jr., sr., grad.; prereq., 18 cred., biol. sci.)	Ar	Ar	Ar	Mr. Harris
108	*Pteridophytes* ..... (5 cred.; jr., sr., grad.; prereq., 7 and 62)	*Not offered in 1924-25*			
110s	Gymnosperms ..... (5 cred.; jr., sr., grad.; prereq., 7 and 63)	Ar	Ar	4AB	Mr. Butters
113f-114w-115s	Adv. Taxonomy ..... (9 cred.; jr., sr., grad.; prereq., 15 cred. incl. 7)	VI, VII (fall, winter) VI, VII, VIII (spring)	MWF TTh	213AB	Mr. Rosendahl
118w	Cytology ..... (3 cred.; jr., sr., grad.; prereq., 18 cred.)	VI, VII, VIII	TTh	213AB	Mr. Rosendahl
123w	Algae: Blue-Green ..... (3 cred.; jr., sr., grad.; prereq., 15 cred. incl. 12)	VI, VII, VIII	TTh	104AB	Miss Tilden
124f	Algae: Green ..... (3 cred.; jr., sr., grad.; prereq., 15 cred. incl. 12)	VI, VII, VIII	TTh	104AB	Miss Tilden
125w	Algae: Brown ..... (3 cred.; jr., sr., grad.; prereq., 15 cred. incl. 12)	VI, VII, VIII	TTh	104AB	Miss Tilden
126s	Algae: Red ..... (3 cred.; jr., sr., grad.; prereq., 15 cred. incl. 12)	VI, VII, VIII	TTh	104AB	Miss Tilden
127w	Anatomy of Vascular Plants ..... (5 cred.; jr., sr., grad.; prereq., 18 cred.)	Ar	Ar	213AB	Mr. Butters
131	*Field Ecology* ..... (5 cred.; jr., sr., grad.; prereq., 21)	*Not offered in 1924-25*			
132w	Ecological Anatomy ..... (5 cred.; jr., sr., grad.; prereq., 21)	III, IV	MTWFS	G	
133s	Forest Geography of North America (5 cred.; jr., sr., grad.; prereq., 21)	VI, VII	MWF	G	
141f	Physical Phases of Plant Physiology ..... (5 cred.; sr., grad.; prereq., 22 and gen. org. chem.)	I, II	MTWThF	G	Mr. Harvey
142w	Plant Metabolism ..... (5 cred.; sr., grad.; prereq., 22 and gen. org. chem.)	I, II	MTWThF	G	Mr. Harvey

No.	Title	Hour	Day	Room	Instructor
143s	Plant Metabolism and Growth ..... (5 cred.; sr., grad.; prereq., 22 and gen. org. chem.)	I, II	MTWThF	G	Mr. Harvey
144s	Plant Microchemistry ..... (5 cred.; sr., grad.; prereq., 22 and gen. org. chem.)	III, IV	MTWFS	G	Mr. Harvey

PLANT PATHOLOGY AND BOTANY

DEPARTMENT OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

Introductory Courses

No.	Title	Hour	Day	Room	Instructor
1f,w	Plant Pathology ..... (5 cred.; jr., sr.; prereq., bot. 9 cred.)	VI-IX VI	MF W	1,2PP	Mr. Stakman, Mr. Leach, Mr. Seal, Mr. Christensen
7w-8s	Weeds and Grasses ..... (6 cred.; soph., jr., sr.; prereq., bot. 9 cred.)	VI, VII, VIII	WF	3PP	Mr. Larson
9f	Weeds and Seed-Testing ..... (3 cred.; soph., jr., sr.; prereq., bot. 9 cred.)	VI, VII, VIII	WF	3,4PP	Mr. Larson
10f,s	Forest Pathology ..... (5 cred.; soph., jr., sr.; prereq., bot. 9 cred.)	VI-IX VI	MF W	1,2PP	Mr. Stakman, Mr. Leach, Mr. Nelson
12w	Seed Problems ..... (3 cred.; jr., sr.; prereq., 9)	Ar	Ar	Ar	Mr. Larson
14s	Plant Disease Control ..... (5 cred.; jr., sr.; prereq., 1, Ent. 3)	Ar	Ar	Ar	Mr. Christensen
105f-106w-107s	Mycology ..... (9 cred.; jr., sr.; prereq., Bot. 7, 11, or equiv.)	I, II	MWF	1,32PP	Mr. Freeman, Miss Dosdall
108f	Methods ..... (3 cred.; jr., sr.; prereq., 1 or 10, Bact. 51)	Ar	Ar	Ar	Mr. Leach
110w	Principles of Pathology ..... (3 cred.; jr., sr.; prereq., 1 or 10, Bact. 51)	III, IV	MWF	1,2PP	Mr. Stakman
111w	Diseases of Field Crops ..... (3 cred.; jr., sr.; prereq., 1 or 10)	VI, VII	MWF	1,2PP	Mr. Stakman, Mr. Christensen
112	Diseases of Fruit Crops ..... (3 cred.; jr., sr.; prereq., 1 or 10)				Mr. Leach, Mr. Seal
113s	*Disease of Vegetable Crops* ..... (3 cred.; jr., sr.; prereq., 1 or 10)	*Not offered in 1924-25*			
114w	Advanced Forest Pathology ..... (3 cred.; jr., sr.; prereq., 1 or 10)	VIII, IX	TTh	1,2PP	Mr. Stakman, Mr. Leach, Mr. Nelson

CHEMISTRY

Major Adviser: I. W. Geiger

REQUIREMENTS OF THE DEPARTMENT

For a teacher's certificate.—Major recommendation: Courses 6, 7, 8, or 9, 10; 12, 13; 20, 21; 35, 36.

Minor recommendation: Courses 6, 7, 8, or 9, 10; 12, 13; 20, 21; or 27 and 6 additional credits in chemistry.

For teacher's certificate in natural science see Specialized Curriculum, Part I of Education Bulletin.

DIVISION OF GENERAL INORGANIC CHEMISTRY

No.	Title	Hour	Day	Room	Instructor
1f-2w†-3s	Gen. Inorg. Chemistry (for pre-med. and pre-dent.) ..... (12 cred.; pre-dent., pre-med.; no prereq.)				
	Sec. 1 Lect.	VI	MWF	225C	Mr. Reyerson
	2 Lab.	VI, VII	TTh	110C	Mr. Reyerson
		VIII, IX	TTh	110C	and assistants
4f-5w†	Gen. Inorg. Chemistry (for pre-med. and pre-dent.) ..... (8 cred.; pre-dent., pre-med. only; prereq., entrance cred. in chem.)				
	Sec. 1 Lect.	VI	MWF	100C	Mr. Stephens
	2 Lab.	VI, VII	TTh	210C	Mr. Stephens
		VIII, IX	TTh	210C	and assistants
6f-7w†-8s	Gen. Inorg. Chemistry ..... (15 cred.; those entering without chem.; no prereq.)				
	Lect.	II	MWF	225C	Miss Cohen
	Lab.	I, II, III	ThS	210C	Miss Cohen and assistants
9f-10w†	Gen. Inorg. Chemistry ..... (10 cred.; all; prereq., entr. cred. in chem.)				
	Lect.	II	MWF	100C	Mr. Sneed
	Lab.	I, II, III	ThS	290C	Mr. Sneed and assistants
9w-10s†	Gen. Inorg. Chemistry ..... (See 9f-10w)				
	Lect.	IV	MWF	225C	Ar
	Lab.	VIII-IX	MWF	290C	Ar
11f	Qual. Chemical Anal. (for pre-med. and pre-dent) ..... (4 cred.; pre-med. and pre-dent. only; prereq., 3 or 5)				
	Lect.	IV	MWF	225C	Miss Cohen
	Lab.	VI, VII	MW	290C	Miss Cohen and assistants
11s	Qual. Chemical Anal. (for pre-med. and pre-dent.) ..... (See 11f)				
	Lect.	VI	MWF	100C	Mr. Stephens
	Sec. 1 Lab.	VI, VII	TTh	210C	Mr. Stephens
	2	VIII, IX	TTh	210C	

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

No.	Title	Hour	Day	Room	Instructor
12f-13w†	Qual. Chemical Anal. ..... (10 cred.; all; prereq., 8 or 10)				
	Lect. (fall)	I	TThS	115C	Mr. Maynard
	Lab.	VI, VII, VIII	MW	290C	Mr. Maynard
	Lect. (winter)	I	TTh	115C	Mr. Maynard
	Lab.	VI, VII, VIII	MWF	290C	Mr. Maynard
12s-(13f)†	Qual. Chemical Anal. ..... (See 12f-13w)				
	Lect.	II	MWF	100C	Mr. Sneed
	Lab.	I, II, III	ThS	290C	Mr. Sneed and assistants
(12s)-13f†	Qual. Chemical Anal. ..... (See 12f-13w)				
	Lect.	VI	MW	111C	Mr. Kirk
	Lab.	VII, VIII, IX	MW	290C	
		VI, VII, VIII	F		
101s	History of Chemistry ..... (2 cred.; sr., grad.; prereq., 36)	IV	TS	Ar	Miss Cohen
102w	Adv. Qual. Chemical Anal. ..... (2 or 3 cred.; jr., sr., grad.; prereq., 21, 36)	Ar	Ar	290C	Mr. Sneed
103f,104w,105s	Adv. Inorg. Chemistry ..... (3 to 9 cred.; jr., sr., grad.; prereq., 21, 36)	IV	MWF	111C	Mr. Sneed

DIVISION OF ANALYTICAL CHEMISTRY

20w-21s	Quant. Analysis ..... (10 cred.; soph., jr., sr.; prereq., 12-13)				
	Lect.	VI	M	325C	Mr. Geiger
	Rec.	VI	F	315C	
	Lab.	VII-IX	MF	310C	
		VI-IX	W	310C	
27f,w	Quant. Analysis (for pre-med.) ... (4 cred.; pre-med. only; prereq., 11 or 13)				
	Lect.	VI	M	325C	Mr. Geiger(f), Mr. Sarver(w)
	Sec. 1 Rec.	VI	W	315C	
	2	VI	F	315C	
	Sec. 1 Lab.	VII, VIII, IX	MW	310C	
		VI, VII, VIII, IX	F	310C	
	2	VII, VIII, IX	MF	310C	
		VI, VII, VIII, IX	W	310C	
123f,124w,125s	Adv. Analytical Chemistry ..... (3 to 9 cred.; jr., sr., grad.; prereq., 21 or 27)				
	Lect.	VI	T	315C	Mr. Brinton
	Lab.	VII-IX	T	310C	
		VI-IX	Th	310C	

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

( ) Numbers in parentheses do not refer to the year 1924-25. See Course Numbering, page 104, S. L. and A. bulletin.

No.	Title	Hour	Day	Room	Instructor
127f-128w-129s	Chemistry of Rare Elements ..... (9 cred.; jr., sr., grad.; prereq., 21)	Ar	Ar	Ar	Mr. Brinton
	DIVISION OF ORGANIC CHEMISTRY				
35f-36w†-37s	Organic Chemistry ..... (10 or 15 cred.; jr., sr.; prereq., 15 cred. in college chem.)				
	Lect.	III	MWF	325C	Mr. Hunter
	Rec.	III	Th	111C	Mr. Lauer
	Lab.	VI-VIII	TTh	390C	Mr. Lauer
131s	Organic Analysis ..... (3 cred.; jr., sr.; prereq., 21, 37)				
	Lect.	Ar	Ar	ArC	Mr. Lauer
	Lab.	Ar	Ar	390C	Mr. Lauer
132w	Rise and Development of Organic Chemistry	For program see bulletin of the School of Chemistry			
133f	Reagents in Organic Chemistry ... (3 cred.; jr., sr.; prereq., 37)	II	MWF	325C	Mr. Smith
138,139f,w,s	Adv. Organic Chemistry Lab. Work (4 to 10 cred.; jr., sr.; prereq., 37)	Ar	Ar	390C	Mr. Hunter
	DIVISION OF PHYSICAL CHEMISTRY				
140f-141w†-142s	Physical Chemistry ..... (9, 12, or 15 cred.; jr., sr., grad.; prereq., 2 yrs. col. chem., 1 yr. col. phys.)				
	Lect.	IV	MWF	325C	Mr. MacDougall
	Lab.	VI-VIII	F	15C, 117C	Mr. MacDougall
	Rec.	IV	S	115C	Mr. MacDougall
143f,w,	Physical Chemistry ..... (4 cred.; med. and biological students; prereq., 32)				
	Lect.	VI	TTh	225C	Mr. Henderson
		VI	F	325C	Mr. Henderson
	Sec. 1 Lab.	I-III	MW	15C	Mr. Henderson
	2	VII-IX	TTh	117C	Mr. Henderson
146f-147w-148s	Adv. Phys. Chem. ..... (9 or 12 cred.; jr., sr., grad.; prereq., 142s and calculus)	Ar	Ar	Ar	Mr. Henderson
149	Princ. of Colloidal Chemistry ..... (2 cred.; sr., grad.; prereq., 141)	Ar	Ar	Ar	Mr. Reyerson
150s	*Appl. of Colloidal Chemistry* ..... (2 cred.; sr., grad.; prereq., 141)	*Not offered in 1924-25*			
151	Radiochemistry ..... (2 cred.; sr., grad.; prereq., 141 or Physics 148w)	Ar	Ar	Ar	Mr. Henderson
152f,w,s	Radiochemistry Lab. ..... (cred. ar.; sr., grad.; to accompany 151)	Ar	Ar	Ar	Mr. Henderson

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

No.	Title	Hour	Day	Room	Instructor
156w	Appl. of Phys. Chem. to Org. Chem. (3 cred.; sr., grad.; prereq., 37 and 142)	Ar	Ar	ArC	Mr. Henderson

DIVISION OF TECHNOLOGICAL CHEMISTRY

161f-162w-163s	Food Analysis ..... (9 cred.; jr., sr., grad.; prereq., 20 and 21)				
	Lect.	IV	T	215C	Mr. Harding
	Lab.	VI, VII, VIII, IX	F	217C	Mr. Harding
		II, III	F		

AGRICULTURAL BIOCHEMISTRY

COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

Introductory Courses

No.	Title	Hour	Day	Room	Instructor
3f,w,s,su	Types of Carbon Compounds ..... (6 cred.; soph., jr., sr.; prereq., chem. 10 cred.)	I	MTWThFS	201Ch	Mr. Sandstrom
7f,su-8w,su	General Agricultural Biochemistry (10 cred.; soph., jr., sr.; prereq., chem. 10 cred.)				
	Lect.	II	TThS	201Ch	Mr. Willaman
	Lab.	VI, VII, VIII	MW	203Ch	Mr. Haag
7w-8s	General Agricultural Biochemistry (10 cred.; soph., jr., sr.; prereq., chem. 10 cred.)				
	Lect.	III	TThS	201Ch	Mr. Willaman
	Lab.	VI, VII, VIII	MF	203Ch	Mr. Haag
15f,s	Principles of Animal Nutrition ... (3 cred.; jr., sr.; prereq., 7-8)	III	MWF	3St	Mr. Palmer

Advanced Courses

101f-102w	Agricultural Quantitative Analysis (6 cred.; jr., sr.; prereq., 7-8)	VI, VII, VIII	MWF	105Ch	Mr. Morrow
103s	Dairy Chemistry ..... (5 cred.; jr., sr.; prereq., 7-8)				
	Lect.	VI	MWF	251Ch	Mr. Palmer
	Lab.	VII, VIII, IX	MWF	7Ch	Mr. Palmer
106f	Chem. Tech. of Agricultural Products ..... (5 cred.; sr.; prereq., 101-102)	Ar	Ar	Ar	Mr. Bailey
108s	Chemistry of Wheat and Wheat Products ..... (3 cred.; jr., sr.; prereq., 7-8)	I	MWF	351Ch	Mr. Bailey
110s	Flour Laboratory Methods ..... (5 cred.; jr., sr.; prereq., same as 109)	VI, VII, VIII, IX	MWF	7Ch	Mr. Bailey
111f,su-112w,su	Phytochemistry ..... (6 cred.; sr.; prereq., biol. 9 cred., org. chem.)	III	MWF	201Ch	Mr. Gortner

No.	Title	Hour	Day	Room	Instructor
113f,su-114w,su-115s	Biochemical Laboratory Methods .. (6 cred.; sr.; prereq., quant. anal., parallel 111-112)	VI, VII, VIII	TTh	7Ch	Mr. Morrow
116w	Advanced Animal Nutrition ..... (2 cred.; jr., sr.; prereq., 15 or equiv.)	III	TTh	351Ch	Mr. Palmer, Miss Kennedy
117f,w,s,su	Laboratory Problems in Animal Nutrition ..... (3 to 5 cred.; jr., sr.; prereq., 116, permission of instructor)	Ar	Ar	Ar	Mr. Palmer, Miss Kennedy
118f,w,s,su	Laboratory Problems in Biochemistry ..... (3 or 5 cred.; sr.; prereq., 111-112, 113-114-115; or 103 or 110)	Ar	Ar	Ar	Ar

COMPARATIVE LITERATURE

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

COMPARATIVE PHILOLOGY

No.	Title	Hour	Day	Room	Instructor
101-102	*Science of Language* ..... (4 cred.; jr., sr., grad.; prereq., see note)	*Not offered in 1924-25*			
103	*Universal Language* ..... (2 cred.; jr., sr., grad.; prereq., see note)	*Not offered in 1924-25*			
105s	Life of Words ..... (2 cred.; jr., sr., grad.; prereq., see note)	VI	TTh	205F	Mr. Klaeber
108w	Comparative Phonetics ..... (3 cred.; jr., sr., grad.; prereq., see note)	Ar	Ar	Ar	Mr. Kroesch
109f-110w-111s†	History of German Lang. ..... (6 cred.; jr., sr., grad.; prereq., see note)	Ar	Ar	Ar	Mr. Klaeber
141f-142w-143s†	Hist. Gram. of Eng. Lang. ..... (6 cred.; jr., sr., grad.; prereq., see note)	Ar	Ar	Ar	Mr. Klaeber

NOTE.—Prerequisites for all courses, one of the following groups: (1) five years foreign language; four may be in high school and one in college; (2) two years foreign language in college; (3) 4 credits in Old English.

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

DRAWING AND DESCRIPTIVE GEOMETRY

COLLEGE OF ENGINEERING AND ARCHITECTURE

No.	Title	Hour	Day	Room	Instructor
41-42-43f,w,s	Technical Drawing ..... (6 cred.; all; no prereq.)				Mr. Myers, Mr. Cederberg
	Sec. 1	I, II	MWF	455C	
	2	III, IV	MWF		
	3	VIII, IX (f,w)	MWF		
		VIII, IX (s)	MTF		
44f,w,s	Lettering ..... (1 cred.; all; no prereq.)				Mr. Schuck, Mr. Levens
	Sec. 1	IV	T	217E	Ar
	2	II	Th	107E	
45f,w,s	Alphabets ..... (2 cred.; soph., jr., sr.; no prereq.)	II	TTh	217E	Mr. Schuck, Mr. Levens
47f-48w-49s	Drawing, Engraving, and Decoration ..... (9 cred.; jr., sr.‖; no prereq.)	II	MWF	208E	Mr. Kirchner

ECONOMICS

Major Adviser: G. W. Dowrie

REQUIREMENTS OF THE DEPARTMENT

For teacher's cerificate.—Major recommendation in commercial subjects, Economics 1-2, 5, 6-7, 25-26, and 15 credits from the following group: 90, 143-144, 161, 191-192; Political Science 51-52-53; Geography 11-12.

For teacher's certificate in social studies see specialized curriculum.

No.	Title	Hour	Day	Room	Instructor
1f-2w†	Introduction to Economics ..... (10 cred.; fr. pre-bus. and major in economics; no prereq.) (Sections limited to 25 students each)				Mr. Black and others
	Lect.	III	TTh	OLAud	
	Sec. 1	I	TThS	213B	
	2	I	TThS	25F	
	3	II	TThS	202B(f) 213B(w)	
	4	II	TThS	25F	
	5	I	MWF	25F	
	6	II	MWF	213B(f) 202B(w)	
	7	III	MWF	102B	
	8	IV	MWF	15F	
	9	IV	MWF	6F	
	10	V	MWF	109B	
	11	VI	MWF	109B	
	12	VI	MWF	213B(f) 202B(w)	
	13	VII	MWF	213B(f) 3F(w)	
	14	VII	MWF	209B	
	15	VIII	MWF	202B	
	16	VIII	MWF	213B	

‖ Not a Senior College course. Not open to sophomores under General Information, section 43, S. L. and A. bulletin.

No.	Title	Hour	Day	Room	Instructor
(1s)-2f†*	Introd. to Economic History ..... (See 1f-2w) (Sections limited to 25 students each)				Mr. Taylor and others
	Lect.				
	Sec. 1	III	TThS	202B	
	2	I	MW	213B	
	3	II	MW	209B	
		V	MW	202B	
5s	The Mechanism of Exchange ..... (5 cred.; fr., pre-bus. and majors in economics; prereq., 1-2) (Sections limited to 25 students each)				Mr. Dowrie and others
	Lect.				
	Sec. 1	III	TTh	LitTh	
	2	I	TThS	202B	
	3	I	TThS	102B	
	4	II	TThS	102B	
	5	II	TThS	213B	
	6	III	MWF	25F	
	7	IV	MWF	6F	
	8	IV	MWF	15F	
	9	V	MWF	202B	
	10	VI	MWF	213B	
	11	VI	MWF	202B	
	12	VII	MWF	102B	
		VIII	MWF	202B	
6f-7w†*	Principles of Economics ..... (10 cred.; soph., jr., sr.; no prereq.) (Sections limited to 25 students each)				Mr. Hansen and others
	Lect.				
	Sec. 1	I	Th	LitTh	
	2	I	TWFS	124F	
	3	II	TThFS	OLc	
	4	III	TThFS	25F	
	5	IV	MWFS	109B	
	6	VI	MWThF	OLc	
	7	VII	MWThF	202B	
	8	III	TThFS	109B	
	9	V	MWFS	209B	
		VI	MWThF	212F	
(6s)-7f†‡	Principles of Economics ..... (See 6f-7w) (Sections limited to 25 students each)				Mr. Hansen and others
	Lect.				
	Sec. 1	III	F	LitTh	
	2	I	TThFS	6F	
	3	II	TThFS	209B	
	4	IV	MTWS	209B	
	5	VI	MWThF	25F	
		VIII	MWThF	102B	

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

* Second quarter of Introduction to Economic History as given in 1923-24. Offered for the last time.

( ) Numbers in parentheses do not refer to the year 1924-25. See Course Numbering, page 104, S. L. and A. bulletin.

‡ Second quarter of Course 3-4 as offered in 1923.

No.	Title	Hour	Day	Room	Instructor
6w-7s†	Principles of Economics ..... (See 6f-7w) (Sections limited to 25 students each)				Mr. Hansen and others
	Lect.	II	T	LitTh	
	Sec. 1	I	TThFS	209B(w) 6F(s)	
	2	I	TThFS	109B(w) OLb(s)	
	3	II	MWFS	6F	
	4	II	MWFS	321F	
	5	III	MWFS	102F	
	6	IV	MWFS	25F	
	7	V	MWFS	102B	
	8	VI	MWThF	25F	
	9	VI	MWThF	322F	
	10	VII	MWThF	25F	
	11	VII	MWThF	15F	
6s-(7f)†§	Principles of Economics ..... (See 6f-7w) (Sections limited to 25 students each)				Mr. Hansen and others
	Lect.	III	W	MuAud	
	Sec. 1	I	TThFS	25F	
	2	II	TThFS	109B	
	3	III	TThFS	202B	
	4	IV	MWFS	109B	
	5	VI	MWThF	OLc	
	6	VII	MWThF	209B	
14	Elements of Statistics ..... (5 cred.; soph.; prereq., 6-7)				Mr. Mudgett and others
	Lect.	III	MW	OLAud	
	Sec. 1	I, II	MW	301B	
	2	I, II	ThS	301B	
	3	III, IV	TS	301B	
	4	VI, VII	WF	301B	
	5	VI, VII	TTh	301B	
	6	VIII, IX	WF	301B	
	7	VIII, IX	TTh	301B	
	8	VI, VII	M	301B	
		I, II	F	301B	
	9	VIII, IX	M	301B	
		III, IV	F	301B	

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

§ Open with permission to third quarter pre-legal freshmen.

( ) Numbers in parentheses do not refer to the year 1924-25. See Course Numbering, page 104, S. L. and A. bulletin.

No.	Title	Hour	Day	Room	Instructor
25f-26w†	Principles of Accounting				Mr. Heilman and others
	(8 cred.; soph., jr., sr.; prereq., 6-7 or concurrently with 6-7)				
	(Sections limited to 30 students each)				
	Sec. 1 Lect.	I	MWF	301B	
	2	I	TThS	301B(f)	
	3	II	MWF	301B	
	4	II	TThS	301B	
	5	III	MWF	301B(f)	
	6	III	TThS	301B	
	7	IV	MWF	301B	
	8	V	MWF	301B	
	9	VI	MWF	301B	
	10	II	MWF	303B(f)	
	(Sections limited to 18 students each)				
	Sec. 1 Lab.	VI, VII	M	303B	
	2	I, II	T	303B	
	3	VI, VII	W	303B(f)	
	4	VI, VII	Th	303B	
	5	VI, VII	F	303B	
	6	VII, VIII	M	301B	
	7	VII, VIII	T	301B(f)	
	8	VII, VIII	W	301B	
	9	VII, VIII	Th	301B	
	10	VII, VIII	F	301B(f)	
	11	VIII, IX	T	303B	
	12	VIII, IX	W	303B(f)	
	13	III, IV	T	303B	
	14	II, III	Th	303B	
	15	III, IV	S	303B	
	16	III, IV	F	303B	
25w-26s†	Principles of Accounting ..... (See 25f-26w)				Mr. Heilman and others
	(Sections limited to 30 students each)				
	Sec. 1 Lect.	II	MWF	303B	
	2	I	TThS	301B(w) 303B(s)	
	3	III	MWF	301B(w) 303B(s)	
	4	IV	MWF	209B(w) 303B(s)	
	5	VI	MWF	213B(w)	
	(Sections limited to 18 students each)				
	Sec. 1 Lab.	VI, VII	T	303B	
	2	III, IV	W	303B(w) 301B(s)	
	3	VIII, IX	M	303B	
	4	VIII, IX	W	303B	
	5	II, III	S	104B	
	6	VII, VIII	F	301B(w) 303B(s)	
	7	VI, VII	W	303B	
	8	VII, VIII	T	301B(w)	

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

No.	Title	Hour	Day	Room	Instructor
27s	Principles of Accounting	I	TThS	209B	Mr. Heilman
	(3 cred.; soph., jr., sr.; prereq., 25-26. Req. of all students who intend to specialize in accounting)	VI	MWF	209B	and others
62w	Social Insurance	III	TThS	102B	Mr. Graves
	(3 cred.; jr., sr.; prereq., 6-7)				
72f	Economics of Transportation				
	(3 cred.; jr., sr.; prereq., 6-7)				
	(Sections limited to 30 students each)				
	Sec. 1	VI	MWF	202B	Mr. Cummings
	2	VII	MWF	109B	
72s	Economics of Transportation	VII	MWF	109B	Mr. Cummings
	(See 72f)				
	(Limited to 30 students)				
74s	Transportation Problems	VI	MWF	102B	Mr. Cummings
	(3 cred.; jr., sr.; prereq., 72)				
85f	Principles of Marketing				
	(3 cred.; jr., sr.; prereq., 6-7)				
	Lect.	I	F	209B	Mr. Vaile
	Sec. 1	I	TTh	202B	
	2	I	MW	209B	
	3	III	ThS	213B	
	4	IV	WF	213B	
85s	Principles of Marketing				Mr. Vaile
	(See 85f)				
	Lect.	I	F	109B	
	Sec. 1	I	TTh	109B	
	2	I	MW	109B	
	3	III	ThS	213B	
	4	IV	WF	213B	
90s	Economics of Consumption	See College of Agriculture bulletin			
103f-104w†	Value and Distribution	VII	MWF	102B	Mr. Garver,
	(6 cred.; jr., sr., grad.; prereq., 6-7)				Mr. Working
105s	History of Economic Ideas	VIII	MWF	102B	Mr. Garver
	(3 cred.; jr., sr., grad.; prereq., 103-104)				
106s	Land Economics	2:30-4:00	TTh	202B	Mr. Black
	(5 cred.; sr., grad.; prereq., 6-7)				
107††	Land Tenure	See College of Agriculture bulletin			
108w	Marketing Organization; Agricultural Products	VIII	MWF	102B	Mr. Price
	(3 cred.; jr., sr.; prereq., 85)				
113w-114s	Theory of Statistics	I	MWF	213B	Mr. Mudgett
	(6 cred.; jr., sr., grad.; prereq., 14)				

† The entire course must be completed before credit is received for any quarter.
†† Given at University Farm.

No.	Title	Hour	Day	Room	Instructor
143f-144w†	The Financial System ..... (8 cred.; jr., sr., grad.; prereq., 6-7)				Mr. Dowrie and others
	Lect.	IV	T	LitTh	
	Sec. 1	VIII	MTW	209B	
	2	II	MWF	9F	
	3	III	MWF	202B	
	4	II	TThS	OLb	
	5	III	TThS	209B	
	6	VI	MWF	209B	
	7	III	MWF	209½F	
	8	II	MWF	25F	
143w-144s†	The Financial System ..... (See 143f-144w)				Mr. Dowrie, Mr. Farmer
	Lect.	IV	S	202B	
	Sec. 1	III	MWF	227F	
	2	IV	MWF	110F	
	3	VII	MWF	213B	
149w	Business Cycles ..... (3 cred.; jr., sr., grad.; prereq., 143-144, 155)				Mr. Ebersole
	Lect.	IX	MT	209B	
	Sec. 1	IX	W	209B	
	2	IX	F	209B	
	3	IX	W	202B	
149s	Business Cycles ..... (See 149w)				
	Lect.	VIII	MT	209B	Mr. Ebersole
	Sec. 1	VIII	W	209B	
	2	VIII	F	209B	
	3	IV	F	209B	
153w	Trust Problem ..... (3 cred.; jr., sr., grad.; prereq., 155)	II	MWF	213B	Mr. Stehman
154s	Public Utilities ..... (3 cred.; jr., sr., grad.; prereq., 155, or Pol. Sci. 159)	I	MWF	102B	Mr. Reighard
155s	Corporation Finance ..... (3 cred.; jr., sr.; prereq., 143-144)				Mr. Stehman
	Lect.	III	Th	OLAud	
	Sec. 1	II	MW	109B	
	2	III	MW	102B	
	3	III	MW	202B	
	4	IV	MW	209B	
	5	VI	TTh	102B	
	6	VII	TTh	102B	
161f	Labor Problems and Trade Unionism ..... (3 cred.; jr., sr., grad.; prereq., 6-7)				Mr. Hansen
	Lect.	IV	MW	202B	
	Sec. 1	IV	F	202B	
	2	IV	F	209B	
	3	I	F	213B	

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

No.	Title	Hour	Day	Room	Instructor
161w	Labor Problems and Trade Unionism ..... (See 161f)	III	TThS	202B	Mr. Hansen
162w	Labor Movement in America and England ..... (3 cred.; jr.. sr., grad.; prereq., 161)	IV	MWF	202B	Mr. Hansen
169s	Labor and Socialist Movement in Europe ..... (3 cred.; jr., sr., grad.; prereq., 161)	IV	MWF	202B	Mr. Hansen
176f	Commercial Policies ..... (3 cred.; jr., sr., grad.; prereq., 6-7)	I	MWF	202B	Mr. Blakey
176s	Commercial Policies ..... (See 176f)	I	MWF	202B	Mr. Blakey
191f-192w†	Public Finance ..... (6 cred.; jr., sr., grad.; prereq., 6-7)				
	Lect.	III	M	LitTh	Mr. Blakey
	Sec. 1	II	WF	109B	
	2	III	WF	209B	
	3	IV	WF	108F	
193s	State and Local Taxation ..... (3 cred.; jr., sr., grad.; prereq., 191-192)	III	MWF	209B	Mr. Blakey

ENGLISH

Major Advisers: C. W. Nichols, Rewly B. Inglis

REQUIREMENTS OF THE DEPARTMENT

For teacher's certificate in English.—

a. English as the major subject: English-Rhetoric A-B-C; English 6 and 8, either 44-45 or 62, and six additional credits from Courses 44-45, 50, 62, and courses numbered 100 and above; Rhetoric 11-12 or 18-19 and 20; Public Speaking 41-42-43 or 45-46.

b. English as the minor subject: English-Rhetoric A-B-C; English 6 and 8 and either 44-45 or 62; Rhetoric 11-12 or 18-19 and 20.

c. Public Speaking as the minor subject: a student must satisfy the department that he is actively interested in some phase of public speaking either as a member of a literary or debating society or a participant in a contest or dramatic performance, or as a lecturer; he must complete the following courses: English-Rhetoric A-B-C; Public Speaking 41-42-43, and 9 additional hours in public speaking.

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

ENGLISH

No.	Title	Hour	Day	Room	Instructor
A-B-C	Freshman English (See Rhetoric)				
1f-2w-3s*	English Survey				
	(9 cred.; soph., jr., sr.; prereq., 9 cred. in rhetoric)				
	Sec. 1 Lect.	II	M	MuAud	
	Rec.	II	WF	114F	
	2 Lect.	II	M or		
		IV	T	MuAud	
	Rec.	III	WF	114F	
	3 Lect.	VII	M	MuAud	
		VII	TTh	107F	
6f	Chaucer				
	(4 cred.; soph., jr., sr.; prereq., A-B-C or equiv.†)				
	Sec. 1	II	TWThS	205F	Miss Carr
	2	V	MTWF	204F	Mr. Malone
6w	Chaucer				
	(See 6f)				
	Sec. 1	II	TWThS	205F	Mr. Ruud
	2	V	MTWF	204F	Mr. Malone
6s	Chaucer				
	(See 6f)				
	Sec. 1	II	TWThS	204F	Mr. Malone
	2	V	MTWF	204F	Mr. Ruud
8f	Shakespeare				
	(4 cred.; soph., jr., sr.; prereq., A-B-C or equiv.†)				
	Sec. 1	I	TThFS	204F	Mr. Nichols
	2	VI	MTThF	204F	Mr. van Winkle, Mr. Raysor
8w	Shakespeare				
	(See 8f)				
	Sec. 1	I	TThFS	204F	Mr. Dunn
	2	VI	MTThF	204F	Mr. Hillhouse, Mr. van Winkle
8s	Shakespeare				
	(See 8f)				
	Sec. 1	I	TThFS	204F	Mr. Raysor
	2	VI	MTThF	124F	Mr. Hillhouse, Mr. van Winkle
40	*Bible as Literature*	*Not offered in 1924-25*			
	(3 cred.; soph., jr., sr.; prereq., A-B-C or equiv.†)				

† Course A-B-C, as a prerequisite, has for its equivalent any two quarters of English 1-2-3 and 9 credits in rhetoric.

*** Students may enter any quarter.**

No.	Title	Hour	Day	Room	Instructor
42s	Browning ..... (3 cred.; soph., jr., sr.; prereq., A-B-C or equiv.† Not open to students with credit for 41)				
	Lect.	IV	MW	301F	Mr. Burton
	Sec. 1 Rec.	II	F	311½F	
	2	III	F	311½F	
	3	III	Th	305F	
	4	II	T	207F	
	5	IV	T	311½F	
	6	VI	T	306F	
44f-45w*	American Literature ..... (6 cred.; soph., jr., sr.; prereq., A-B-C or equiv.†)	IV	MWF	301F	Mr. Moore
44w-45s*	American Literature ..... (See 44f-45w)	VI	MWF	301F	Mr. Spencer
50f	Old English ..... (4 cred.; jr., sr.; prereq., A-B-C or equiv.†)	III	TThFS	205F	Mr. Ruud
51	*Spenser* ..... (3 cred.; jr., sr.; prereq., A-B-C or equiv.†)	*Not offered in 1924-25*			
53f	Seventeenth-Century Lyrists ..... (4 cred.; jr., sr.; prereq., A-B-C or equiv.†)	III	MTThF	204F	Mr. Moore
58f-59w*	Nineteenth-Century Prose ..... (6 cred.; jr., sr.; prereq., A-B-C or equiv.†)	II	TThS	204F	Mr. Beach
60w	History of English Language ..... (2 cred.; jr., sr.; prereq., 50)	VI	TTh	205F	Mr. Klaeber
61s	Present-Day English ..... (3 cred.; soph., jr., sr.; prereq., A-B-C or equiv.†)	I	TThS	114F	Mr. Malone
62f	Milton ..... (4 cred.; jr., sr.; prereq., A-B-C or equiv.†)	VII	MTWF	204F	Mr. van Winkle
62w	Milton ..... (See 62f)	VII	MTWF	204F	Mr. Raysor
64	*Bacon* ..... (3 cred.; jr., sr.; prereq., A-B-C or equiv.†)	*Not offered in 1924-25*			
66s	English Novel ..... (4 cred.; jr., sr.; prereq., A-B-C or equiv.†)				
	Lect.	III	MWF	301F	Mr. Burton
	Sec. 1 Rec.	IV	T	311F	
	2	III	T	311F	
	3	IV	S	209½F	
	4	III	Th	311F	
70f	Elizabethan Drama ..... (4 cred.; jr., sr.; prereq., 8)	VII	MTWF	204F	Mr. Spencer
101f	Middle English ..... (2 cred.; jr., sr., grad.; prereq., 6 and 50)	VI	TTh	205F	Mr. Klaeber

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

† A-B-C, as a prerequisite, has for its equivalent any two quarters of English 1-2-3 and 9 credits in rhetoric.

No.	Title	Hour	Day	Room	Instructor
103s	Beowulf ..... (3 cred.; jr., sr., grad.; prereq., 50 and either 6 or 8)	VI	MWF	205F	Mr. Klaeber
105-106†	*Eighteenth-Century Poetry* ..... (6 cred.; jr., sr., grad.; prereq., ‡)	*Not offered in 1924-25*			
107w-108s†	Eighteenth-Century Prose ..... (6 cred.; jr., sr., grad.; prereq., ‡)	VII	MWF	301F	Mr. Moore
109f-110w†	Romantic Poets ..... (6 cred.; jr., sr., grad.; prereq., ‡)	III	TThS	204F	Mr. Beach
111-112†	*Seventeenth-Century Prose* ..... (6 cred.; jr., sr., grad.; prereq., ‡)	*Not offered in 1924-25*			
123f-124w-125s†	Victorian Novelists ..... (9 cred.; jr., sr., grad.; prereq., ‡)	4 to 6 o'clock	T	205F	Mr. Beach
129s	Modern Drama ..... (4 cred.; jr., sr., grad.; prereq., 8, and one other course numbered above 5)	II	MWThF	301F	Mr. Burton
133w	Ballads ..... (3 cred.; jr., sr., grad.; prereq., ‡)	III	MWF	205F	Mr. Ruud
136s	Advanced Shakespeare ..... (4 cred.; jr., sr., grad.; prereq., grade of B in Eng. 8)	I	TThFS	205F	Mr. van Winkle
140s	Advanced Chaucer ..... (4 cred.; jr., sr., grad.; prereq., 6, and one other course numbered above 5§)	II	TWThS	205F	Mr. Ruud
141-142-143†	Historical Grammar ..... (6 cred., sr., grad.; prereq., see ‡)	Ar	Ar	Ar	Mr. Klaeber
146f-147w†	Metrical Romances ..... (6 cred., jr., sr., grad.; prereq., 6, and one other course numbered above 5)	VIII	MWF	205F	Mr. Malone
148-149†	*The Arthurian Romances* ..... (6 cred.; jr., sr., grad.; prereq., 6, and one other course numbered above 5)	*Not offered in 1924-25*			
150	*Victorian Poetry* ..... (4 cred.; jr., sr., grad.; prereq., see ‡)	*Not offered in 1924-25*			
151s	Recent Poetry ..... (4 cred.; jr., sr., grad.; prereq., see ‡)	III	TWThS	204F	Mr. Beach
152	*Pre-Elizabethan Drama* ..... (4 cred.; jr., sr., grad.; prereq., 8, and one other course numbered above 5)	*Not offered in 1924-25*			
155s	American Novel ..... (4 cred.; jr., sr., grad.; prereq., 44-45 and either 6 or 8)	VI	MTWF	204F	Mr. Moore

† The entire course must be completed before credit is received for any quarter.
‡ Courses 6 and 8, or either 6 or 8 and one other course numbered above 5.
§ Open without further prerequisites to students receiving B in English 6.

RHETORIC

No.	Title	Hour	Day	Room	Instructor
(Aw-Bs)-Cf	Freshman English ..... (15 cred.; all; no prereq.)				
	Lect.	III	W	LitTh	
	Rec.	II	MTThS	Ass'd on registration	
		III	MTThS		
		VI	MTThF		
		VIII	MTThF		
Af-Bw-Cs	Freshman English ..... (See (Aw-Bs)-Cf)				
	Lect.	II	M	MuAud	
	Rec.	I	TThFS	Ass'd on registration	
		II	TThFS		
	Lect.	IV	T	MuAud	
	Rec.	III	MWFS	Ass'd on registration	
		IV	MWFS		
	Lect.	VII	M	MuAud	
	Rec.	V	MTWF	Ass'd on registration	
		VI	TWThF		
		VII	TWThF		
		VIII	TWThF	(fall, winter)	
			MTThF	(spring)	
Aw-Bs-(Cf)	Freshman English ..... (See (Aw-Bs)-Cf)				
	Lect.	III	W	LitTh(w) Ar(s)	
	Rec.	II	MTThS	Ass'd on registration	
		III	MTThS		
		VI	MTThF		
		VIII	MTThF		
4f-5w-6s	Composition for Technical Students .(9 cred.; all; no prereq.)	I	MWF	311F	
		II	MWF	311F	
		III	(Chemists only) MWF		
		I	TThS	311F	
4w-5s-(6su)	Composition for Technical Students (9 cred.; all; no prereq.)	II	TThS	311F	
11f-12w*†	Description; Narration ..... (6 cred.; soph., jr., sr.; prereq., A-B-C, or 4-5-6)				
	Sec. 1	II	MWF	304F	Mrs. del Plaine
	2	IV	MWF	304F	Mr. Nichols
	3	VII	MWF	305F	Miss Chase
	4	II	TThS	305F	Mrs. Phelan
11w-12s*†	Description; Narration ..... (See 11f-12w)				
	Sec. 1	II	MWF	306F	Mr. Hillhouse
	2	II	TThS	306F	Mr. Sutcliffe
	3	VI	MWF	306F	Miss Gable

* Students may not receive credit for both 11-12 and 18-19.

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

( ) Numbers in parentheses do not refer to the year 1924-25. See Course Numbering, page 104, S. L. and A. bulletin.

No.	Title	Hour	Day	Room	Instructor
18f-19w*†	Types of Writing ..... (6 cred.; soph., jr., sr.; prereq., A-B-C or 4-5-6)				
	Sec. 1	III	TThS	304F	Mrs. del Plaine
	2	V	MWF	304F	Miss Armstrong
	3	VII	MWF	306F	Miss Macgregor
18w-19s*†	Types of Writing ..... (See 18f-19w)				
	Sec. 1	III	MWF	306F	Mrs. Phelan
	2	VII	MWF	304F	Miss Carr
20s	Informal Exposition ..... (3 cred.; soph., jr., sr.; prereq., 11-12 or 18-19)				
	Sec. 1	II	MWF	305F	Mrs. del Plaine
	2	IV	MWF	305F	Mr. Nichols
	3	VI	MWF	304F	Miss Chase
	4	VII	MWF	305F	Miss Macgregor
	5	II	TThS	305F	Mrs. Phelan
31w	Technical Writing	Consult College of Engineering bulletin			
63-64	*Studies in Structure and Style* .... (6 cred.; jr., sr.; prereq., 11-12 or 18-19, and 20)	*Not offered in 1924-25*			
67f-68w†	Imitative Writing ..... (6 cred.; jr., sr.; prereq.‡)	IV	MWF	304F	Miss Chase
69s	Short Story-Writing ..... (4 cred.; jr., sr.; prereq.‡)	IV	MTWF	304F	Ar
100w-101s	Versification ..... (6 cred.; jr., sr., grad.; prereq.§)	IV	TS and ar	305F	Mr. Nichols
111f-112w-113s	Essay-Writing ..... (9 cred.; jr., sr., grad.; prereq., 11-12 or 18-19, and 20)	III	MWF	304F	Mr. Sutcliffe
115-116-117	*Dramatic Technique* ..... (9 cred.; jr., sr., grad.; prereq.¶)	*Not offered in 1924-25*			
119f-120w-121s	Seminary in Writing ..... (9 cred.; sr., grad.; prereq.‖)	VI, VII	Th	304F	Mr. Thomas

PUBLIC SPEAKING

41f-42w-43s	Public Speaking ..... (9 cred.; soph., jr., sr.; prereq., Rhet. A-B-C, or 4-5-6)				
	Sec. 1	I	MWF	308F	Mr. Tannewitz
	2	II	MWF	308F	Mr. Tannewitz
	3	III	TThS	308F	Mr. Edwards
	4	VII	MWF	18Mu	Ar
	5	I	TThS	3F	Mr. Tannewitz
	6	II	TThS	308F	Mr. Tannewitz
41w-42s	Public Speaking ..... (6 cred.; see 41f-42w-43s)	VI	MWF	5F	Ar

* Students may not receive credit for both 11-12 and 18-19.

‡ Open to those who have taken either 11-12 or 18-19, and 20, and received a grade of B in each quarter.

¶ Open to those who have taken 1-12 or 18-19, and 20, and have taken or are taking English 129.

§ Open to those who have taken either 11-12 or 18-19, and 20, and have taken or are taking nine hours in the historical study of English poetry.

‖ Open with special permission to seniors and graduates. Prerequisites: 11-12 or 18-19, or 47-48, and 20, and nine additional credits in rhetoric.

No.	Title	Hour	Day	Room	Instructor
45f-46w	Public Speaking ..... (10 cred.; soph., jr., sr.; prereq., Rhet. A-B-C, or 4-5-6)				
	Sec. 1	IV	MTWFS	3F	Mr. Edwards
	2	VII	MTWThF	308F	Mr. Rarig
	3	VIII	MTWThF	308F	Ar
45s-(46f)	Public Speaking ..... (See 45f-46w)				
	Sec. 1	IV	MTWFS	3F	Mr. Edwards
	2	VI	MTWThF	301F	Ar
	3	VII	MTWThF	308F	Mr. Rarig
(45s)-46f	Public Speaking ..... (See 45f-46w)	VI	MTWThF	308F	Ar
45w-46s	Public Speaking ..... (See 45f-46w)	VI	MTWThF	308F	Ar
55f-56w-57s	Arg. and Debating ..... (9 cred.; jr., sr.; prereq., 41-42-43, or 45-46)	VII	MWF	102F	Ar
81f-82w-83s	Interp. Reading ..... (9 cred.; jr., sr.; prereq., 41-42-43, or 45-46)				
	Sec. 1	IV	MWF	308F	Mr. Rarig
	2	I	TThS	308F	Mr. Edwards
85f-86w-87s	Adv. Public Speaking ..... (9 cred.; jr., sr.; prereq., 41-42-43, or 45-46)	III	MWF	308F	Mr. Rarig
91f-92w-93s	Play Production ..... (9 cred.; jr., sr.; prereq., 81-82-83, Eng. 8)	VIII	MWF	18Mu	Ar
97f,w	Adv. Debate and Oratory ..... (3 cred.; jr., sr., prereq.††)	Ar	Ar	308F	Mr. Rarig

GEOLOGY AND MINERALOGY

REQUIREMENTS OF THE DEPARTMENT

For the teacher's certificate in geography.—Major recommendation: 28 credits as follows: (a) 10 credits from 29, or 1, and 3; (b) 114, and one other regional course required; (c) the remaining credits from 34, 115, 116, 118, 119, 51, 67.

Minor recommendation: 19 credits as follows: (a) 10 credits from 29 or 1, 30, 37; (b) 114, and one other regional course required.

GEOGRAPHY

Major Adviser: D. H. Davis

No.	Title	Hour	Day	Room	Instructor
(1s)-2f†	Introd. to Human Geography ..... (See 1f-2w)	I	TWThFS	2F	Mr.Davis
1f-2w†	Introd. to Human Geography ..... (10 cred.; 3d qu. fr., soph., jr., sr. by permission; no prereq.)	II	MWThFS	2F	

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

†† Open to intercollegiate debaters and orators.

( ) Numbers in parentheses do not refer to the year 1924-25. See Course Numbering, page 104, S. L. and A. bulletin.

No.	Title	Hour	Day	Room	Instructor
1w-2s†	Introd. to Human Geography ..... (See 1f-2w)	III	MTThFS	2F	Mr. Davis
1s-(2f)†	Introd. to Human Geography ..... (See 1f-2w)	I	TWThFS	2F	Mr. Davis
33w¶	Climatology ..... (3 cred.; soph., jr., sr.; no prereq.)	VI	WThF	2F	Mr. Davis
41f	Geography of Commercial Production ..... (5 cred.; soph. with permission, jr., sr.; no prereq.)	IV	MTWFS	2F	
41s	Geography of Commercial Production ..... (See 41f)	IV	MTWFS	2F	
62w	Trade Routes and Trade Centers (3 cred.; jr., sr.; prereq., 41 and 10 cred. in econ.)	IV	MWF	2F	
71f	Geography of North America .... (4 cred.; jr., sr.; prereq., 1-2 and 41, or 15 cred. in soc. sci. incl. 5 cred. in geog.)	VI	TWThF	2F	Mr. Davis
81s	Geography of Minnesota ..... (3 cred.; jr., sr.; prereq., 15 cred. in soc. sci. incl. 5 cred. in geog.) (Limited to 12. Permission of instructor necessary)	VI	WThF	2F	Mr. Davis

COURSES IN GEOLOGY

1f‡	General Geology ..... (5 cred.; 3d qu. fr., soph., jr., sr.; prereq., course in chem.)				
	Sec. 1	I	TWThFS*	210P	Mr. Thiel
	2	III	MTThFS*	110P	Mr. Emmons
	3	VII	MTWThF*	110P	Mr. Allison
1w‡	General Geology ..... (See 1f)				
	Sec. 1	II	MWThFS*	210P	Ar
	2	IV	MTWFS*	110P	Ar
1s§	General Geology ..... (See 1f)	III	MTThFS*	110P	
4s	Geology of Minnesota ..... (5 cred.; soph., jr., sr.; prereq., Geol. 1)	IV	MTWFS	110P	Mr. Thiel
9f§	Historical Geology ..... (5 cred.; soph., jr., sr.; prereq., 1)	III	MTThFS*	200aP	Ar
9w§	Historical Geology ..... (See 9f)	VII	MTWThF*	110P	Ar
9s§	Historical Geology ..... (See 9f)	I	TWThFS*	210P	Ar
10w§	Economic Geology ..... (5 cred.; soph., jr., sr.; prereq., 1)	III	MTThFS*	110P	Mr. Emmons

¶ Not open to those who have had Course 1-2.

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

( ) Numbers in parentheses do not refer to the year 1924-25. See Course Numbering, page 104, S. L. and A. bulletin.

* Additional hour of laboratory to be arranged.

‡ Course 1 may be followed by 4, 9, 10, 11 to satisfy the Junior College requirements for science.

§ Students registering for this course should have either Wednesday or Thursday afternoon free for field excursions.

No.	Title	Hour	Day	Room	Instructor
10s§	Economic Geology ..... (See 10w)	II	MWThFS*	200aP	
11f§	Elements of Paleontology ..... (5 cred.; soph., jr., sr.; prereq., 1)	II	MWThFS	105P	Mr. Stauffer
15s¶	Minerals and Rocks ..... (1 cred.; jr., sr.; prereq., 1 or 29)	Ar	Ar	100P	Mr. Gruner
23w**	Elem. of Mineralogy ..... (Soph., jr., sr.; prereq., course in chem.)	(See Mines bulletin for other sections)			
	Lect.	II	WF	110P	Mr. Gruner
	Lab.	III	WF	100P	
24s**	Elem. of Mineralogy ..... (See 23w)				
	Lect.	II	MWF	110P	Mr. Gruner
	Rec.	IX	T		
	Sec. 1 Lab.	VII-VIII	M	100P	
		VI-VII	T		
	2 Lab.	III-IV	M		
		VII-VIII	F		
25f**	Elem. of Mineralogy ..... (See 23w)				
	Lect.	III	MWF	Ar	Mr. Gruner
	Rec.	VIII	F		
	Sec. 1 Lab.	VI-VII	M	100P	
		VI-VII	W		
	2 Lab.	VII-VIII	T		
		VI-VII	F		
27s¶	Outlines of Mineralogy ..... (1 cred.; jr., sr.; no prereq.)	Ar	Ar	100P	Mr. Gruner
29f	General Physiography ..... (5 cred.; soph., jr., sr.; no prereq.)	III	MTThFS	210P	Ar
61f	Blowpipe Analysis ..... (3 cred.; jr., sr.; prereq., 25)	Consult Mines program			
65f	Crystallography ..... (3 cred.; jr., sr.)	Ar	Ar	100P	Mr. Gruner
67w	Mineralogy of Chemical Materials (3 cred.; jr., sr.; prereq., Chem., 5 cred.)	Consult Chemistry program			Mr. Brown
73f	Economic Geology ..... (3 cred.; jr., sr.; prereq., 25)	VI	MWF	110P	Mr. Schwartz
85s	Field Work in Northern Minnesota (6 cred.; jr., sr.; prereq., 9, 10, or 11)	Ar	Ar	Ar	Mr. Gruner, Mr. Thiel
91f-92w-93s	Index Fossils of North America .. (9 cred.; jr., sr.; prereq., 9, 10, or 11)				
	Lect.	I	F	105P	Mr. Stauffer
	Lab.	VI, VII	MW	105P	Mr. Stauffer

* Additional hour of laboratory to be arranged.

** 10 credits after completion of 25f.

§ Students registering for this course should have either Wednesday or Thursday afternoon free for field excursions.

¶ Does not count as a Senior College course.

No.	Title	Hour	Day	Room	Instructor
101f	Sedimentation ..... (3 cred.; jr., sr., grad.; prereq., 23-24-25)	Ar	Ar	Ar	Mr. Allison
105f	Rock Study ..... (3 cred.; jr., sr., grad.; prereq., 24)				
	Lect.	VI	TTh	110P	Mr. Grout
	Sec. 1 Lab.	VII, VIII	T	200P	
	2	VII, VIII	Th	200P	
106w	Petrography ..... (3 cred.; jr., sr., grad.; prereq., 105)	VI, VII	MF	200P	Mr. Grout
107f-108w-109s	Paleontologic Practice ..... (9 cred.; jr., sr., grad.; prereq., 91-92-93)	Ar	Ar	105P	Mr. Stauffer
111f	Ore Deposits ..... (3 cred.; sr., grad.; prereq., 9, 10, or 11, and 105)	I	TThS	110P	Mr. Emmons
112w	Geology of Petroleum ..... (3 cred.; sr., grad.; prereq., 111)	I	TThS	110P	Mr. Emmons
113s	Prob. in Ore Deposits ..... (3 cred.; sr., grad.; prereq., 112)	VI-IX	Th	104P	Mr. Emmons
124w-125s	Struct. and Met. Geol. ..... (6 cred., jr., sr., grad.; prereq., 9, 10, or 11, and 105)	VI	MWF	200aP	Mr. Schwartz
127f	Geol. of Lake Sup. Region ..... (3 cred.; jr., sr., grad.; prereq., 124-125)	Ar	Ar		Mr. Thiel
131f-132w-133s	Adv. Petrology ..... (9 cred.; jr., sr., grad.; prereq., 106)				
	Lect.	III	TThS	200P	Mr. Grout
	Lab.	Ar	Ar	200P	
137w	Testing Econ. Minerals ..... (3 cred.; jr., sr., grad.; prereq., 9, 10, or 11, and 105)				
	Lect.	VI	T	200P	Mr. Grout
	Lab.	VIII, IX	MW	200P	Mr. Thiel
140w-141s	Applied Petrography ..... (6 cred.; jr., sr., grad.; prereq., 131)				
	Lect.	II	F	200P	Mr. Grout
	Lab.	I, II	MW		
144w-145s	Inter. of Geologic Maps ..... (6 cred.; jr., sr., grad.; prereq., 9, 10, or 11, and 124)	VII-IX	TTh	104P	Mr. Allison
149s	Methods of Field Geology ..... (See 150s)	Ar	Ar	Ar	Mr. Schwartz
150s	Field Geol. (Black Hills) ..... (Cred. ar.; jr., sr., grad.; see members of department)	Ar	Ar	Ar	Mr. Emmons, Mr. Schwartz
151f-152w-153s	Adv. General Geology ..... (9 cred.; jr., sr., grad.; prereq., 9, 10, or 11)	III	MWF	200aP	Mr. Stauffer
166w-167s	Mineralography ..... (6 cred.; sr., grad.; prereq., 111)	Ar	Ar	103P	Mr. Schwartz

GERMAN

Major Adviser: C. Schlenker

For a teacher's certificate.—Major recommendation: Courses 50-51-52, 56-57-58, 62 or 63, 64, 66, 67, 108, and nine additional credits in courses numbered above 50. Course 65 may be substituted for either Course 66 or Course 67.

Minor recommendation: Courses 50-51-52, 108, and eight additional credits in courses numbered above 50.

Credit may be earned for either Course 62 or Course 63, but not for both courses.

No.	Title	Hour	Day	Room	Instructor
1f	Beginning A				
	(5 cred.; all; no prereq.)				
	Sec. 1	I	TWThFS	207F	Ar
	2	I	TWThFS	209F	Ar
	3	I	TWThFS	209½F	Ar
	4	IV	MTWFS	207F	Ar
	5	IV	MTWFS	212F	Ar
	6	IV	MTWFS	209F	Ar
	7	VI	MTWThF	207F	Ar
	8	VI	MTWThF	209F	Ar
	9	VI	MTWThF	209½F	Ar
1w	Beginning A				
	(See 1f)				
	Sec. 1	II	MWThFS	209F	Ar
	2	VII	MTWThF	207F	Ar
1s	Beginning A				
	(See 1f)				
	Sec. 1	III	MTThFS	207F	Ar
	2	VII	MTWThF	209F	Ar
2f	Beginning B				
	(5 cred.; all; prereq., 1 or one yr. prep. German)				
	Sec. 1	II	MWThFS	207F	Ar
	2	VII	MTWThF	209½F	Ar
2w	Beginning B				
	(See 2f)				
	Sec. 1	I	TWThFS	207F	Ar
	2	I	TWThFS	209F	Ar
	3	I	TWThFS	209½F	Ar
	4	IV	MTWFS	207F	Ar
	5	IV	MTWFS	212F	Ar
	6	IV	MTWFS	209F	Ar
	7	VI	MTWThF	207F	Ar
	8	VI	MTWThF	209F	Ar
	9	VI	MTWThF	209½F	Ar
2s	Beginning B				
	(See 2f)				
	Sec. 1	II	MWThFS	209F	Ar
	2	VII	MTWThF	207F	Ar
3f	Beginning C				
	(5 cred.; all; prereq., 2)				
	Sec. 1	III	MTThFS	209F	Ar
	2	VII	MTWThF	209F	Ar

No.	Title	Hour	Day	Room	Instructor
3w	Beginning C ..... (See 3f)				
	Sec. 1	II	MWThFS	207F	Ar
	2	VII	MTWThF	209½F	Ar
3s	Beginning C ..... (See 3f)				
	Sec. 1	I	TWThFS	207F	Ar
	2	I	TWThFS	209F	Ar
	3	I	TWThFS	209½F	Ar
	4	IV	MTWFS	207F	Ar
	5	IV	MTWFS	212F	Ar
	6	IV	MTWFS	209F	Ar
	7	VI	MTWThF	207F	Ar
	8	VI	MTWThF	209F	Ar
	9	VI	MTWThF	209½F	Ar
4f	Rapid Reading ..... (5 cred.; all; prereq., 3)				
	Sec. 1	II	MWThFS	209F	Ar
	2	III	MTThFS	212F	Ar
	3	VII	MTWThF	207F	Ar
4w	Rapid Reading ..... (See 4f)				
	Sec. 1	III	MTThFS	209F	Ar
	2	VII	MTWThF	209F	Ar
4s	Rapid Reading ..... (See 4f)				
	Sec. 1	II	MWThFS	207F	Ar
	2	VII	MTWThF	209½F	Ar
7f	Prose and Poetry ..... (5 cred.; all; prereq., 2 yrs. prep. German)	III	MTThFS	207F	Ar
7w	Prose and Poetry ..... (See 7f)	VII	MTWThF	212F	Ar
7s	Prose and Poetry ..... (See 7f)	II	MWThFS	212F	Ar
8w	Adv. Prose and Poetry ..... (5 cred.; all; prereq., 7)	III	MTThFS	207F	Ar
8s	Adv. Prose and Poetry ..... (See 8w)	VII	MTWThF	212F	Ar
15f	Narr. Prose for Pre-Medics ..... (4 cred.; pre-med.; prereq., 2 yrs. prep. German)	I	MTWTh	212F	Mr. Lussky
24f-25w-26s†	Begin. for Chemists ..... (12 cred.; chemists, miners; no prereq.)	IV	MTWF	209½F	Mr. Davies
27f	Narr. Prose for Chemists ..... (3 cred.; chemists, miners; prereq., 26 or 2 yrs. prep. German)	II	MWF	209½F	Mr. Lussky
28w-29s†	Chemical German ..... (6 cred.; chemists, miners; prereq., 27)	II	MWF	209½F	Mr. Lussky
31w-32s†	Medical German ..... (6 cred.; pre-med.; prereq., 4 or 15)				
	Sec. 1	I	MWF	212F	Mr. Lussky
	2	I	TThS	212F	Mr. Downs

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

No.	Title	Hour	Day	Room	Instructor
(31s)-32f†	Medical German ..... (See 31f-32w)	I	TThS	114F	Mr. Downs
50f-51w-52s†	Composition ..... (6 cred.; jr., sr.; prereq., 4 or 4 yrs. prep. German)	IV	TS	302F	Mr. Downs
56f-57w-58s†	Essay-Writing ..... (6 cred.; jr., sr.; prereq., 52)	III	WF	302F	Mr. Lussky
62w¶	Nineteenth-Century Prose ..... (5 cred.; jr., sr.; prereq., 4 or 8, or 4 yrs. prep. German)	II	MWThFS	212F	Ar
62s¶	Nineteenth-Century Prose ..... (See 62w)	III	MTThFS	209F	Ar
63f¶	Modern Drama ..... (3 cred.; jr., sr.; prereq., 4 or 8)	IV	MWF	302F	Mr. Downs
64w	Classic Drama ..... (3 cred.; jr., sr.; prereq., 62 or 63)	IV	MWF	302F	Mr. Downs
65s	Survey through Reformation ..... (3 cred.; jr., sr.; prereq., 3 cred. above 60)	III	TThS	209½F	Mr. Kroesch
66f	Eighteenth-Century Survey ..... (3 cred.; jr., sr.; prereq., 3 cred. above 60)	III	TThS	209½F	Mr. Burkhard
67w	Nineteenth-Century Survey ..... (3 cred.; jr., sr.; prereq., 3 cred. above 60)	III	TThS	209½F	Mr. Burkhard
72	*Drama since 1880 (Sudermann)* .. (3 cred., jr., sr.; prereq., 8 cred. above 60)	*Not offered in 1924-25*			
73	*Drama since 1880 (Hauptmann)* .. (3 cred.; jr., sr.; prereq., 8 cred. above 60)	*Not offered in 1924-25*			
74	*German Poets* ..... (3 cred.; jr., sr.; prereq., 62 or 63 or 64)	*Not offered in 1924-25*			
77s	Faust I ..... (3 cred.; jr., sr.; prereq., 6 cred. above 60)	IV	MWF	302F	Mr. Schlenker
100f-101w-102s†	Middle High German ..... (9 cred.; sr., grad.; prereq., 65 and 11 cred. above 60)	VII, VIII	WF	302F	Mr. Kroesch
107	*Historical German Grammar* ..... (3 cred.; sr., grad.; prereq., 11 cred. above 60)	*Not offered in 1924-25*			
108w	Phonetics ..... (3 cred.; sr., grad.; prereq., 9 Senior College cred. in mod. lang.)	Ar	Ar	Ar	Mr. Kroesch

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

( ) Numbers in parentheses do not refer to the year 1924-25. See Course Numbering, page 104, S. L. and A. bulletin.

¶ Students may not receive credit for both 62 and 63.

No.	Title	Hour	Day	Room	Instructor
109f-110w-111s†	Hist. of German Language ..... (9 cred.; sr., grad.; prereq., see statement under Comp. Phil., page 121)	Ar	Ar	Ar	Mr. Klaeber
140f-141w-142s	Early New High German Literature, 1500-1700 ..... (9 cred.; sr., grad.; prereq., 67 and 11 cred. above 60)	Ar	Ar	Ar	Mr. Lussky
150-151-152†	*Novelle* ..... (9 cred.; sr., grad.; prereq., 67 and 11 cred. above 60)	*Not offered in 1924-25*			
153f-154w-155s†	Studies in German Literature of the Nineteenth Century ..... (9 cred.; sr., grad.; prereq., 67 and 11 cred. above 60)	VII, VIII, IX	T	Ar	Mr. Burkhard
160f-161w-162s†	Lyric Poetry ..... (9 cred.; sr., grad.; prereq., 66 or 67 and 11 cred. above 60)	VII, VIII, IX	F	Ar	Mr. Davies
225f-226w-227s†	Lit. Problems ..... (9 cred.; grad., sr. with completed major sequence)	VII, VII, IX	Th	Ar	Mr. Schlenker

GREEK

No.	Title	Hour	Day	Room	Instructor
1f-2w†-3s	Beginning Greek ..... (10 or 15 cred.; all; no prereq.)	IV	MTWFS	114F	Mr. Savage, Miss Strong
4f-5w-6s	History and Epic Poetry ..... (5, 10, or 15 cred.; all; prereq., 1-2-3)	III	MTThFS	115F	Mr. Savage, Miss Strong
7f,w	Greek Sources (Everyday Greek) (2 cred.; soph., jr., sr.; prereq., 1 yr. of language)	VIII	TTh	114F	Mr. Savage
51f	Philosophy ..... (3 cred.; jr., sr.; prereq., 4-5. or 4-6, or 5-6)	Ar	Ar	115F	Mr. Savage
52w	Oratory ..... (3 cred.; jr., sr.; prereq., 4-5, or 4-6, or 5-6)	Ar	Ar	115F	Mr. Savage
53s	Dramatic Poetry ..... (3 cred.; jr., sr.; prereq., 51 or 52)	Ar	Ar	115F	Mr. Savage
105f	Lyric Poetry ..... (3 cred.; sr., grad.; prereq., 53)	Ar	Ar	112F	Mr. Savage
106w*	Advanced Drama ..... (3 cred.; sr., grad.; prereq., 53 or 105)	Ar	Ar	112F	Mr. Savage
107s	Advanced Prose ..... (3 cred.; sr., grad.; prereq., 51-52, or 51-53, or 52-53)	Ar	Ar	112F	Mr. Savage

† The entire course must be completed before credit is received for any quarter.
* Courses 106 and 107 are offered alternately.

No.	Title	Hour	Day	Room	Instructor
108s‡	Advanced Epic Poetry ..... (3 cred.; sr., grad.; prereq., 105 or 106)	Ar	Ar	112F	Mr. Savage
109s‡	New Testament ..... (3 cred.; jr., sr., grad.; prereq., 51 and 52)	Ar	Ar	112F	Mr. Savage
	COURSES FOR WHICH NO KNOWLEDGE OF GREEK IS REQUIRED				
42s¶	Greek Sculpture ..... (2 cred.; jr., sr.; no prereq.)	VII	TTh	114F	Mr. Savage
43f¶	Greek Drama ..... (2 cred.; jr., sr.; no prereq.)	VII	TTh	114F	Mr. Savage
44w¶	Greek Literature and Life ..... (2 cred.; jr., sr.; no prereq.)	VII	TTh	114F	Mr. Savage
44s¶	Greek Literature and Life ..... (See 44w)	I	WF	114F	Mr. Savage
45f¶	Greek Mythology ..... (2 cred.; jr., sr.; no prereq.)	I	MW	114F	Mr. Savage
45w¶	Greek Mythology ..... (See 45f)	I	WF	114F	Mr. Savage

HISTORY

Major Adviser: A. C. Krey

REQUIREMENTS OF THE DEPARTMENT

For a teacher's certificate.—Major recommendation: at least 45 credit hours; 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 credit hours 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.

No.	Title	Hour	Day	Room	Instructor
1f*	Modern World, 1648-1799 ..... (5 cred.; all; no prereq.)				
	Lect.	II	TThS	OLAud	Mr. Ford
	Sec. 1	I	MW	111OL	
	2	I	MW	112OL	
	3	I	MW	305F	
	4	I	MW	306F	
	Sec. 5	II	MW	111OL(f) 109F(w, s)	
	6	II	MW	112OL(f) 303F(w, s)	
	7	II	MW	305F	
	8	II	MW	213F	
	9	III	MW	OLc	
	10	V	MW	111OL	
	11	V	MW	112OL	
	12	VII	MW	112OL	
	13	VIII	MW	107F	

* To receive credit for Course 1, a student must complete both 1 and 2.

‡ Courses 108 and 109 are offered alternately.

¶ Not a Senior College course. Not open to sophomores under General Information, section 43, p. 24, S. L. and A. bulletin.

No.	Title	Hour	Day	Room	Instructor
2w*	Modern World, 1799-1871 ..... (5 cred.; all; no prereq.)				
	Lect.	II	TThS	OLAud	Mr. Ford
	Sections as in 1f				
3s	Modern World, 1871 to Present .. (5 cred.; all; prereq., 2)				
	Lect.	II	TThS	OLAud	Mr. Ford
	Sections as in 1f				
4f-5w†	England, 1066 to Present ..... (10 cred.; all no prereq.)				
	Lect.	VII	MWF	LitTh	Mr. White
	Sec. 1	I	TTh	111OL	
	2	III	TTh	305F	
	3	IV	TS	111OL	
	4	VI	TTh	113F	
	5	VII	TTh	111OL	
	6	VII	TTh	112OL	
4s-(5w)†	England, 1066 to Present ..... (See 4f-5w)	III	MTThFS	112OL	Mr. White
7f-8w†	American History ..... (10 cred.; soph., jr., sr.; no prereq.)				
	Lect.	VII	MWF	301F	Mr. Stephenson, Mr. Shippee
	Sec. 1	VII	TTh	101F	
	2	I	TS	OLc	
	3	IV	TS	227F	
	4	III	TTh	311F	
9s	Recent American History ..... (5 cred.; soph., jr., sr.; prereq., 10 cred. in hist. or pol. sci.)	VII	MTWThF	301F	Mr. Shippee
11f-12w-13s†	Medieval History ..... (10 cred.; 3d qu. fr., soph., jr., sr.; prereq., 10 cred. except for mus. and int. dec.)	IV	MWF (f, w) MWF and ar (s)	OLc	Mr. Wheeler
16s	Europe in the Middle Ages ..... (5 cred.; all; prereq., 10 cred. in hist. if taken by fr.)	II	MWThFS	OLc	Mr. Krey
33w-34s†	English Legal Institutions ..... (5 cred.; soph., jr., sr.; prereq., Hist. 4)	II	MW (w) MWF (s)	112OL	Mr. White
80f	Introduction to Economic History (3 cred.; jr., sr.; prereq., 15 cred. in hist., or 10 cred. in econ. or sociol.)	III	TThS	OLc	
81w	Introduction to Economic History (3 cred.; jr., sr.; prereq., 15 cred. in hist., or 10 cred. in econ. or sociol.)	III	TThS	OLc	

* To receive credit for Course 2, a student must complete either 1 and 2 or 2 and 3.

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

( ) Numbers in parentheses do not refer to the year 1924-25. See Course Numbering, page 104, S. L. and A. bulletin.

No.	Title	Hour	Day	Room	Instructor
101-102	*French Revolution: Napoleonic Era* (6 cred.; jr., sr., grad.; prereq., 15 cred. in hist., or 20 cred. in soc. sci. incl. 10 cred. in hist.)	*Not offered in 1924-25*			
103f	Pol. Hist.: Greece ..... (5 cred.; jr., sr., grad.; prereq., 20 cred. or major in Greek or Latin)	III	MTThFS	111OL	Mr. Davis
104s	Near East: Modern ..... (5 cred.; jr., sr.; grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist.)	III	MTThFS	111OL	Mr. Davis
105w	History of Rome ..... (5 cred.; jr., sr., grad.; prereq., 26 cred. in soc. sci. or 15 cred. in hist.)	III	MTThFS	111OL	Mr. Davis
106f-107w-108s§	Europe, 1815-1914 ..... (9 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. Hist. 1-2 or 2-3)	VII	MWF	111OL	Mr. Steefel
109s	Modern England ..... (5 cred.; jr., sr., grad.; prereq., 20 cred. in soc. or 15 cred. in hist.)	IV	MTWFS	111OL	Mr. Harding
111	*European Background and American Immigration* ..... (4 cred.; jr., sr., grad.; prereq., 21 cred. in soc. sci. or 15 cred. in hist.)	*Not offered in 1924-25*			
112	*American Immigration* ..... (4 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist.)	*Not offered in 1924-25*			
113f,114w,115s	Econ. Hist. of Europe and U.S. .. (9 cred.; jr., sr., grad.; prereq., 20 cred. in hist., econ., or both)	II	TThS	111OL	
116-117-118	*Econ. Hist. of Europe, 1300-1750* .. (9 cred.; jr., sr., grad.; prereq., 20 cred. in hist., econ., or both)	*Not offered in 1924-25*			
119s	Renaissance and Reformation ..... (5 cred.; jr., sr., grad.; prereq., 15 cred.)	IV	MTWFS	112OL	Mr. Krey
120f	Medieval Civilization ..... (5 cred.; jr., sr., grad.; prereq., 15 cred.)	IV	MTWFS	112OL	Mr. Krey
121w-122s†	English Backgrounds of American Colonization ..... (6 cred.; jr., sr., grad.; prereq., 20 cred. in hist. or pol. sci.)	II	TThS	112OL	Mr. White
124s	European Expansion ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. Hist. 2-3 or 106-107)	II	MWF	111OL	Mr. Steefel

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

No.	Title	Hour	Day	Room	Instructor
126w	Feudal Institutions ..... (5 cred.; jr., sr., grad.; prereq., 15 cred.)	IV	MTWFS	112OL	Mr. Krey
128	*Rise of Nationalism in Europe* .... (5 cred.; jr., sr., grad.; prereq., 15 cred.)	*Not offered in 1924-25*			
129-130†	*Modern German Empire* ..... (6 cred.; jr., sr., grad.; prereq., 15 cred. in hist. or 20 cred. in soc. sci. incl. 10 cred. in hist.)	*Not offered in 1924-25*			
131f-132w	France under Louis XIV and Louis XV ..... (6 cred.; jr., sr., grad.; prereq., 15 cred. in hist. or 20 in soc. sci. incl. 10 in hist.)	I	TThS	112OL	Mr. Harding
133f	Near East: Old Orient ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist.)	VIII	MWF	111OL	Mr. Davis
134w	Ancient Civilization: Greece ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. incl. 103 or equiv., or major in Greek or Latin and consent of instr.)	VIII	MWF	111OL	Mr. Davis
135s	Ancient Civilization: Rome ..... (3 cred.; jr., sr., grad.; prereq., 134 or consent of instructor; 20 cred. incl. 105 or equiv., or major in Greek or Latin and consent of instr.)	VIII	MWF	111OL	Mr. Davis
141	*West in Amer. Hist. to 1815* ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist. incl. 7-8)	*Not offered in 1924-25*			
142	*West in Amer. Hist., 1815-1865* ... (3 cred.; jr., sr., grad.; prereq., see 141)	*Not offered in 1924-25*			
143	*American Political Parties* ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist. incl. 7-8 or equiv.)	*Not offered in 1924-25*			
144f-145w†	History of Minnesota ..... (6 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. 7-8 or consent of instr.)	VIII	MWF	112OL	Mr. Buck
146f-147w†	Constitutional Hist. of U. S. .... (6 cred.; jr., sr., grad.; prereq., 15 cred. in hist. or 10 cred. in hist. and 10 in soc. sci. incl. Pol. Sci. 1)	IV	MWF	111OL	Mr. Shippee
152	*Select Topics in Hist. of West* .. (5 cred.; sr., grad.; prereq., 20 cred. incl. 7-8)	*Not offered in 1924-25*			

No.	Title	Hour	Day	Room	Instructor
153	*Topics, West since 1865* ..... (5 cred.; sr., grad.; prereq., 20 cred. incl. 7-8)	*Not offered in 1924-25*			
154s	Topics, Minnesota ..... (5 cred.; sr., grad.; prereq., 20 cred. incl. 7-8)	VII, VIII	TTh	218aOL	Mr. Buck
155	*United States, 1850-1865* ..... (5 cred.; sr., grad.; prereq., 20 cred. incl. 7-8)	*Not offered in 1924-25*			
156f	U. S., Reconstruction ..... (5 cred.; sr., grad.; prereq., 20 cred. incl. 7-8)	VII, VIII	WF	218aOL	Mr. Shippee
157f-158w†	Topics, Nineteenth Century ..... (5 cred.; sr., grad.; prereq., 20 cred. incl. 107-108, 101-102, or 129-130; equiv. of Hist. 2-3 and French or German)	VII, VIII	TTh	218aOL	Mr. Steefel
162	*Beginnings of Parliament* ..... (5 cred.; sr., grad.; prereq., 20 cred., knowledge high school Latin)	*Not offered in 1924-25*			
164f-165w	Studies in Crusades ..... (5 cred.; sr., grad.; prereq., 20 cred., knowledge high school Latin)	VIII, IX	TTh	OLc	Mr. Krey
166	*Topics, Hist. of Immigration* .... (5 cred.; sr., grad.; prereq., 20 cred., consent of instr.)	*Not offered in 1924-25*			
168s	Topics, American Foreign Relations (5 cred.; sr., grad.; prereq., 20 cred. in hist. incl. 7-8, or 20 cred. in pol. sci.)	VIII, IX	MW	218aOL	Mr. Shippee
169s	Econ. Hist. of U. S. since 1865 .. (3 cred.; sr., grad.; prereq., 20 cred. in hist. or econ.)	III	TThS	218aOL	
183s	Stuart Period	VIII, IX	TTh	218bOL	Mr. Harding

HOME ECONOMICS

Major Adviser: Wylle B. McNeal

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	Room	Instructor
3s	Textiles ..... (5 cred.; no prereq.) (Sections limited to 20 students each)				
	Sec. 1	I, II	MTWThF	211,307HE	Miss Weller, Miss Phelps
	2	III, IV	MTWFS	211,307HE	Miss Weller, Miss Phelps

No.	Title	Hour	Day	Room	Instructor
4f,w,s	Textiles (Ed., S. L. & A.) ..... (3 cred.; no prereq.; not open to students in H. E.) (Limited to 20)	VI, VII	MWF	211,307HE	Miss Phelps, Miss Noer
11f,w	Garment-Making				
	Sec. 3 (fall)	VI-VII	TTh		Miss Patchin
	1 (winter)	I-II	MWF		Miss Patchin
	3 (winter)	VI-VII	TTh		Miss Patchin
11s	Garment-Making ..... (3 cred.; no prereq.) (Limited to 20 each)				
	Sec. 1	I, II	MWF	304HE	Miss Noer, Miss Sell
	2	I, II	TThS	304HE	Miss Noer, Miss Sell
	3	VI, VII, VIII	TTh	304HE	Miss Noer, Miss Sell
13f,s	Dressmaking ..... (5 cred.; prereq., 3, 11, 51, home pract. in garment-making) (Limited to 20 each)				
	Sec. 1	III, IV	MTWFS	304HE	Miss Patchin
	2	I, II	TWThFS	305HE(f) 114HE(s)	Miss Patchin
13w	Dressmaking ..... (Same as 13f,s) (Limited to 20)	III, IV	MTWFS	304HE	Miss Patchin
21f,s	Foods and Cookery ..... (5 cred.; prereq., Chem. 8 cred., Physiol. 4 or parallel)	I, II	MTWThF	209HE	Miss Kolshorn
21w	Foods and Cookery ..... (Same as 21f,s) (Limited to 20 each)				
	Sec. 1	VI, VII	MTWThF	209HE	Miss Kolshorn
	2	I, II	MTWThF	209HE	Miss Kolshorn
22f,w	Food Economics ..... (5 cred.; soph., jr., sr.; prereq., 21) (Limited to 20 each)				
	Sec. 1	III, IV	MTWFS	205,207HE	Miss Child, Miss Kolshorn
	2	VI, VII	MTWThF	205,207HE	Miss Child, Miss Kolshorn
22s	Food Economics	III, IV	MTWFS	205,207HE	Miss Child, Miss Kolshorn
51f,w,s	Drawing and Design ..... (3 cred.; no prereq.) (Limited to 20 each)				
	Sec. 1	I, II	MWF	401HE	Miss V. Goldstein
	2	I, II	TThS	401HE	Miss V. Goldstein
	3	VI, VII, VIII	TTh	402HE	Miss V. Goldstein

No.	Title	Hour	Day	Room	Instructor
52f	Art History and Appreciation ..... (3 cred.; jr., sr.; prereq., 51)				
	Sec. 1	III	TThS	309HE	
	2	VIII	MWF	309HE	Miss V. Goldstein
52w	Art History and Appreciation ..... (Same as 52f,s)	VIII	MWF	209HE	Miss H. Goldstein
52s	Art History and Appreciation ..... (Same as 52f)				
	Sec. 1	II	MWF	309HE	Miss V. Goldstein
	2	VIII	MWF	309HE	Miss V. Goldstein
53f	Advanced Design ..... (4 cred., soph., jr., sr.; prereq., 51) (Limited to 20 each)				
	Sec. 1	VI, VII, VIII	MWF	402HE	Miss H. Goldstein
	2	I, II	MWThF	402HE	Miss H. Goldstein
53w	Advanced Design ..... (Same as 53f,s) (Limited to 20)	VI, VII	MWThF	402HE	Miss H. Gold stein
53s	Advanced Design ..... (Same as 53f)				
	Sec. 1	VI, VII, VIII	MWF	402HE	Miss H. Goldstein, Miss V. Goldstein
	2	I, II	MWThF	402HE	Miss H. Goldstein, Miss V. Goldstein
	3	III, IV	MTWF	402HE	
70f	Food Preparation ..... (3 cred.; soph.,‡ jr., sr.; prereq., 10 cred. in a laboratory science) (Limited to 20)	VI, VII	MWF	103HE	Miss Osbeck
	Senior College Courses				
17f,w	Advanced Clothing Construction ... (3 cred.; jr., sr.; prereq., 13, 53)	III, IV	MWF	305HE	Miss Patchin, Miss C. Brown
17s	Advanced Clothing Construction .. (See 17f,w,su)				
	Sec. 1	III, IV	MWF	305HE	
	2	I, II	TThS	305HE	
34f,w,s	Home Management: Operation and Maintenance ..... (3 cred.; jr., sr.; prereq., 22, 35 parallel, Agr. Econ. 5 or parallel. Preventive Med. and Health 52)	VIII	MWF	203HE	Miss Studley
71w	Elementary Dietetics for the Social Worker ..... (3 cred.; soph.,‡ jr., sr.; prereq., 70, Physiol. 4 or parallel)	VI, VII	MWF	105HE	Miss Osbeck

‡ Open to sophomores only in their third quarter. Not open to students in Home Economics except by special permission of the head of the division.

No.	Title	Hour	Day	Room	Instructor
72s	Special Problems in Home Management ..... (3 cred.; soph.,‡ jr., sr.; prereq., H.E. 71, Econ. 3-4 or parallel)	VI	MWF	106HE	Miss Osbeck
123w	Clothing Economics ..... (2 cred.; jr., sr.; prereq., 13, Agr. Econ. 5)	III	TTh	313HE	Miss Weller
	Sec. 1	III (for teachers)	TTh	313HE	Miss Weller
	2	III, IV	S		Miss Weller
123s	Clothing Economics ..... (Same as 123w)				
131f	Home Management: House Planning and Equipment	III, IV	MTWFS		Miss Morse
131w	Home Management: House Planning and Equipment ..... (5 cred.; sr.; prereq., 52, 53) (Limited to 20)				
	Sec. 1	III, IV	MTWFS	401HE	Miss Morse
	2	VI, VII	MTWThF	401HE	Miss Morse
131s	Home Management: House Planning and Equipment ..... (See 131f)	I-II	MTWThF		Miss Morse

HUMAN ANATOMY

MEDICAL SCHOOL

No.	Title	Hour	Day	Room	Instructor
160f	Physical Development of the Child.. (2 cred.; jr., sr., grad.)	VI	MF	211IA	Dr. Scammon

Other courses in anatomy (see Medical School program) may be carried only by arrangement with the head of the Department of Anatomy.

HUMAN PHYSIOLOGY

MEDICAL SCHOOL

No.	Title	Hour	Day	Room	Instructor
4f,s,su	Human Physiology ..... (5 cred.; all; prereq., 1 qu. biol., 1 qu. chem.)				
	Lect.	IV	MWF	315MH	Dr. Lyon, Dr Greisheimer and others
	Dem. and rec.	III	TTh		
	Lab.	II, III, IV	S		
57f,su	Physiol. Chemistry ..... (4 cred.; jr., sr.; prereq., An. Biol. 1-2, or 5-6-7; Chem. 1-2-3 or 4-5)				
	Div. A Lab.	I	TThS	310MH	Dr. Pettibone and others
	B Lab.	II, III, IV	T		
		VI, VII, VIII	W		
58w,su-59s,su	Human Physiology ..... (8 cred.; jr., sr.; prereq., Biol. 1-2, or 5-6-7; Chem. 1-2-3 or 4-5)				
	Div. A Lab.	I	TThS	310MH	Dr. Lyon and others
	B Lab.	II, III, IV	T		
		VI, VII, VIII	W		

‡ Open to sophomores only in their third quarter. Not open to students in Home Economics except by special permission of the head of the division.

No.	Title	Hour	Day	Room	Instructor
100w-101s,100su-101su*	Physiol. Chemistry ..... (12 cred.; jr. sr.; prereq., biol., org. chem., and physics)	IV	MWF	310MH	Dr. McClendon, Dr. Pettibone, Dr. Swanson
	Div. A Lab.	I, II, III	TTh		
	B Lab.	I, II, III	FS		
103f,su*	Physiology of Muscles, etc..... (8 cred.; jr., sr.; prereq., same as 100-101)	IV, VI, VII, VIII	MWF	301MH	Dr. Scott, Dr. Lyon, and others
104w,su*	Physiol. of Nervous System, etc.... (8 cred.; jr., sr.; prereq., same as 100-101)	IV, VI, VII, VIII	MWF	301MH	Dr. Lyon, Dr. Scott, and others

For other courses see Medical School bulletin.

JOURNALISM

No.	Title	Hour	Day	Room	Instructor
13f-14w-15s†	Reporting ..... (9 cred.; soph., jr., sr.; prereq., one year rhet.)	I	MWF	104Pu	Mr. Barlow
51f-52w†	Editing ..... (6 cred.; jr., sr.; prereq., 13-14-15)	VI	MWF	103Pu	Mr. Barlow
55f-56w-57s†	Newspaper and Magazine Articles.. (6 cred.; jr., sr.; prereq., 13-14-15)	IV	TS	104Pu	Mr. Steward
61f	Editorial-Writing ..... (3 cred.; sr.; prereq., two of following: Econ. 6-7, Pol. Sci. 1, Hist. 1-2 or 2-3, Soc. 1)	II	MWF	104Pu	Mr. Barlow
65w-66s†	Newspaper Problems ..... (6 cred.; sr.; prereq., 51-52)	II	MWF	104Pu	Mr. Barlow
67s†	Journalistic Practice ..... (1, 2, or 3 cred.; sr.; prereq., 13-14-15)	Ar	Ar	102Pu	Mr. Barlow

LATIN

Major Adviser: J. B. Pike

REQUIREMENTS OF THE DEPARTMENT

For a teacher's certificate.—Major recommendation: any two of Courses 61, 62, 63, and any two of 121-133 or equivalent.

Minor recommendation: any two of Courses 61-63 or equivalent.

JUNIOR COLLEGE COURSES

No.	Title	Hour	Day	Room	Instructor
1f-2w†	Beginning Latin ..... (10 cred.; all; no prereq.)				
	Sec. 1	IV	MTWFS	109F	Ar
	2	VI	MTWThF	109F	Mr. Cram
3s	Caesar ..... (5 cred.; all; prereq., 1-2 or 1 yr. Latin)				
	Sec. 1	IV	MTWFS	109F	Ar
	2	VI	MTWThF	109F	Mr. Cram

* Lectures only may be taken as 100 x etc.

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

No.	Title	Hour	Day	Room	Instructor
11f	Virgil I and II..... (5 cred.; all; prereq., 1-2, 3, or 2 yrs. Latin)				
	Sec. 1	III	MTThFS	109F	Mr. Cram
	2	VI	MTWThF	107F	Ar
12w	Virgil III and IV..... (5 cred.; all; prereq., 1-2, 3, or 2 yrs. Latin)				
	Sec. 1	III	MTThFS	109F	Mr. Cram
	2	VI	MTWThF	107F	Ar
13s	Ovid ..... (5 cred.; all; prereq., 1-2, 3, or 2 yrs. Latin)	III	MTThFS	109F	Mr. Cram
21f*	Selections ..... (5 cred.; all; prereq., any two of 11, 12, 13, or 3 or 4 yrs. of Latin)	IV	MTWFS	107F	Mr. Pike
22w*	Selections and Survey..... (5 cred.; all; prereq., any two of (11, 12, 13, or 3 or 4 yrs. of Latin)	IV	MTWFS	107F	Mr. Pike
23s*	Plautus and Terence ..... (5 cred.; all; prereq., any two of (11, 12, 13, or 3 or 4 yrs. of Latin)	IV	MTWFS	107F	Mr. Pike
	SENIOR COLLEGE COURSES				
51	*Pliny's Letters* ..... (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	*Not offered in 1924-25.*			
52	*Horace's Satires and Epistles*..... (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	*Not offered in 1924-25.*			
53	*Suetonius, Selected Lives*..... (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	*Not offered in 1924-25.*			
61f	Tacitus' Agricola and Germania... (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	I	TThS	108F	Mr. Cram
62w	Horace's Odes and Epodes..... (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	I	TThS	108F	Mr. Cram
63	*Apuleius* ..... (3 cred.; jr., sr.; prereq., any two of 21, 22, 23, or equiv.)	*Not offered in 1924-25.*			
75s	Advanced Grammar and Composition ..... (3 cred.; jr., sr.; prereq., 51 and 52, or 61 and 62)	I	TThS	108F	Ar

NOTE.—Courses 61, 62, and 75 are open without petition to sophomores who have the prerequisites and who satisfy the requirements given in General Information, sec. 43, S. L. and A. bulletin.

* Students continuing Latin from the sequence 11, 12, 13, as offered in 1922-23 will omit the sequence 21, 22, 23 and select from the sequence 61, 62, 75.

Students entering second 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 third quarter.—Students with one year of Latin may elect 3s. Students with two years of Latin may elect 13s. Students with three or four years of Latin may elect 23s.

No.	Title	Hour	Day	Room	Instructor
121	*Advanced Virgil* ..... (3 cred.; jr., sr., grad.; prereq., any one of 51, 52, 53, or equiv.)	*Not offered in 1924-25.*			
122w	Cicero's Letters ..... (3 cred.; jr., sr., grad.; prereq., any two of 51, 52, 53, or equiv.)	II	MWF	107F	Mr. Pike
123s	Medieval Latin ..... (3 cred.; jr., sr., grad.; prereq., any two of 51, 52, 53, or equiv.)	II	MWF	107F	Mr. Pike
131f	Juvenal ..... (3 cred.; jr., sr., grad.; prereq., any two of 51, 52, 53, or equiv.)	II	MWF	107F	Mr. Pike
132	*Seneca's Epistles* ..... (3 cred.; jr., sr., grad.; prereq., any two of 51, 52, 53, or equiv.)	*Not offered in 1924-25.*			
133	*Vulgar Latin* ..... (3 cred.; jr., sr., grad.; prereq., any two of 51, 52, 53, or equiv.)	*Not offered in 1924-25.*			
201f-202w-203s	Grad. Seminar: Tacitus..... (9 cred.)	Ar	Ar	Sem	Mr. Pike
211-212-213	*Grad. Seminar: Lucretius*..... (9 cred.)	*Not offered in 1924-25.*			
221f-222w-223s	Graduate Seminar ..... (9 cred.)	Ar	Ar	Sem	Mr. Cram

COURSES FOR WHICH NO KNOWLEDGE OF LATIN IS REQUIRED

43	*Roman Literature* ..... (2 cred.; jr., sr.‡; no prereq.)	*Not offered in 1924-25.*			

LIBRARY METHODS

No.	Title	Hour	Day	Room	Instructor
1f,w,s	Use of Books and Libraries..... (2 cred.; fr., soph. only; no prereq.)				
	Sec. 1	II	MW	Li	Miss Firkins
	2	IV	MW	Li	Mr. Russell
	3	VI	MW	Li	Mr. Walter
101f-102w	Bibliographic Seminar ..... (4 cred.; sr., grad.; prereq., Jr. Col. requirements in one lang. and 9 add. cred. in same lang. or another lang.)	II	Th	Li	Mr. Walter

NOTE.—For courses in hospital library service, consult special bulletin.

MATHEMATICS

Major Adviser: A. L. Underhill

REQUIREMENTS OF THE DEPARTMENT

For a teacher's certificate.—Major recommendation: 8 credits in addition to the courses required for a minor recommendation.

Minor recommendation: entrance credit in solid geometry or its equivalent;* Course 1 (Higher Algebra) taken either in high school or in college; Courses 6, 7, 30, 50, 51.

* 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.

‡ Not a Senior College course. Not open to sophomores under General Information, sec. 43, S. L. and A. bulletin.

No.	Title	Hour	Day	Room	Instructor
5f	Higher Algebra ..... (5 cred.; all; prereq., 1 yr. elem. alg.)				
	Sec. 1	II	MWThFS	105F	Ar
	2	VI	MTWThF	104F	Ar
5w	Higher Algebra ..... (See 5f)				
	Sec. 1	I	TWThFS	104F	Ar
	2	VI	MTWThF	105F	Ar
5s	Higher Algebra ..... (See 5f)	I	TWThFS	102F	Ar
6f¶	Trigonometry ..... (5 cred.; all; prereq., 5 or prep. higher algebra)	IV	MTWFS	104F	Ar
6w¶	Trigonometry ..... (See 6f)	VI	MTWThF	104F	Ar
6s¶	Trigonometry ..... (See 6f)	I	TWThFS	104F	Ar
7f¶	College Algebra ..... (5 cred.; all; prereq., 6)	IV	MTWFS	105F	Ar
7w¶	College Algebra ..... (See 7f)	IV	MTWFS	104F	Ar
7s¶	College Algebra ..... (See 7f)	VI	MTWThF	104F	Ar
8f¶	Commerce Algebra ..... (5 cred.; pre-bus. students; prereq., 5 or prep. high. alg.)	I	MTWFS	104F	Ar
8w¶	Commerce Algebra ..... (See 8f)	II	MWThFS	105F	Ar
8s¶	Commerce Algebra ..... (See 8f)	VI	MTWThF	105F	Ar
20f	Mathematics of Investment ..... (5 cred.; all; prereq., 8, or 6 and 7	VI	MTWThF	105F	Mr. Hart
20w	Mathematics of Investment ..... (See 20f)	I	MTWFS	105F	Mr. Hart
20s	Mathematics of Investment ..... (See 20f)	II	MWThFS	105F	Mr. Hart
30f	Analytical Geometry ..... (5 cred.; all; prereq., 6 and 7)	III	MTThFS	104F	Mr. Underhill
30w	Analytical Geometry ..... (See 30f)	IV	MTWFS	105F	Miss Gibbens
30s	Analytical Geometry ..... (See 30f)	IV	MTWFS	104F	Mr. Underhill
	Senior College Courses				
50f§	Calculus I ..... (5 cred.; jr., sr.; prereq., 30)	III	MTThFS	101F	Mr. Jackson
50w§	Calculus I ..... (See 50f)	III	MTThFS	104F	Mr. Underhill

¶ Courses 6 and 8 involve some duplication of material, and no student may take both without special permission. No student may receive credit for both of Courses 7 and 8. Pre-business students who elect mathematics to meet the requirement of 10 credits in mathematics or laboratory science, should take 5 and 8 if they have not had high school higher algebra, and 8 and 20 if they have had high school higher algebra.

§ Courses 50, 51, and 52 are open without petition to sophomores who have the prerequisites and who satisfy the requirements given in General Information, sec. 43, S. L. & A. bulletin.

No.	Title	Hour	Day	Room	Instructor
50s§	Calculus I ..... (See 50f)	IV	MTWFS	105F	Miss Gibbens
51w§	Calculus II ..... (5 cred.; jr., sr.; prereq., 50)	III	MTThFS	101F	Mr. Jackson
51s§	Calculus II ..... (See 51w)	III	MTThFS	104F	Mr. Underhill
52f§	Calculus III ..... (5 cred.; jr., sr.; prereq., 51)	III	MTThFS	102F	Miss Gibbens
52s§	Calculus III ..... (See 52f)	III	MTThFS	101F	Mr. Jackson
62w-63s	Theory of Equations ..... (6 cred.; jr., sr.; prereq., 50)	VII	MWF	101F	Mr. Jackson
70	*Hist. of Elem. Math*..... (3 cred.; jr., sr.; prereq., 30)	*Not offered in 1924-25.*			
71f	Solid Analytical Geometry..... (3 cred.; jr., sr.; prereq., 50)	VII	MWF	101F	Mr. Jackson
90-91	*Advanced Analytic Geometry*..... (6 cred.; jr., sr.; prereq., 50)	*Not offered in 1924-25.*			
92	*Synthetic Projective Geometry*..... (3 cred.; jr., sr.; prereq., 50)	*Not offered in 1924-25.*			
106f	Differential Equations ..... (3 cred.; jr., sr., grad.; prereq., 51)	III	MWF	108F	Mr. Hart
107w-108s	Advanced Calculus ..... (6 cred.; jr., sr., grad.; prereq., 52)	III	MWF	108F	Mr. Hart
121f-122w-123s	Math. Theory of Statistics..... (9 cred.; jr., sr., grad.; prereq., 50-51)	II	MWF	108F	Mr. Jackson
140w‡	Method of Least Squares..... (3 cred.; jr., sr., grad.; prereq., Math. 51)	See Astronomy program			

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.

MILITARY SCIENCE AND TACTICS

No.	Title	Hour	Day	Room	Instructor
1f-2w	First Year Basic Course..... (No. cred.; fr.;* no prereq.)	II	MWF	A	Ar
		III	MWF	A	Ar
		VI	MWF	A	Ar
		VIII	MWF	A	Ar
3s	First Year Basic Course..... (No cred.; fr.; prereq., 1f-2w)	VII, VIII, IX	T or W	A	Ar
4f-5w	Second Year Basic Course..... (No. cred.; soph.; no prereq.)	II	MWF	A	Ar
		III	MWF	A	Ar
		VI	MWF	A	Ar
		VIII	MWF	A	Ar
6s	Second Year Basic Course..... (No cred.; soph.; prereq., 4f-5w)	VI, VIII, IX	T or W	A	Ar

§ Courses 50, 51, and 52 are open without petition to sophomores who have the prerequisites and satisfy the requirements given in General Information, see 43, S. L. and A. bulletin.

‡ Identical with Astronomy 140.

* Must be legally eligible for enrolment in Reserve Officers Trainging Corps. Consult P. M. S. & T.

No.	Title	Hour	Day	Room	Instructor
51f-52w	First Year Advanced Course.....	II	MWF	A	Ar
	(Cred.;* jr.; prereq., 4f-5w-6s†)	III	MWF	A	Ar
		VI	MWF	A	Ar
		VIII	MWF	A	Ar
		I, II	TThS	A	Ar
		III, IV	TThS	A	Ar
		VI, VIII	TTh	A	Ar
		VIII, IX	TTh	A	Ar
53s	First Year Advanced Course.....	VII, VIII, IX	T or W	A	Ar
	(Cred.;† jr.; prereq., 51f-52w)	III	TS	A	Ar
54f-55w	Second Year Advanced Course ...	II	MWF	A	Ar
	(Cred.;† sr.; prereq., 51f-52w-53s)	III	MWF	A	Ar
		VI	MWF	A	Ar
		VIII	MWF	A	Ar
		I, II	TThS	A	Ar
		III, IV	TThS	A	Ar
		VI, VII	TTh	A	Ar
		VIII, IX	TTh	A	Ar
56s	Second Year Advanced Course	VII, VIII, IX	T or W	A	Ar
	(Cred.;† sr.; prereq., 54f-55w)	IV	TS	A	Ar

MUSIC

Major Adviser: T. P. Giddings

Courses in music are not open to freshmen and sophomores except those working for a major in music.

Students may enter courses in practical music any quarter.

No.	Title	Hour	Day	Room	Instructor
1f-2w-3s‡	Harmony				
	(9 cred.; fr. mu.; no prereq.)				
	Sec. 1	II	MWF	Mu	Mr. Scott
	2	VI	MWF	Mu	Mr. Scott
1w-2s-(3su)‡	Harmony	III	MWF	Mu	Mr. Scott
	(See 1f-2w-3s)				
7f-8w-9s	Ear-Training				
	(Cred.;¶ soph. mu.)				
	Sec. 1	VI	TTh	Mu	Ar
10f-11w-12s	First Year Organ.....	Ar	Ar	Mu	Ar
	(6 or 12 cred.; fr. mu.)				
13f-14w-15s	Second Year Organ.....	Ar	Ar	Mu	Ar
	(6 or 12 cred.; soph. mu.; prereq., 10-11-12)				
16f-17w-18s	First Year Pianoforte.....	Ar	Ar	Mu	Ar
	(6 or 12 cred.; fr. mu.)				

* Must be legally eligible for enrolment in Reserve Officers Training Corps. Consult P. M. S. & T.

† The University allows 2 credits per quarter for the first year advanced R.O.T.C. work, and 2 credits per quarter for the second year advanced work, with a maximum of 12 credits for the two years' work which can be counted toward the bachelor of arts degree.

¶ Course 7-8-9 carries 3 credits for freshmen; none for sophomores.

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

No.	Title	Hour	Day	Room	Instructor
19f-20w-21s	Second Year Pianoforte..... (6 or 12 cred.; soph. mu.; prereq., 16-17-18)	Ar	Ar	Mu	Ar
22f-23w-24s	First Year Violin..... (6 or 12 cred.; fr. mu.)	Ar	Ar	Mu	Ar
25f-26w-27s	Second Year Violin..... (6 or 12 cred.; soph. mu.; prereq., 22-23-24)	Ar	Ar	Mu	Ar
28f-29w-30s	First Year Vocal Training..... (6 or 12 cred.; fr. mu.)	Ar	Ar	Mu	Ar
31f-32w-33s	Second Year Vocal Training..... (6 or 12 cred.; soph. mu.; prereq., 28-29-30)	Ar	Ar	Mu	Ar
34f-35w-36s	First Year of Other Orchestral Instruments ..... (6 or 12 cred.; fr. mu.)	Ar	Ar	Mu	Ar
37f-38w-39s	Second Year of Other Orchestral Instruments ..... (6 or 12 cred.; soph. mu.; prereq., 37-38-39)	Ar	Ar	Mu	Ar
40f-41w-42s	Orchestra	7:30 p.m.	W	Mu	Mr. Pepinsky
	String Section ..... (3 cred.; jr., sr.)	IX	T	Mu	Ar
43f-44w-45s	University Choir ..... (3 cred.; fr. and soph. mus., acad. jr., sr.)	7 p.m.	T	Mu	Mr. Killeen
50f-51w-52s	Third Year Organ..... (6 or 12 cred.; sr.; prereq., 13-14-15)	Ar	Ar	Mu	Ar
53f-54w-55s	Fourth Year Organ..... (6 or 12 cred.; sr.; prereq., 50-51-52)	Ar	Ar	Mu	Ar
56f-57w-58s	Third Year Piano..... (6 or 12 cred.; jr.; prereq., 19-20-21)	Ar	Ar	Mu	Ar
59f-60w-61s	Fourth Year Piano..... (6 or 12 cred.; sr.; prereq., 56-57-58)	Ar	Ar	Mu	Ar
62f-63w-64s	Third Year Violin..... (6 to 12 cred.; jr.; prereq., 25-26-27)	Ar	Ar	Mu	Ar
65f-66w-67s	Fourth Year Violin..... (6 or 12 cred.; sr.; prereq., 62-63-64)	Ar	Ar	Mu	Ar
68f-69w-70s	Third Year Violin Training..... (6 or 12 cred.; jr.; prereq., 31-32-33)	Ar	Ar	Mu	Ar
71f-72w-73s	Fourth Year Vocal Training..... (6 or 12 cred.; sr.; prereq., 68-69-70)	Ar	Ar	Mu	Ar
74f-75w-76s	Third Year of Other Orchestral Instruments ..... (6 or 12 cred.; jr.; prereq., 37-38-39)	Ar	Ar	Mu	Ar

No.	Title	Hour	Day	Room	Instructor
77f-78w-79s	Fourth Year of Other Orchestral Instruments ..... (6 or 12 cred.; sr.; prereq., 74-75-76)	Ar	Ar	Mu	Ar
86f-87w-88s	Normal Piano ..... (6 cred.; jr.; prereq., 2 yrs. piano)	VII	MWF	Mu	Miss Reeves
89f-90w-91s	Adv. Normal Piano..... (6 cred.; sr.; prereq., 86-87-88)	VIII	MWF	Mu	Miss Reeves
100f-101w-102s	Composition Orchestration ..... (9 cred.; jr., sr.; prereq., 1-2-3, 4-5-6)	Ar	Ar	Mu	Mr. Ferguson
103f-104w-105s	Analysis ..... (3 cred.; jr., sr.; prereq., 1-2-3)	IV	W	Mu	Mr. Pepinsky
106f-107w-108s	History of Music..... (3 cred.; jr., sr.; prereq., 1-2-3)	II	MWF	Mu	Mr. Ferguson
109f-110w-111s	Bach and Beethoven..... (9 cred.; sr.; prereq., 106-107-108)	VII, VIII	TTh	Mu	Mr. Ferguson
112f-113w-114s	Ensemble ..... (6 cred.; jr.)				
	Sec. 1	VII	TTh	Mu	Mr. Pepinsky
	2 (For voice students)	VII	TTh	Mu	Miss Hull
115f-116w-117s	Advanced Ensemble ..... (6 cred.; sr.; prereq., 112-113-114)				
	Sec. 1	VI	MW	Mu	Mr. Pepinsky
	2 (For voice students)	VI	MW	Mu	Mr. Killeen, Miss Hull, Mrs. Richter
121f-122w-123s	Romantic Movement ..... (6 cred.; jr., sr.; prereq., 106-107-108)	VII	WF	Mu	Mr. Lindsay
124f-125w-126s	Advanced Harmony ..... (6 cred.; jr., prereq., 4-5-6)	Ar	Ar	Mu	Mr. Scott
127f-128w-129s	Advanced Composition ..... (6 cred.; sr., prereq., 4-5-6)	Ar	Ar	Mu	Mr. Ferguson

PHILOSOPHY

No.	Title	Hour	Day	Room	Instructor
1f	Problems of Philosophy..... (5 cred.; soph., jr., sr.; no prereq.)				
	Sec. 1	II	MWThFS	321F	Mr. Conger
	2	VII	MTWThF	322F	
1w	Problems of Philosophy..... (See 1f)				
	Sec. 1	III	MTThFS	321F	Mr. Swenson
	2	VII	MTWThF	322F	Mr. Conger
1s	Problems of Philosophy..... (See 1f)				
	Sec. 1	IV	MTWFS	321F	Mr. Conger
	2	VI	MTWThF	321F	
2f	Logic ..... (5 cred.; soph., jr., sr.; no prereq.)				
	Sec. 1	III	MTThFS	321F	Mr. Swenson
	2	IV	MTWFS	321F	

No.	Title	Hour	Day	Room	Instructor
2w	Logic				
	(See 2f)				
	Sec. 1	IV	MTWFS	321F	
	2	VII	MTWThF	321F	
2s	Logic				
	(See 2f)				
	Sec. 1	III	MTThFS	321F	Mr. Swenson
	2	IV	MTWFS	113F	
3f	Ethics	IV	MTWFS	322F	Mr. Wilde
	(5 cred.; soph., jr., sr.; no prereq.)				
3s	Ethics	I	TWThFS	322F	Mr. Wilde
	(See 3f)				
10s	Science and Religion.....	VII	TTh	321F	Mr. Conger
	(2 cred.; soph., jr., sr.; prereq., 10 cred. in phil. or a science)				
50w	Ancient and Medieval Philosophy..	IV	MTWFS	322F	Mr. Wilde
	(5 cred.; jr., sr.; prereq., 10 cred. or 15 cred. in phil. and soc. sci.)				
51s	Modern Philosophy	IV	MTWFS	322F	Mr. Wilde
	(5 cred.; jr., sr.; prereq., 10 cred. or 15 cred. in phil. and soc. sci.)				
100f	History of Religions	II	TThS	322F	Mr. Conger
	(3 cred.; jr., sr., grad.; prereq., 10 cred.)				
101w	Psychology of Religion.....	II	TThS	322F	Mr. Conger
	(3 cred.; jr., sr., grad.; prereq., 10 cred.)				
102s	Philosophy of Religion.....	II	TThS	322F	Mr. Swenson
	(3 cred.; jr., sr., grad.; prereq., 10 cred.)				
103	*Esthetics*	*Not offered in 1924-25.*			
	(3 cred.; jr., sr., grad.; prereq., 10 cred.)				
104	History of Esthetics.....	II	MWF	322F	Mr. Swenson
	(3 cred.; jr., sr., grad.; prereq., 10 cred.)				
108-109	*History of Ethics*	*Not offered in 1924-25.*			
	(6 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 10 cred. in phil.)				
120	*Scandinavian Philosophy*	*Not offered in 1924-25.*			
	(3 cred.; jr., sr., grad.; prereq., 10 cred.)				
124f	Political and Social Ethics.....	I	TWThFS	322F	Mr. Wilde
	(5 cred.; jr., sr., grad.; prereq., 20 cred in soc. sci. or 10 cred. in phil.)				
129w	Modern Political Thought.....	I	TWThFS	322F	Mr. Wilde
	(5 cred.; jr., sr., grad.; prereq., 20 cred in soc. sci. or 10 cred. in phil.)				
135-136	*Philosophy of Plato*	*Not offered in 1924-25.*			
	(6 cred.; jr., sr., grad.; prereq., 10 cred.)				
141-142	*Metaphysics*	*Not offered in 1924-25.*			
	(6 cred.; jr., sr., grad.; prereq., 10 cred. in phil. incl. 2)				

No.	Title	Hour	Day	Room	Instructor
147f-148w	Advanced Logic ..... (6 cred.; jr., sr., grad.; prereq., 10 cred. in phil. incl. 2)	II	MWF	316F	Mr. Swenson
151f-152w	Modern Idealism ..... (6 cred.; sr., grad.; prereq., 15 cred. in phil.)	VIII	MWF	316F	Mr. Swenson
161f-162w-163s	Seminar in Philosophy..... (9 cred.; sr., grad.; prereq., 20 cred. in phil. and consent of instructor)	Ar	Ar	316F	Mr. Wilde, Mr. Swenson, Mr. Conger

PHYSICS

Major Adviser: H. A. Erikson

REQUIREMENTS OF THE DEPARTMENT

For a teacher's certificate.—Sixteen quarter credits in physics.

For University teacher's certificate in natural science, see specialized curriculum, Part I of Education bulletin.

Introductory Courses

No.	Title	Hour	Day	Room	Instructor
1f,w	Elem. of Mechanics and Sound... (3 cred.; all; prereq., Math. 6, or equiv.)				
	Lect.	VIII	MWF	30Ph	Mr. Erikson
	Quiz.	II	Th	100C	
1s	Elem. of Mechanics and Sound... (See 1f,w)				
	Lect.	III	TThS	30Ph	Mr. Erikson
	Quiz.	II	Th	100C	
2f,w,s	Elem. of Mechanics Lab..... (1 cred.; all; prereq., 1 or reg. in 1)				
	Sec. 1	VI, VII	T	16Ph	Mr. Erikson
	2	VIII, IX	T	16Ph	and assistants
	3	I, II	M	16Ph	
9s	Acoustics ..... (3 cred.; all; no prereq.)	VIII	MWF	30Ph	Mr. Power
10s	Acoustics Lab. ..... (1 cred.; all; prereq., 9 or reg. in 9)	Ar	Ar	30Ph	Mr. Power
21f	Heat ..... (3 cred.; all; prereq., 1)				
	Lect.	III	TThS	30Ph	Mr. Miller
	Quiz.	IX	Th	30Ph	Mr. Miller
21w	(For schedule of hours, see Physics 23w, Engineering program)				
22f	Heat Laboratory ..... (1 cred.; all; prereq., 2, 21, or reg. in 21)				
	Sec. 1	VI, VII	M	23Ph	Mr. Miller
	2	VIII, IX	M	23Ph	and assistants
	3	VI, VII	T	23Ph	
	4	VIII, IX	T	23Ph	
22w	(For schedule of hours, see Physics 24w, Engineering program)				

No.	Title	Hour	Day	Room	Instructor
31f,s	Optics				
	(3 cred.; all; prereq., 1)				
	Lect.	I	TThS	30Ph	Mr. Valasek
	Quiz.	IX	Th	30Ph	Mr. Valasek
32f,s	Optics Laboratory				
	(1 cred.; all; prereq., 2, 31, or reg. in 31)				
	Sec. 1	VI, VII	Th	23Ph	Mr. Valasek
	2	VI, VII	F	23Ph	Mr. Valasek
	3	VIII, IX	F	23Ph	Mr. Valasek
35w	Optics	I	TTh	30Ph	Mr. Valasek
	(2 cred.; all; prereq., 1)				
41w	Magnetism and Electricity.....				
	(3 cred.; all; prereq., 1)				
	Lect.	III	TThS	30Ph	Mr. Zeleny
	Quiz.	IX	Th	30Ph	Mr. Zeleny
41s	(For schedule of hours, see Physics 43s, Engineering program)				
42w	Electrical Laboratory				
	(1 cred.; all; prereq., 2, 41, or reg. in 41)				
	Sec. 1	VI, VII	T	31Ph	Mr. Zeleny
	2	VIII, IX	T	31Ph	and assistants
	3	VI, VII	W	31Ph	
42s	(For schedule of hours, see Physics 44s, Engineering program)				

Intermediate Courses

101f-103w-105s	Theoretical Physics	IV	MTWF	18Ph	Mr. Tate
	(5 cred.; jr., sr., grad.; prereq., 12 cred. in phys., Math. 51)				
102f	Laboratory Arts				
	(3 cred.; jr., sr., grad.; prereq., 12 cred. in physics)				
	Sec. 1	VI-VIII	MW	2Ph	Mr. Power
	2	VI-VIII	TTh	2Ph	Mr. Power
104w	Precision Mechanics				
	(3 cred.; jr., sr., grad.; prereq., 12 cred. in phys., Math. 51)				
	Sec. 1	VI-VIII	MW	2Ph	Mr. Power
	2	VI-VIII	TTh	2Ph	Mr. Power
114f-116w-118s	Elem. Phys. Investigation.....	Ar	Ar	1Ph	Mr. Tate
	(3 cred.; jr., sr., grad.; prereq., 106, Math. 51)				
115f-117w-119s	Elem. of Math. Physics.....	Ar	Ar	20Ph	Mr. Van Vleck
	(3 cred.; jr., sr., grad.; prereq., 105, Math. 51)				
122s	Pyrometry and Heat.....	VI-VIII	MWF	9Ph	Mr. Miller
	(3 cred.; jr., sr., grad.; prereq., 21 and 22)				
132w	Applied Optics	Ar	Ar	3Ph	Mr. Valasek
	(3 cred.; jr., sr., grad.; prereq., 31 and 32)				
142f	Elect. Measurements	See Engineering program			Mr. Zeleny
	(3 cred.; jr., sr., grad.; prereq., 41 and 42)				
146w	Elect. Meas. of Precision	Ar	Ar	12Ph	Mr. Zeleny
	(3 cred.; jr., sr., grad.; prereq., 142)				

No.	Title	Hour	Day	Room	Instructor
148w	Radioactivity ..... (3 cred.; jr., sr., grad.; prereq., 41, 42)	Ar	Ar	15Ph	Mr. Erikson
150s	Conduction through Gases..... (3 cred.; jr., sr., grad.; prereq., 142)	Ar	Ar	15Ph	Mr. Erikson

NOTE.—Credits stated are *credits per quarter.*

POLITICAL SCIENCE

REQUIREMENTS OF THE DEPARTMENT

For a teacher's certificate in government.—Major recommendation: at least 36 credits in political science including American Government, State or Municipal Government, Introduction to Political Science and at least 12 credits in Senior College courses not including Course 51-52-53.

Minor recommendation: at least 18 credits in political science including American Government, Introduction to Political Science, and either State or Municipal or Comparative European Government.

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

Economics 154, Public Utilities; 169, Labor and Socialist Movement in Europe; 191-192, Public Finance; and 193, State and Local Taxation.

History 33-34, English Legal Institutions; 106-107-108, Europe 1815-1914; 109, Modern England; 146-147, Constitutional History of the United States; 153, The West in American Politics since 1865; 168, Topics in American Foreign Relations.

Sociology 140, History of Social Theory.

Civil Engineering 53, Municipal Engineering.

Philosophy 129, Modern Political Thought.

INTRODUCTORY COURSES

No.	Title	Hour	Day	Room	Instructor
1f	American Government ..... (5 cred.; soph., jr., sr.; and fr. with 10 cred. in hist.; no prereq.)				
	Lect.	IV	MWF	OLAud	Mr. Young
	Sec. 1	I	TTh	OLb	
	2	II	TTh	15F	
	3	III	TTh	322F	
	4	IV	TS	OLc	
	Lect.	VII	MWF	OLAud	Mr. Kumm
	5	VI	TTh	3F	
	6	VII	TTh	OLa	
	7	VII	TTh	OLc	
1w	American Government ..... (See 1f)				
	Lect.	IV	MWF	OLAud	Mr. Young
	Sec. 1	I	TTh	6F	
	2	II	TTh	6F	
	3	III	TTh	322F	
	4	IV	TS	OLc	
	Lect.	VII	MWF	OLAud	Mr. Allin
	5	VI	TTh	3F	
	6	VII	TTh	OLa	

No.	Title	Hour	Day	Room	Instructor
1s	American Government				
	(See 1f)				
	Lect.	IV	MWF	OLAud	Mr. Young
	Sec. 1	I	TTh	Ar	
	2	II	TTh	6F	
	3	III	TTh	322F	
	4	IV	TS	OLc	
	Lect.	VII	MWF	OLAud	Mr. Allin
	5	VI	TTh	3F	
	6	VII	TTh	OLa	
	7	VII	TTh	OLc	
2f,w,s	State Government				
	(5 cred.; soph., jr., sr., and fr. with 10 cred. in hist.; no prereq.)				
	Lect.	VI	MWF	OLAud	Mr. Lambie
	Sec. 1	VI	TTh	OLa	
	2	VI	TTh	6F	
	3	VII	TTh	6F	
	4	Ar	Ar		
	INTERMEDIATE COURSES				
3w,s	Comparative European Government	IV	MTWFS	OLa	Mr. Gaus
	(5 cred.; soph., jr., sr.; prereq., 1)				
11f,w,s	Municipal Government	I	TWThFS	OLa	Ar
	(5 cred.; soph., jr., sr.; prereq., 1 or 2)				
15f	Introd. to Political Science.....	III	MTThFS	112OL	Mr. Allin
	(5 cred.; soph., jr., sr.; prereq., 1 or 2)				
25f,w,s	World Politics	VI	MTWThF	112OL	Mr. Quigley
	(5 cred.; soph., jr., sr.; prereq., 1 or 10 cred. in hist.)				
	ADVANCED COURSES				
51f-52w-53s†*	Business Law				
	(9 cred.; jr., sr.; prereq., 10 cred. in pol. sci. or 10 cred. in econ., or 5 cred. in each)				
	Lect.	II	WF	OLAud	Mr. Young
	Sec. 1	I	M	110F	
	2	II	M	102F	
	3	IV	M	Ar	
	4	VI	M	311F	
	5	I	T	Ar	
	6	II	T	104F	
	7	IV	T	125F	
	8	VI	T	25F	
102	*Political Parties*	*Not offered in 1924-25.*			
	(3 cred.; jr., sr., grad.; prereq., 15 cred.)				

* Cannot be counted for a minor sequence.

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

No.	Title	Hour	Day	Room	Instructor
105s	Colonization ..... (3 cred.; jr., sr., grad.; prereq., 15 cred. or 20 cred. in soc. sci.)	II	TThS	OLa	Mr. Allin
111	*Municipal Functions* ..... (3 cred.; jr., sr., grad.; prereq., 15 cred. incl. 11)	*Not offered in 1924-25.*			
113	*Municipal Problems* ..... (3 cred.; jr., sr., grad.; prereq., 18 cred. incl. 11)	*Not offered in 1924-25.*			
115	*Municipal Corporations* ..... (3 cred.; jr., sr., grad.; prereq., 18 cred. incl. 11)	*Not offered in 1924-25.*			
121f-122w†	International Law ..... (6 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. 10 cred. in pol. sci. or Hist. 106-107-108)	IV	MWF	OLb	Mr. Allin
123s	International Organization ..... (3 cred.; jr., sr., grad.; prereq., 121-122)	IV	MWF	OLb	Mr. Quigley
124	*Problems in International Law*.... (3 cred.; jr., sr., grad.; prereq., 121-122)	*Not offered in 1924-25.*			
125-126	*American Diplomacy* ..... (6 cred.; jr., sr.. grad.; prereq., 20 cred. in soc. sci. incl. 10 cred. in pol. sci. or Hist. 6-7)	*Not offered in 1924-25.*			
128	*Problems in International Relations* ..... (3 cred.; jr., sr., grad.; prereq., 25 and either 121-122, 125-126, 166-167 or 138, or Hist. 106-107-108)	*Not offered in 1924-25.*			
130f	Introduction to Administration... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. 10 cred. in pol. sci.)	II	MWF	OLb	Mr. Gaus
131w	Principles of Public Administration ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. 10 cred. in pol. sci.)	II	MWF	OLb	Mr. Lambie
132s	Problems in Public Administration ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. one Senior College course)	II	MWF	OLb	Mr. Lambie
136f-137w	Far Eastern Government and Politics ..... (6 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci.)	VII	MWF	OLa	Mr. Quigley
139s	Far Eastern Diplomacy..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. Course 25, or 10 cred in pol. sci. and Hist. 1-2 or 2-3)	VII	MWF	OLa	Mr. Quigley

No.	Title	Hour	Day	Room	Instructor
141f	Problems in State Government and Constitutional Law ..... (3 cred.; jr., sr., grad.; prereq., 15 cred.)	VI	MWF	OLa	Mr. Kumm
145w	Legislative Power and Methods... (3 cred.; jr., sr., grad.; prereq., 15 cred.)	II	TThS	OLa	Mr. Young
151w-152s†	Constitutional Law ..... (6 cred.; jr, sr., grad.; prereq., 15 cred. incl. 1 Senior College course)	VI	MWF	OLa	Mr. Kumm
155s	Administrative Law ..... (3 cred.; jr., sr., grad.; prereq., 15 cred.)	I	MWF	OLc	Mr. Kumm
157f	Police Power ..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci.)	II	TThS	OLa	Mr. Young
158s	Government and Business..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci.)	II	TThS	OLa	Mr. Young
159w	Law of Public Utilities..... (3 cred.; jr., sr., grad.; prereq., 15 cred. in pol. sci. or Econ. 155)	I	MWF	OLc	Mr. Kumm
161	*Comparative Federal Government*.. (3 cred.; jr., sr., grad.; prereq., 20 cred.)	*Not offered in 1924-25.*			
166w-167s†	Government and Politics of the British Empire ..... (3 cred.; jr., sr., grad.; prereq., 15 cred. or Hist. 109)	II	MWF	OLa	Mr. Allin
187s	Recent Political Theory..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci.)	II	TThS	OLb	Mr. Gaus

PREVENTIVE MEDICINE AND PUBLIC HEALTH

MEDICAL SCHOOL

NOTE.—Students desiring to major in this department are advised to consult the special bulletin, obtainable at the office of the registrar.

No.	Title	Hour	Day	Room	Instructor
2w	First Aid	VI, VII	F	WH(Farm)	Miss Fisher
3f,w,s	Personal Hygiene and Elementary Sanitation ..... (2 cred.; fr.; no prereq.) (Limited to 40 men)	IV	TS	129MH	
50f,w,su	Public and Personal Health..... (3 cred.; jr., sr.; prereq., An. Biol. 1-2 and Psy. 1-2)	V	MWF	315MH	

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

No.	Title	Hour	Day	Room	Instructor
52f,w,s	Health Care of the Family..... (3 cred.; jr., sr.; prereq., Bact. 1, Phys. 4) (Lab. sections limited to 20)				
	Lect.	I	S	213HE	Dr. Mayer
	Sec. 1	VI, VII	TTh	WH	Miss Fisher
	2	VI, VII (fall, spring)	MF	WH	Miss Fisher
		I, II (winter)	MW	WH	Miss Fisher
53f	Elements of Prreventive Medicine.. (3 cred.; jr., sr.; prereq., Psy. 1-2; Bact. 1 or equiv.)	I	MWF	315MH	Dr. Diehl
58w	Maternal and Child Hygiene..... (1½ cred.; jr., sr.; prereq., 50 or 52 or 53)	II	MW	315MH	Dr. Boynton, Dr. Adair, and others
59w	Social Hygiene ..... (1 cred.; jr., sr.; prereq., 50 or 52 or 53)	II	S	315MH	
60w	The Tuberculosis Problem..... (2 cred.; jr., sr.; prereq., 50 or 52 and 53)	IV	TS	315MH	Dr. Myers
61w	Mental Hygiene ..... (1 cred.; jr., sr.; prereq., 50 or 52 or 53, Psy. 1-2)	II	T	315MH	Dr. Hamilton and others
62w,su	Principles of Public Health Nursing ..... (3 cred.; jr., sr.; for public health nurses)	I	TThS	315MH	Miss Butzerin
63f,w,s,su	Field Practice in Visiting Nursing ..... (176 hrs.; 5 cred.; jr. sr.; prereq., 62)	Ar	Ar	Ar	Miss Haupt
64f,w,s,su	Field Practice in Infant Welfare Nursing ..... (108 hrs.; 3 cred.; jr., sr.; prereq., 58 and 62)	Ar	Ar	Ar	Miss Butzerin
65f,w,s	Field Practice in School Nursing.. (80 hrs.; 2 cred.; jr., sr.; prereq., 62)	Ar	Ar	Ar	Miss Butzerin
66f,w,s,su	Field Practice in County Nursing.. (80 hrs.; 2 cred.; jr., sr.; prereq., 62)	Ar	Ar	Ar	Miss Butzerin
67f,w,s,su	Field Practice in a Tuberculosis Sanatorium ..... (80 hrs.; 2 cred.; jr., sr.; prereq., 60 and 62)	Ar	Ar	Ar	Dr. Mariette
73w	Occupational Hygiene and Disease.. (2 cred.; jr., sr.; prereq., 50, 52, or 54)	IV	MW	111MH	Dr. Myers
80w	Educational Hygiene ..... (3 cred.; jr., sr.; prereq., 50 or 52 or 53)	II	MWF	129MH	Dr. Diehl
101s	Sanitary Surveys ..... (2 cred.; jr., sr., grad.; prereq., 53 or 55)	Ar	Ar	Ar	Dr. Myers

No.	Title	Hour	Day	Room	Instructor
102f,w,s,su	Sanitation ..... (Cred. ar.; jr., sr., grad.; prereq., Bact. 101; Chem. 21 or 27, 32 or 37; Phys. 22, 32, 42)	Ar	Ar	SBH	Mr. Whittaker, Dr. Archibald, Mr. Child
103s	Public Health Bacteriology..... (3 cred. or ar.; jr., sr., grad.; prereq., Bact. 101, 116)	VII, VIII or ar	MWF or ar	SBH	Miss Wade
105f,w,s	Vital Statistics ..... (Cred. ar.; jr., sr., grad.; prereq., 53 and Soc. 45, and open to grad. med. stud.)	Ar	Ar	SBH	Dr. Chesley, Mr. Feezer
106f,w,s	Public Health Administration..... (Cred. ar.; jr., sr., grad.; prereq., 53 or 56)	Ar	Ar	Ar	Dr. Chesley, Dr. Diehl

PSYCHOLOGY

No.	Title	Hour	Day	Room	Instructor
1f-2w†	General Psychology ..... (6 cred.; soph., jr., sr.; no prereq.)				
	Lect.	I	MW	MuAud	Mr. Elliott,
	Rec. (one hour)	II	Th or F or S	Psy	Mr. Foster
		I	Th or F or S	Psy	
		VII	Th or F	Psy	
		VIII	Th or F	Psy	
1f-6w†	General Psychology for Business Students ..... (6 cred.; bus. and pre-bus., soph., jr., sr.; no prereq.)				
	Lect.	III	MW	MuAud	Mr. Elliott,
	Rec. (one hour)	III	Th or F or S	Psy	Mr. Foster,
		IV	F or S	Psy	Mr. Paterson
3s	Psychology Applied to Daily Life.. (3 cred.; soph., jr., sr.; prereq., 1-2 or 1-6)				
	Lect.	II	MW	202B	Mr. Elliott,
	Rec. (one hour)	I	F	Psy	Mr. Paterson
		II	Th or F	Psy	
1w-2s†	General Psychology ..... (See 1f-2w. Registration limited. Written permission must be obtained from Jun. Col. Office.)	Ar	Ar	Psy	
1s,2s†	General Psychology ..... (Identical with 1f-2w combined, 6 cred. Registration limited. Written permission must be obtained from Jun. Col. Office.)	Ar	Ar	Psy	
4f-5w†	Introd. Lab. Psychology..... (4 cred.; soph., jr., sr.; with or after 1-2 or 1-6) (Sections limited to 40)				
	Sec. 1	I, II	TTh	211Psy	Mr. Foster
	2 (For pre-law students)	III, IV	TS	211Psy	and others
	3	VI, VII	TTh	211Psy	
	4	III, IV	MW	211Psy	
	5	VIII, IX	TTh	211Psy	

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

No.	Title	Hour	Day	Room	Instructor
7s	Introd. Lab. Psychology..... (See 4f-5w) (Identical with 4f-5w combined)				
	Sec. 1	VI, VII	MTF	211Psy	Mr. Foster
	2	III, IV	MTWF	211Psy	and others
9s	Animal Behavior ..... (3 cred.; soph., jr., sr.; prereq., 1-2 or 1-6)	VIII	MWF	109Psy	Mr. Lashley
15s	Psychology of Sensation..... (3 cred.; soph., jr., sr.; prereq., 1-2 or 1-6)	II	TThS	Psy	Mr. Foster
56w	Psychology of Advertising..... (3 cred.; jr., sr.; prereq., 1-2 or 1-6, Prin. of Econ.)	VII	MWF	115Psy	Mr. Paterson
60f	Employment Psychology ..... (3 cred.; jr., sr.; prereq., 1-2 or 1-6, Prin. of Econ.)	VII	MWF	115Psy	Mr. Paterson
101f-102w†-103s	Experimental Psychology ..... (6 or 9 cred.; jr., sr., grad.; prereq., 1-2, and 4-5 or 7, or 8 cred. in physics)	VII VIII	MWF WF	116Psy	Mr. Foster
108f-109w†	Adv. General Psychol. ..... (6 cred.; jr., sr., grad.; prereq., 1; 2 or 6; 4-5 or 7)	III	TThS	109Psy	Miss Ludgate
114w-115s†	Human Behavior ..... (6 cred.; jr., sr., grad.; prereq., 1; 2 or 6; 4-5 or 7, or Biol. 1-2)	II	TThS	109Psy	Mr. Elliott
121f-122w†-123s	Neuropsychology ..... (6 or 9 cred.; jr., sr., grad.; prereq., 1; 2 or 6; 114-115 or 144-145 or by permission)	VII, VIII	MWF	109Psy	Mr. Lashley
124f	Psychology of Learning..... (3 cred.; jr., sr., grad.; prereq., 1; 2 or 6; 4-5 or 7)	IV	MWF	109Psy	Mr. Lashley
125f-126w†	Psych. of Individual Differences .. (6 cred.; jr., sr., grad.; prereq., 1; 2 or 6; 4-5 or 7, or Ed. Psy. 126-127)	II	MWF	109Psy	Mr. Woodrow
127s	Social Psychology ..... (3 cred.; jr., sr., grad.; prereq., 1; 2 or 6; 4-5 or 7 or Biol. 1-2 or 10 cred. in soc.)	III	TThS	109Psy	Mr. Bird
130s	Vocational Psychology ..... (2 cred.; jr., sr.; prereq., 1-2 or 1-6, 4 additional cred. in psych., educ., or econ.)	IX, X	F	115Psy	Mr. Paterson
144w-145s†	Abnormal Psychology ..... (6 cred.; jr., sr., grad.; prereq., 1; 2 or 6; 4-5 or 7 or Biol. 1-2 or 10 cred. in soc.)	IV	MWF	109Psy	Mr. Lashley

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

ROMANCE LANGUAGES

Major Adviser: E. W. Olmsted

REQUIREMENTS OF THE DEPARTMENT

For a teacher's certificate.—Major recommendaton: in addition to Courses 1-2 and 3-4, 36 credits in one language.

Minor recommendation: in addition to Courses 1-2 and 344, 18 credits in one language.

Courses in French and Spanish conversation.—May be taken only when accompanied by the corresponding courses in composition. No credit will be given for work done in a course in conversation unless the course in composition is passed also. Courses in composition may be taken separately.

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	Room	Instructor
(1s)-2f†	Beginning French	I	TWThFS	202F	Ar
	(See 1f-2w)	VI	MTWThF	213F	Ar
1f-2w†	Beginning French	I	TWThFS	213F	Ar
	(10 cred.; all; no prereq.)	II	MWThFS	227F	Ar
		IV	MTWFS	201F	Ar
		VI	MTWThF	226F	Ar
		VII	MTWThF	202F	Ar
1w-2s†	Beginning French	IV	MTWFS	202F	Ar
	(See 1f-2w)	VI	MTWThF	202F	Ar
1s-(2f)†	Beginning French	I	TWThFS	227F	Ar
	(See 1f-2w)	VI	MTWThF	110F	Ar
(3s)-4f	Intermediate French	II	MWThFS	306F	Ar
	(See 3f-4w)	IV	MTWFS	124F	Ar
		VI	MTWThF	202F	Ar
3f-4w	Intermediate French	I	TWThFS	125F	Ar
	(10 cred.; all; prereq., 1-2, or 2	III	MTThFS	213F	Ar
	yrs. high school French)	VII	MTWThF	213F	Ar
		VIII	MTWThF	201F	Ar
3w-4s	Intermediate French	I	TWThFS	202F	Ar
	(See 3f-4w)	VI	MTWThF	213F	Ar
3s-(4f)	Intermediate French	I	TWThFS	213F	Ar
	(See 3f-4w)	II	MWThFS	227F	Ar
		IV	MTWFS	201F	Ar
		VI	MTWThF	226F	Ar
		VII	MTWThF	202F	Ar
8f-9w-10s*	Scientific French (pre-medic)	I	MWF	3F	Ar
	(9 cred.; pre-med.; prereq., 3 or equiv.)				
20f‡	Oral and Written French.....	III	MTThFS	125F	Ar
	(5 cred.; all; prereq., 4 or 3 yrs. high school French)	VII	MTWThF	227F	Ar

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

‡ See departmental requirements, note on freshmen entering with three years of high school French (or Spanish). No student may receive credit for both Course 20 and Courses 50-51-52 and 53-54-55.

* Students may enter any quarter.

( ) Numbers in parentheses do not refer to the year 1924-25. See Course Numbering, page 104, S. L. and A. bulletin.

No.	Title	Hour	Day	Room	Instructor
20s‡	Oral and Written French.....	I	TWThFS	15F	Ar
	(See 20f)	III	MTThFS	213F	Ar
		VII	MTWThF	213F	Ar
21f-22w-23s†	Survey of French Lit.	II	TThS	209½F	Mr. LeCompte
	(9 cred.; all; prereq., 3-4 or 20	III	TThS	27F	
	or 4 yrs. high school French)	VII	MWF	107F	Mr. Searles
24w-25s†	Survey of French Lit.	III	MTThFS	125F	Mr. LeCompte
	(10 cred.; all; prereq., 3-4 or 20	VII	MTWThF	113F	Mr. Watts
	or 4 yrs. high school French)				
49f,w,s	French Pronunciation	VIII	MWF	207F	Miss Guinotte
	(3 cred.; soph., jr., sr.; prereq., 3-4 or 4 yrs high school French)				
50f-51w-52s†	French Conversation¶	III	MW	201F	Mr. Frelin
	(3 cred.; jr., sr.*; prereq., 3-4)	VI	MW	302F	Mr. Clefton
53f-54w-55s†	French Composition	III	F	201F	Mr. Frelin
	(3 cred.; jr., sr.*; prereq., 3-4)	VI	F	302F	Mr. Clefton
56f-57w-58s†	Adv. French Conversation¶.....	II	MW	113F	Mr. Clefton
	(3 cred.; jr., sr.*; prereq., 20 or	III	MW	203F	Miss Guinotte
	50-51-52)	VI	MW	108F	Miss Nissen
59f-60w-61s†	Adv. French Composition	II	F	113F	Mr. Clefton
	(3 cred.; jr., sr.*; prereq., 20 or	III	F	203F	Miss Guinotte
	53-54-55)	VI	F	108F	Miss Nissen
62f	Practical French Phonetics	VIII	MWF	203F	Mr. Coburn
	(3 cred.; jr., sr.*; prereq., 20, or 50-51-52 and 53-54-55)				
80f-81w-82s†	French Lit.: 19th Century.....	IV	MWF	227F	Mr. Barton
	(9 cred.; jr., sr.*; prereq., 21-22-23	VII	MWF	114F	Mr. Clefton
	or 24-25)				
100w-101s†	French Oral Diction.....	VIII	MWF	203F	Mr. Coburn
	(6 cred.; jr., sr., grad.; prereq., 62)				
103f-104w-105s†	French Syntax and Comp.	VI	F	304F	Mr. Barton
	(3 cred.; jr., sr., grad.; prereq., 59-60-61)				
115f-116w-117s†	French Lit.: 17th Century.....	III	TThS	201F	Mr. Searles
	(9 cred.; jr., sr., grad.; prereq., 21-22-23, or 24-25)				
118f-119w-120s†	French Lit.: 18th Century	III	MWF	113F	Mr. Sirich
	(9 cred.; jr., sr., grad.; prereq., 21-22-23, or 24-25)				
121-122-123†	*French Lit.: 16th Century*.....	*Not offered in 1924-25.*			
	(9 cred.; jr., sr., grad.; prereq., 80-81-82, or 115-116-117 or 118-119-120)				
141-142-143†	*Realistic Novel: 19th Century*.....	*Not offered in 1924-25.*			
	(6 cred.; jr., sr., grad.; prereq., 80-81-82)				

* Open without petition to sophomores who have the prerequisites and who satisfy the requirements in General Information, section 43, S. L. and A. bulletin.

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

¶ Courses in conversation may be taken only when accompanied by the corresponding courses in composition. Courses in composition may be taken separately.

‡ See departmental requirements, note on freshmen entering with three years of high school French (or Spanish). No student may receive credit for both Course 20 and Courses 50-51-52 and 53-54-55.

No.	Title	Hour	Day	Room	Instructor
150f-151w-152s†	French Dramatic Lit. ..... (6 cred.; jr., sr., grad.; prereq., 21-22-23 or 24-25)	III	TTh	203F	Mr. Olmsted
153s	French Lyric Poetry ..... (4 cred.; jr., sr., grad.; prereq., 20-21-22 or 24-25)	VI	MTWF	212F	Mr. van Roosbroeck
156w	Molière ..... (4 cred.; jr., sr., grad.; prereq., 21-22-23 or 24-25)	IV	MTWF	316F	Mr. Searles
157w	Contemporary French Novel..... (4 cred.; jr., sr., grad.; prereq., 21-22-23 or 24-25)	VI	MTWF	316F	Mr. van Roosbroeck
162f-163w-164s	French Romanticism ..... (6 cred.; jr., sr., grad.; prereq., 80-81-82)	VII	TTh	203F	Mr. LeCompte
171f-172w-173s†	History of French Language..... (3 cred.; jr., sr., grad.; prereq., 59-60-61)	VIII	Th	203F	Mr. LeCompte
174f-175w-176s†	Lectures in French..... (6 cred.; jr., sr., grad.; prereq., 50-51-52, 53-54-55 (or 20); and 80-81-82)	IX	TTh	201F	Mr. van Roosbroeck
191f-192w-193s†	Research Meth. and Material..... (3 cred.; sr., grad.; prereq., consent of instructor)	IX	M	201F	Mr. van Roosbroeck
	ITALIAN				
1f-2w†	Beginning Italian ..... (10 cred.; soph., jr., sr.; no prereq.)	II	MWThFS	203F	Miss Phelps
80s	Italian Survey: Renaissance Period ..... (5 cred.; jr., sr.; prereq., 1-2)	II	MWThFS	203F	Miss Phelps
81	*Italian Survey: Romantic Period..* (5 cred.; jr., sr.; prereq., 1-2)	*Not offered in 1924-25.*			
159f-160w†	Dante, Petrarch, Boccaccio..... (6 cred.; jr., sr., grad.; prereq., 80 or 81)	IV	MWF	203F	Miss Phelps
162s	Dante (in English)..... (3 cred.; jr., sr., grad.; prereq., 4 cred. in Eng. besides A-B-C, or Fr. 21-22-23. Required of students taking 159-160)	IV	MWF	203F	Miss Phelps
	SPANISH				
(1s)-2f†	Beginning Spanish	III	MTThFS	107F	Ar
	(See 1f-2w)	VII	MTWThF	201F	Ar
1f-2w†	Beginning Spanish	I	TWThFS	226F	Ar
	(10 cred.; all; no prereq.)	IV	MTWFS	226F	Ar
		VI	MTWThF	201F	Ar
		VIII	MTWThF	202F	Ar

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

( ) Numbers in parentheses do not refer to the year 1924-25. See Course Numbering, page 104, S. L. and A. bulletin.

No.	Title	Hour	Day	Room	Instructor
1w-2s†	Beginning Spanish	II	MWThFS	202F	Ar
	(See 1f-2w)	III	MTThFS	212F	Ar
		VII	MTWThF	227F	Ar
1s-(2f)†	Beginning Spanish	II	MWThFS	201F	Ar
	(See 1f-2w)	VI	MTWThF	107F	Ar
(3s)-4f	Intermediate Spanish	II	MWThFS	202F	Ar
	(See 3f-4w)	IV	MTWFS	202F	Ar
		VI	MTWThF	227F	Ar
3f-4w	Intermediate Spanish	II	MWThFS	201F	Ar
	(10 cred.; all; prereq., 1-2 or 2	III	MTThFS	202F	Ar
	yrs. high school Spanish)	VI	MTWThF	102F	Ar
3w-4s	Intermediate Spanish	III	MTThFS	107F	Ar
	(See 3f-4w)	VII	MTWThF	201F	Ar
3s-(4f)	Intermediate Spanish	I	TWThFS	226F	Ar
	(See 3f-4w)	IV	MTWFS	226F	Ar
		VI	MTWThF	201F	Ar
		VIII	MTWThF	202F	Ar
20s‡	Oral and Written Spanish.....	III	MTThFS	202F	Ar
	(5 cred.; all; prereq., 4, or 3 yrs.	VII	MTWThF	226F	Ar
	high school Spanish)				
50f-51w-52s†	Spanish Conversation¶	II	MW	302F	Mr. Torres
	(3 cred.; jr., sr.*; prereq., 3-4)				
53f-54w-55s†	Spanish Composition	II	F	302F	Mr. Torres
	(3 cred.; jr., sr.*; prereq., 3-4)				
56f-57w-58s†	Adv. Spanish Conversation¶.....	VI	MW	203F	Mr. Coburn
	(3 cred.; jr., sr.*; prereq., 20 or				
	50-51-52)				
59f-60w-61s†	Adv. Spanish Composition.....	VI	F	203F	Mr. Coburn
	(3 cred.; jr., sr.*; prereq., 20 or				
	53-54-55)				
62-63-64†	*Practical Spanish Phonetics*	*Not offered in 1924-25.*			
	(6 cred.; jr., sr.*; prereq., 65-66-				
	67, and 20, or 50-51-52 and 53-				
	54-55)				
65f-66w-67s†	Survey of Spanish Lit.	II	TThS	302F	
	(9 cred.; jr., sr.*; prereq., 3-4)				
68w-69s†	Survey of Spanish Lit.	VI	MTWThF	115F	Mr. Torres
	(10 cred.; jr., sr.*; prereq., 3-4)				
73-74-75†	*Span. Commer. Correspond.*	*Not offered in 1924-25.*			
	(3 cred.; jr., sr.*; prereq., 20 or				
	53-54-55)				
80f-81w-82s†	Spanish Lit.: 19th Century.....	IV	MWF	213F	Mr. Torres
	(9 cred.; jr., sr.*; prereq., 65-66-				
	67, or 68-69)				
83f-84w-85s†	Spanish American Lit.	VII	MW	203F	Mr. Torres
	(6 cred.; jr., sr.*; prereq., 65-66-67				
	or 68-69 or 20 or 50-51-52 and				
	53-54-55)				

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

( ) Numbers in parentheses do not refer to the year 1924-25. See Course Numbering, page 104, S. L. and A. bulletin.

¶ Courses in conversation may be taken only when accompanied by the corresponding courses in composition. Courses in composition may be taken separately.

‡ See departmental requirements, note on freshmen entering with 3 years of high school French (or Spanish). No student may receive credit for both Course 20 and Courses 50-51-52 and 53-54-55.

* Open without petition to sophomores who have the prerequisites and who satisfy the requirements given in General Information, section 43, S. L. and A. bulletin.

No.	Title	Hour	Day	Room	Instructor
100-101-102†	*Spanish Oral Diction* ..... (6 cred.; jr., sr., grad.; prereq., 56-57-58)	*Not offered in 1924-25.*			
103f-104w-105s†	Spanish Syntax ..... (3 cred.; jr., sr., grad.; prereq., 59-60-61)	VIII	W	108F	Mr. Torres
115f-116w-117s†	Spanish Lit.: 17th Century..... (6 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	IV	TS	203F	
141-142-143†	*Spanish Novel* ..... (6 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	*Not offered in 1924-25.*			
150-151-152†	*Spanish Dramatic Lit.* ..... (6 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	*Not offered in 1924-25.*			
156-157-158†	*Spanish Lit.: 16th Century*..... (6 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	*Not offered in 1924-25.*			
159-160-161†	*Cervantes* ..... (6 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	*Not offered in 1924-25.*			
174f-175w-176s†	Lectures in Spanish..... (6 cred.; jr., sr., grad.; prereq., 20 (or 50-51-52 and 53-54-55) and 65-66-67)	IX	TTh	202F	Mr. Torres

SCANDINAVIAN

No.	Title	Hour	Day	Room	Instructor
1f-2w	Beginning Norwegian ..... (10 cred.; all; no prereq.)	I	TWThFS	206F	Mr. Bothne
3s	Intermediate Norwegian ..... (5 cred.; all; prereq., 1-2, or 1 yr. high school)	I	TWThFS	206F	Mr. Bothne
4f-5w	Adv. Norwegian (Survey)..... (10 cred.; soph., jr., sr.; prereq., 1-2-3 or 2 yrs. high school)	III	MTThFS	206F	Mr. Bothne
7f-8w	Beginning Swedish ..... (10 cred.; all; no prereq.)	II	MWThFS	206F	Mr. Stomberg
9s	Intermediate Swedish ..... (5 cred.; all; prereq., 7-8 or 1 yr. high school)	II	MWThFS	206F	Mr. Stomberg
10f-11w	Adv. Swedish ..... (10 cred.; soph., jr., sr.; prereq., 7-8-9 or 2 yrs. high school)	I	TWThFS	110F	Mr. Stomberg
12s	Ancient and Medieval Scandinavian History ..... (5 cred.; soph., jr., sr.; prereq., 10-11, or 4-5, or Hist. 1-2)	I	TWThFS	110F	Mr. Stomberg
45s	Scandinavian Mythology ..... (3 cred.; jr., sr., grad.*; prereq., none)	IV	MWF	206F	Mr. Stomberg

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

* Does not count as a Senior College course. Not open to sophomores under General Information, section 43, S. L. and A. bulletin.

No.	Title	Hour	Day	Room	Instructor
101f-102w-103s	Modern Norwegian Lit. ..... (9 cred.; jr., sr., grad.; prereq., 4-5)	II	TThS	110F	Mr. Bothne
104f-105w	Mod. Scand. History ..... (6 cred.; jr., sr., grad.; prereq., 10-11-12, or 4-5, or 15 cred. in hist.)	IV	MWF	206F	Mr. Stomberg
107f-108w-109s	Modern Swedish Lit. ..... (9 cred.; jr., sr., grad.; prereq., 10-11-12)	VI	MWF	206F	Mr. Stomberg
110w	Ibsen ..... (3 cred.; sr., grad.; prereq., 101-102-103)	IV VI	T TTh	206F 206F	Mr. Bothne
111f-112w-113s	Old Norse (Icelandic) ..... (6 cred.; sr., grad.; prereq., consent of instructor)	VI	WF	217F	Mr. Bothne
114f	Strindberg ..... (3 cred.; sr., grad.; prereq., 107-108-109)	Ar	Ar	Ar	Mr. Stomberg
116s	History of Scandinavian Languages (3 cred.; sr., grad.; prereq., 101-102-103 or 107-108-109 or 117 or 111)	II	MWF	217F	Mr. Bothne
117s	Earlier Norwegian Lit. ..... (5 cred.; jr., sr., grad.; prereq., 4-5)	III	MTThFS	206F	Mr. Bothne
130-131-132	*Danish Lit. of the 19th Century*... (9 cred.; jr., sr., grad.; prereq., 4-5)	*Not offered in 1924-25.*			
134-135	*The Landsmaal Movement*..... (6 cred.; sr., grad.; prereq., 101-102-103, or 130-131-132)	*Not offered in 1924-25.*			
136	*Björnson* ..... (3 cred.; sr., grad.; prereq., 101-102-103, or 130-131-132)	*Not offered in 1924-25.*			

SOCIOLOGY AND SOCIAL WORK

Major Adviser: R. L. Finney

No.	Title	Hour	Day	Room	Instructor
1f	Introd. to Sociology..... (5 cred.; soph., jr., sr., and 3d qu. fr.; no prereq.)				
	Sec. 1	I	TWThFS	9F	Mr. Bernard
	2	III	MTThFS	5F	
	3	IV	MTWFS	9F	
	4	VI	MTWThF	9F	
	5	VII	MTWThF	5F	
	6 (Farm, 3 cred.)	IV	MWF	105En(F)	

No.	Title	Hour	Day	Room	Instructor
1w	Introd. to Sociology.....				
	(See 1f)				
	Sec. 1	I	TWThFS	9F	Mr. Chapin
	2	III	MTThFS	5F	
	3	IV	MTWFS	9F	
	4	VI	MTWThF	9F	
	5	VII	MTWThF	5F	
	6 (Farm, 3 cred.)	IV	MWF	105En(F)	
1s	Introd. to Sociology				
	(See 1f)				
	Sec. 1	I	TWThFS	9F	Mr. Chapin
	2	II	MWThFS	5F	
	3	III	MTThFS	9F	
	4	IV	MTWFS	9F	
	5	VI	MTWThF	9F	
	6	VII	MTWThF	5F	
	7	VIII	MTWThF	9F	
	8 (Farm, 3 cred.)	IV	MWF	105En(F)	
6f,w,s	Modern Social Reform Movements				
	(3 cred.; soph., jr., sr.; prereq., 1)				
	Sec. 1	II	TThS	5F (fall, winter)	Mr. Clarke
	2	IV	MWF	3F(spring)	
	3	VI	MWF	5F	
				6F	
14f,w	Rural Sociology				
	(3 cred.; soph., jr., sr.; prereq., 1)				
	Sec. 1	III	TThS	9F	Mr. Hoffer
	2	V	MWF	9F	
	3	VI	MWF	3F	
	4 (Farm)	IV	TThS	105En(F)	
14s	Rural Sociology				
	(See 14f,w)				
	Sec. 1	III	TThS	3F	Mr. Hoffer
	2	V	MWF	9F	
	3	VI	MWF	3F	
45f,w	Social Statistics	VII	MTWThF	9F	Mr. Chapin
	(5 cred.; soph., jr., sr.; prereq., 1)				
51f,w,s	The Occurrence of the Socially Inadequate	I	MWF	5F	Mr. Bruno
	(3 cred.; jr., sr.; prereq., 10 cred. in soc. or Soc. 1 and 10 cred. in soc. sci. or psy.)				
52f,w,s	Elem. Case Work.....	I	TThS	5F	Mr. Bruno
	(3 cred.; jr., sr.; prereq., 51)				
53f,w,s	Elem. of Criminology.....	III	MWF	3F	Mr. Elmer
	(3 cred.; jr., sr.; prereq., same as for 51)				
55w	Housing Problems	I	MWF	6F	Mr. Hodson
	(3 cred.; jr., sr.; prereq., same as for 51)				
60f,w	Child Welfare	IX	MWF	9F	Mr. Hodson
	(3 cred.; jr., sr.; prereq., 51 and 52)				

No.	Title	Hour	Day	Room	Instructor
70w	Group Work in the Community... (3 cred.; jr., sr.; prereq., 51 and 52)	VIII, IX	T	5F	Mr. Clarke, Mrs. Mudgett
90f,w,s-91f,w,s-92f,w,s	Elementary Field Work..... (6 cred.; jr., sr.; prereq., 51)				
	(Fall)				
	Sec. 1	I, II, III	MW		Mrs. Mudgett
	2	I, II, III	WF		
	3	VI, VII, VIII	MW		
	4	VI, VII, VIII	WF		
	5	VI, VII, VIII	TTh		
	(Winter)				
	Sec. 1	II, III, IV	MW		Mrs. Mudgett
	2	II, III, IV	WF		
	3	VI, VII, VIII	MW		
	4	VI, VII, VIII	WF		
	5	VI, VII, VIII	TTh		
	(Spring)				
	Sec. 1	VI, VII, VIII	MW		Mrs. Mudgett
	2	VI, VII, VIII	WF		
	3	II, III, IV	TTh		
	4	VI, VII, VIII	TTh		
100f	Social Psychology ..... (3 cred.; primarily for sociology students; jr., sr., grad.; prereq., Soc. 1, Psy. 1-2, and 11 cred. in soc. sci., educ., phil., and psy.)	II	TThS	9F	Mr. Bernard
101w	Social Organism ..... (3 cred.; jr., sr., grad.; prereq., 4 courses in soc., or Soc. 1 and 15 cred. in soc. sci., educ., phil., or psy.)	II	TThS	9F	Mr. Finney
102s	Social Control ..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	II	TThS	9F	Mr. Finney
103s	Sociology of Conflict ..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	II	MWF	9F	Mr. Clarke
110w	Community Organization and Social Work in Small Towns and Country ..... (2 cred.; jr., sr., grad.; prereq., same as for 101)	VIII, IX	Th	5F	Mr. Elmer
112f	The Rural Social Survey ..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	VIII	MWF	9F	Mr. Elmer
114s	Rural Social Institutions..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	III	MWF	105En(F)	
115	*The Rural Church as a Social Institution* ..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	*Not offered in 1924-25.*			
119f	The Family ..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	III	TThS	3F	Mr. Clarke

No.	Title	Hour	Day	Room	Instructor
120f	Social Progress ..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	II	MWF	5F	Mr. Bernard
121w	Advanced Statistical Methods..... (3 cred.; jr., sr., grad.; prereq., 4 courses in soc., including 45 or its equivalent)	VII	MWF	108F	Mr. Chapin
122w-123s	Methods of Social Investigation... (6 cred.; jr., sr., grad.; prereq., same as for 101 but including 45 or its equivalent for 123s)	VIII	MWF	3F	Mr. Elmer
126-127	*Settlement and Community Center Work* ..... (4 cred.; sr., grad.; prereq., consent of director)	*Not offered in 1924-25.*			
128s	Principles of Administration Applied to Social Work..... (2 cred.; jr., sr., grad.; prereq., same as for 101)	VIII, IX	Th	5F	Mr. Hodson
130s	Advanced Case Work..... (2 cred.; sr., grad.; prereq., same as for 101 incl. 51 and 52)	VIII, IX	T	3F	Mr. Bruno
132	*Juvenile Courts and Probation*.... (2 cred.; jr., sr., grad.; prereq., 51, 52, 53)	*Not offered in 1924-25.*			
133f	Health Aspects of Case Work..... (3 cred.; jr., sr., grad.; prereq., same as for 130)	IX and ar	WF and ar	5F	Miss Haupt
134s	Legal Protection of the Child..... (3 cred.; jr., sr., grad.; prereq., same as for 101 incl. 60)	IX	MWF	5F	Mr. Hodson
135s	Field Practice in Legal Protection of the Child..... (2 cred.; jr., sr., grad.; prereq., open to students taking 134)	Ar	Ar	Ar	Mrs. Mudgett
138w-139s	Mental Case Work..... (6 cred.; jr., sr., grad.; prereq., same as for 130)	IX	TTh and ar	9F	Mrs. Muenzinger
140	*History of Social Theory*..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	*Not offered in 1924-25.*			
141	*Contemp. Social Theory*..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	*Not offered in 1924-25.*			
152	*Seminar: Problems of Institutional Administration* ..... (2 cred.; sr., grad.; prereq., consent of director)	*Not offered in 1924-25.*			
153f,154w,155s	Advanced Field Work..... (3 cred. per qu.; jr., sr., grad.; prereq., 90 and 91)	Ar	Ar	Ar	Mrs. Mudgett
187f,w,s	Seminar in Educ. Sociology..... (6 cred.; jr., sr., grad.; prereq., same as for 101, including 1 and 6)	Ar	M	Ed	Mr. Finney