

The Bulletin of the University of Minnesota

*The School of Agriculture
Courses in Agriculture and Home
Economics
Announcement for the Year
1923-1924*

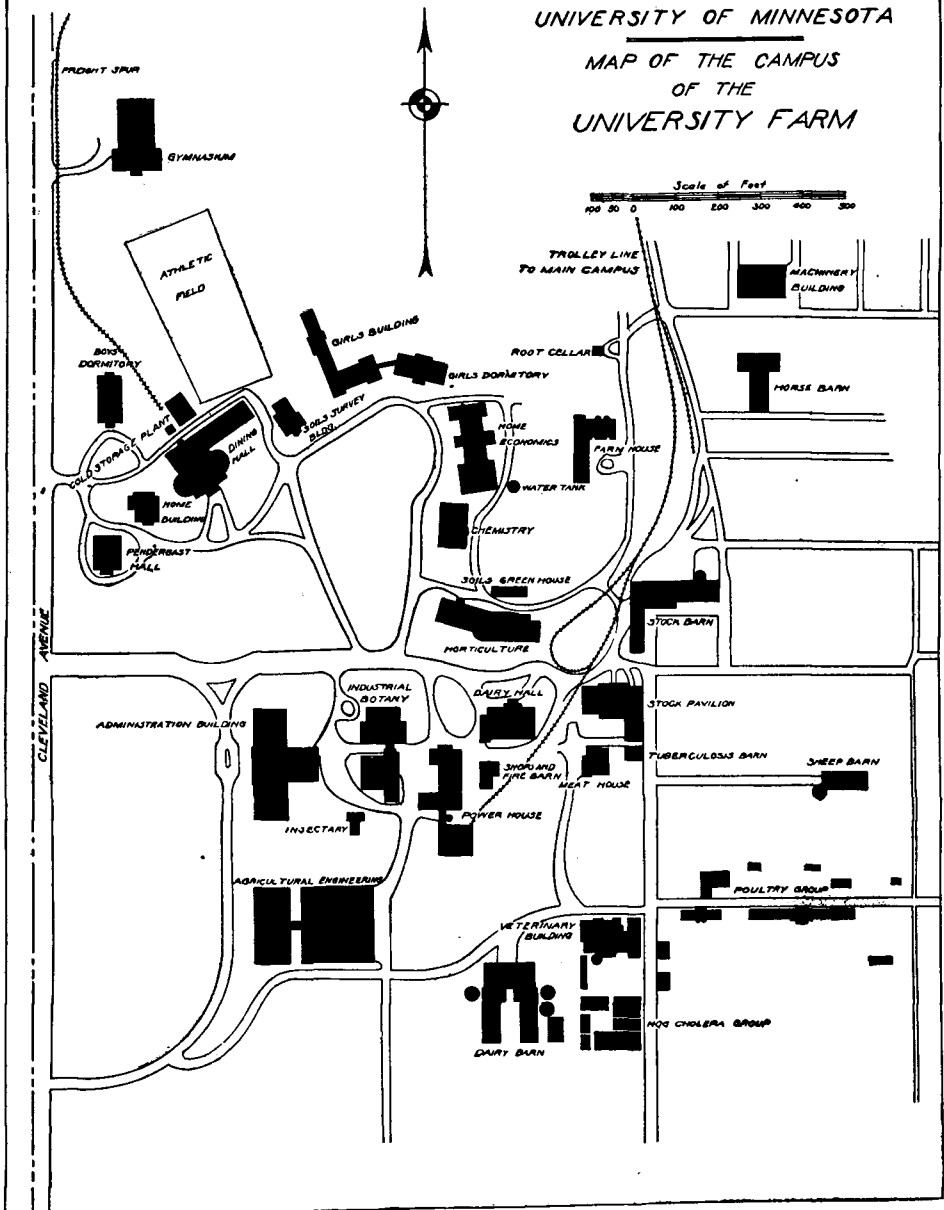


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UNIVERSITY OF MINNESOTA
 MAP OF THE CAMPUS
 OF THE
 UNIVERSITY FARM



Area of University Farm, 422.56 acres

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Courses offered to men (see pages 19 to 27)

- Agriculture with an opportunity to take special work in
 - Crop Production
 - Farm Mechanics
 - Horticultural and Nursery Training
 - Livestock Production

Courses offered to women (see pages 27 to 29)

- Home-making with an opportunity to take special work in
 - Millinery
 - Dressmaking
 - Music
 - Office assistant's work
 - Pre-nursing work.

CALENDAR

SCHOOL OF AGRICULTURE

1923			
October	1	Monday	First term begins; entrance examinations, registration, payment of fees
October	2	Tuesday	Regular class work begins
November	12	Monday	A holiday (Sunday, November 11, Armistice Day)
November	29	Thursday	Thanksgiving Day; a holiday
December	20	Thursday	First term closes; Christmas vacation begins, 4:30 p.m.
1924			
January	14	Monday	Second term begins; entrance examinations, registration, payment of fees
January	15	Tuesday	Regular class work begins
February	12	Tuesday	Lincoln's Birthday; a holiday
February	22	Friday	Washington's Birthday; a holiday
March	29	Saturday	Second term closes
April	1	Tuesday	Alumni Day
April	2	Wednesday	Thirty-fifth annual commencement

THE SCHOOL OF AGRICULTURE
FACULTY

LOTUS DELTA COFFMAN, Ph.D., LL.D., President
WILLIAM WATTS FOLWELL, LL.D., President Emeritus
WALTER C. COFFEY, M.S., Dean of the Department of Agriculture
DEXTER D. MAYNE, Principal
RODNEY M. WEST, B.A., Registrar
JOHANNA HOGNASON, B.A., Matron, Boys' Dormitories
GEORGINA LOMMEN, M.L., M.A., Matron, Girls' Dormitories
HARRIET W. SEWALL, B.A., Librarian
CARL G. AAMODT, Poultry
WILLIAM H. ALDERMAN, B.S.A., Chief of the Division of Horticulture
FREDERICK J. ALWAY, Ph.D., Chief of the Division of Soils
EDNA AMIDON, B.S., Home Economics
PHILIP A. ANDERSON, B.S. in Agr., Animal Husbandry
ALBERT C. ARNY, M.S., Farm Crops
LOUIS B. BASSETT, Farm Implements
JOHN D. BLACK, Ph.D., Chief of the Division of Agricultural Economics
ANDREW BOSS, Chief of the Division of Agronomy and Farm Management
WILLIAM BOSS, Chief of the Division of Farm Engineering
WILLARD L. BOYD, D.V.S., Veterinary Medicine
RUTH E. BOYNTON, B.S., M.D., Home Nursing
FAE BRADLEY, Rhetoric
CARLOTTA BROWN, Millinery
LEROY CADY, B.S. in Agr., Horticulture
NORRIS K. CARNES, M.S., Animal Husbandry
VICTOR A. CHRISTGAU, Gymnasium
OSCAR F. CUTKOSKY, Mathematics
CHESTER D. DAHLE, M.S., Dairy Husbandry
FRANC P. DANIELS, B.S. in Agr., Horticulture
RUETTA DAY, M.A., Home Economics
J. GRANT DENT, Mechanics Laboratory
HAROLD S. DIEHL, M.A., M.D., Hygiene
CHARLES S. DORCHESTER, B.S., Farm Crops
AMANDA EBERSOLE, B.S., Textiles and Clothing
CLARENCE H. ECKLES, M.S.A., D.Sc., Chief of the Division of Dairy
Husbandry
RUSSELL C. ENGBERG, B.S. in Agr., Farm Management
RICHARD B. FALKENSTEIN, B.S. in Agr., Entomology
FLORENCE FALLGATTER, B.S., Home Economics
HALLY J. FISHER, R.N., Home Nursing
CLIFFORD P. FITCH, M.S., D.V.M., Chief of the Division of Veterinary
Medicine

- EDWARD M. FREEMAN, Ph.D., Chief of the Division of Plant Pathology and Botany
- EDWIN W. GAUMNITZ, B.S., M.A., Agricultural Economics
- HENRY C. GILBERT, M.S., Agricultural Botany
- ROSS A. GORTNER, Ph.D., Chief of the Division of Agricultural Biochemistry
- THOR W. GULEICKSON, B.S., Dairy Husbandry
- ALFRED L. HARVEY, B.S., Animal Husbandry
- ELIZABETH HAUSE, B.A., Rhetoric
- HERBERT K. HAYES, S.D., Crop-Breeding
- JAMES C. HENING, B.S., Dairy Husbandry
- FLOYD L. HIGGINS, B.S., Farm Crops
- JOHANNA HOGNASON, B.A., Mathematics
- GLADYS HOKE, M.S., Entomology
- MAURICE G. JACOBSON, Drawing
- FRANCIS JAGER, Chief of the Division of Bee Culture
- FREDERICK B. JOHNSON, B.A., Business Training
- PEDER L. JOHNSRUD, B.S. in Agr., Mathematics
- ALLEN D. JOHNSTON, Blacksmithing
- AURA KEEVER, B.S., Textiles and Clothing
- KATHERINE KESTER, B.A., Rhetoric
- FRED A. KRANTZ, M.S., Horticulture
- MONICA LANGTRY, B.A., Rhetoric
- ROBERT C. LANSING, M.A., Chief of the Section of Rhetoric
- ALVIN H. LARSON, B.S. in Agr., Agricultural Botany
- LEONARD W. LARSON, B.S., M.B., Hygiene
- GEORGINA LOMMEN, M.L., M.A., Social Training
- RAYMOND E. LUBBEHUSEN, B.S., D.V.M., Bacteriology
- GUSTAV A. LUNDQUIST, M.A., Rural Sociology and Economics
- MARK A. MCCARTY, B.S., Animal Husbandry
- EDMUND T. MCCANN, Sergeant, Military Science and Tactics
- WYLLE B. MCNEAL, M.A., Chief of the Division of Home Economics
- GROVER C. MATTHEWS, B.S., Beekeeping
- DEXTER D. MAYNE, Parliamentary Law
- GEORGE H. NESOM, B.A., B.S., Soils
- CARL J. OSTROM, B.S., Entomology
- WALTER H. PETERS, M.Agr., Acting Chief of the Division of Animal Husbandry
- WILLIAM E. PETERSEN, M.S., Dairy Husbandry
- ALLAN B. RAYBURN, B.S. in Agr., Dairy Husbandry
- MYRON H. REYNOLDS, B.S.A., M.D., D.V.M., Veterinary Medicine
- WILLIAM A. RILEY, Ph.D., Chief of the Division of Entomology and Economic Zoology
- HARRY B. ROE, B.S. in Eng., Drainage and Roads
- CHRISTINE ROLLEFSON, Music
- JULIUS ROMNESS, Physics
- ROSE SCHAETGEN, Violin

ARTHUR C. SMITH, B.S., Chief of the Division of Poultry Husbandry
 NEWTON W. SPEECE, Captain, Infantry, U.S.A., Military Science and
 Tactics
 EARL A. STEWART, B.Pd., B.S., Agricultural Physics
 GIRARD STURTEVANT, Colonel, Infantry, U.S.A., Military Science and
 Tactics
 WILLIAM T. TAPLEY, M.S., Horticulture
 GEORGE S. TAYLOR, B.A., Chemistry
 LLOYD M. THURSTON, B.S., Dairy Husbandry
 JAMES B. TORRANCE, B.S. in Agr., Farm Motors
 ARTHUR G. TYLER, Farm Engineering
 WILLIAM R. WEHREND, Instrumental Music
 HALL B. WHITE, B.S. in Agr., Carpentry and Farm Buildings
 MABEL WILLSON, Piano
 EVELYN V. WISE, B.A., Physical Training
 WILBERT L. WITTE, M.A., Economics and History

COMMITTEES

Executive.—The Executive Committee of the Department of Agriculture
Subcommittee on Auditing.—MR. BAILEY, MR. POND, MR. ROE, MISS
 LINDSTROM

Advisory to Administration.—Principal, Preceptress, Matron Boys' Dormi-
 tories, Secretary; Chairmen of following committees: Curriculum, Stu-
 dents' Work and Eligibility, Enrolment and Program, Dormitory and
 Dining Hall, Summer Practice, Social and Entertainment, Rules
Subcommittee Dormitory and Dining Halls.—MR. W. BOSS, MR. CADY,
 MISS HOGNASON, MISS LOMMEN

Curriculum.—MR. FITCH, MISS CLARA BROWN, MR. W. BOSS, MR. FIELD,
 MR. LANSING

Entertainment.—MR. MAYNE, MR. A. BOSS, MISS HOGNASON, MISS LOMMEN
Students' Work and Eligibility.—MR. BASSETT, MR. P. A. ANDERSON,
 MISS FALLGATTER, MR. WHITE, MISS HOGNASON

Rules.—MR. LUNDQUIST, MR. GILBERT, MR. DANIELS

Enrolment.—MR. MAYNE, MISS AMIDON, MR. LUNDQUIST

Summer Practice.—MR. A. BOSS, MR. JOHNSRUD, MR. LUNDQUIST, MR.
 MAYNE, MR. REYNOLDS

SPECIAL COMMITTEES ON SCHOLARSHIPS

Scholarship.—MR. A. BOSS, MR. A. H. LARSON, MR. BASSETT

Scholarship Essays.—MISS LANGTRY, MISS BACON, MR. GULLICKSON

Community Betterment.—MR. LUNDQUIST, MR. FIELD, MR. JOHNSRUD

Oratorical and Dramatic Declamations.—MISS KESTER, MR. DANIELS, MR.
 CHRISTIANSON

Extemporaneous Speaking.—MR. LANSING, MR. TYLER, MISS CLARA BROWN

GENERAL INFORMATION

LOCATION

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

HOW TO GET TO THE SCHOOL

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

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

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

TIME OF OPENING AND CLOSING

The School of Agriculture will open Monday, October 1, 1923, and close March 29, 1924. The fall term will close at 4:30 p.m., Thursday, December 20, and the winter term will begin Monday, January 14, 1924.

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

PURPOSE

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

ADMISSION

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

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

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

Scholastic preparation.—Students who have completed eighth grade work, or its equivalent, in the common schools, are admitted without examination. Each applicant for admission should send to the registrar for a certificate of admission which, when properly filled out by former teacher or superintendent and returned to the registrar, will be accepted in place of entrance examinations. Diplomas should not be sent.

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

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

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

Minimum number of credit hours	
High school graduate.....	40
Non-graduate—per unit.....	2½
Agriculture—per unit (boys).....	12½
Maximum number of credit hours.....	80

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

COURSES OF STUDY

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

HOME PROJECTS

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

The students may have a free choice as to the nature of their projects but are advised to choose those connected with the class work being taken. Freshmen should select projects connected with freshman subjects; juniors, those connected with junior subjects.

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

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

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

RULES AND REGULATIONS

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

HOME LIFE ON THE CAMPUS

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

STUDENTS IN DORMITORIES

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

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

ASSEMBLY

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

HOLIDAYS

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

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

REQUIREMENTS FOR GRADUATION

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

1. The prescribed course of study, including all of the required work and enough elective work to make a total of 108 credit hours. (Credits earned prior to 1919-20 will be reduced to current credit basis.) For boys at least half of the elective credit must be in agricultural subjects.

2. Military drill or gymnasium for the boys, or physical training for girls, 12 credit hours.

3. Social problems for boys, 1 credit hour or social training for girls, 2 credit hours.

4. An honorary standing in deportment.

5. An essay of not less than one thousand words upon a topic connected with agriculture or home economics, typewritten on paper of approved size for binding and filing in the library.

6. For men, at least six months of practical farm experience in addition to the six months required for entrance. This experience may be gained either on the home farm or in the employment of a good farmer. Regularly approved and recorded home project work may be counted toward this requirement. The satisfaction of this requirement shall be certified by the home project committee.

EXPENSES

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

The cost to the student for board is the actual cost of maintaining the table (including management). Each term board is paid in advance. No deduction in charge is made for any absence of less than five days. If

students are compelled to be absent for that length of time, they are allowed half rates, if they make arrangements before leaving.

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

Each student provides four sheets, one pair of blankets, one quilt, one bedspread, one pillow, three pillowcases, towels, napkins, comb and brushes, one glass tumbler, and one teaspoon.

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

Each girl is required to provide two large aprons suitable for the protection of her clothing while working in the foods and cooking laboratory.

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

Each girl should be provided with a kimono or bathrobe, a pair of bedroom slippers, at least four changes of undergarments, nightgowns, and hosiery. It is suggested that each girl be provided with a good woolen skirt to be worn with wash waists, one woolen school dress, and a dress suitable for social occasions. Rubbers and umbrellas are necessities.

TABLE OF CHARGES

Tuition fee, per term. Residents of the state.....	\$ 3.00
Nonresidents	6.00
Deposit as guarantee for the return of books and other material.....	5.00
Military deposit. Required of every student registered for Military Drill as guarantee for the return of equipment.....	10.00
Gymnasium fee. Required of every student. Per term.....	1.00
Post-office box fee. Per term.....	.20
Textbook rental fee. For those not desiring to purchase their books. Per term	2.00
Health fee. Per term.....	2.00
Music fee. Per course.....	10.00
Room in dormitory. (Price subject to change.) Per term.....	16.00
Board. Per term. (Price subject to change).....	60.00
Laundry. Per term. (Price subject to change.) Required of all in dormitories	6.00
Gymnasium suits—boys. (Price subject to change).....	4.20
Girls. (Price subject to change).....	8.30
Average cost drawing instruments, notebooks, stationery, and supplies. Per year	\$10.00-12.00

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

	Fall Term		Winter Term	
	Men	Women	Men	Women
Student in dormitory (resident).....	\$107.00	\$97.00	\$92.00	\$92.00
Nonresident	110.00	100.00	95.00	95.00
Day student (resident).....	23.20	13.20	8.20	8.20
Nonresident	26.20	16.20	11.20	11.20
Not in attendance first term, add to winter term charges.....			15.00	5.00

DORMITORIES

Each student in attendance at the school who expects to return the following year and who desires to room in the dormitory will, before going home, make a deposit of \$2 with the cashier as evidence of good faith that he expects to return on the opening day of the following school year. Dormitory rooms will be assigned to new students in the order in which their applications are received. Each prospective student who desires to room in the dormitory will be required to send a deposit of \$2, which will be returned in case the application is received after all dormitory rooms are spoken for.

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

STUDENTS' HEALTH SERVICE

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

For services which are specialized and individual in character, such as operations, board and laundry when in the hospital, drugs, X-rays, out-patient calls, dentistry, etc., special fees, calculated on a cost basis, are charged. No student, however, will be denied service because of inability to pay these fees.

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

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

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

1. *Personal Division.*—This division is concerned with the physical examinations of students. Complete physical records of all students are kept. From each record can be determined in a large measure what procedure is essential to keep the student in the best physical condition during

his academic life. The following are some of the phases of the work in the personal division:

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

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

(c) Provisions for the care and treatment of such cases of communicable diseases; isolation hospital.

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

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

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

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

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

CLASS TRUST FUNDS

The class of 1902 and the class of 1916 each left with the school a fund of \$100 "to assist by temporary loans, at a reasonable rate of interest, deserving students needing such help." Application for loans should be made to the principal.

THE LUDDEN TRUST

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

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

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

THE DORR FUND

This fund consists of \$50,000 willed by the late Caleb Dorr, of Minneapolis, for the benefit of the Department of Agriculture of the University.

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

CALEB DORR CASH SCHOLARSHIP PRIZES

Cash prizes amounting to \$200 each year are offered to the students securing the highest standings in general scholarship. Of this amount \$75 will be offered each term in five prizes of \$25, \$20, \$15, \$10, \$5 each. All students carrying the full work of 18 credit hours per term are eligible for these prizes. One prize of \$50 will be awarded at the close of the second term for the senior student graduating from the School of Agriculture with the highest scholarship and student activity record for the first five terms.

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

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

Besides the above, annual scholarship prizes of \$200 each, divided into smaller awards, are given for excellence in extemporaneous speaking, community betterment, essay-writing, and declamation. The rules governing these scholarships may be found in the booklet of information supplied to each student at the time of his registration.

GIDEON MEMORIAL PRIZE IN HORTICULTURE

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

ORGANIZATIONS

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

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

PUBLICATIONS

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

The Minnesota Farm Review.—The *Minnesota Farm Review* is a weekly newspaper owned by the alumni of the School of Agriculture, but edited by students as an educational newspaper for the whole University Department of Agriculture for the benefit of students, graduates, faculty, and members of the community. The editorial work is done under the supervision of the Division of Publications.

LIBRARY

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

The librarian and her assistants are always ready and glad to give whatever assistance they can, both to those interested in special research work and to those doing regular reference work in connection with their classes. All those wishing to read or study are made welcome and are given whatever privileges the library can provide.

ZOOLOGICAL MUSEUM

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

COURSES OF STUDY

For courses of study in agriculture, see pages 19 to 27.

For courses of study in home economics, see pages 27 to 29.

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

For description of the courses listed in the following outline see pages 30 to 47, and for schedule of classes, pages 49 to 61.

See page 10 for statement with reference to home project work.

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

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

Adults desiring a special course should consult the Enrolment Committee.

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

GENERAL FARMING

FRESHMAN YEAR

REQUIRED—FIRST TERM	REQUIRED—SECOND TERM
English I, 3(f,w)	English II, 3(f,w)
Hygiene, 1(f,w)	Corn, 2(f,w)
Farm Arithmetic, 3(f,w)	Soils, 3(f,w)
Types and Market Classes, 2(f,w)	Breeds, 3(f,w)
Drawing and Farm Buildings, 3(f,w)	Animal Biology, 3(f,w)
Agricultural Botany, 3(f,w)	Military Drill, 2(f,w) ¹
Military Drill, 2(f,w) ¹	Electives, 4
Social Problems for Boys, 1(f,w)	
Electives, 3	

¹ Students excused from Military Drill are required to register for Gymnasium, 2(f,w).

ELECTIVES

Advanced Farm Arithmetic, 3(f,w)	Elementary Landscape Gardening, 3(f,w)
Physiology, 3(f,w)	Elementary Beekeeping II, 3(f,w)
Blacksmithing I, 3(f,w)	Elements of Music I, 2(f,w)
Carpentry, 3(f,w)	Elements of Music II, 2(f,w)
Farm Motors I, 3(f,w)	Violin, $\frac{1}{2}$ (f,w) ²
Mechanical Laboratory, 3(f,w)	Piano, $\frac{1}{2}$ (f,w) ²
Elementary Beekeeping I, 3(f,w)	Instrumental Music, $\frac{1}{2}$ (f,w) ²
Spelling, 1(f,w)	Voice, $\frac{1}{2}$ (f,w) ²
Penmanship, 1(f,w)	Orchestra, $\frac{1}{2}$ (f,w)
Elementary Plant Propagation, 3(f)	Chorus, $\frac{1}{2}$ (f,w)
Floriculture, 3(w)	Harmony I, 2(f,w)
Dramatics, $\frac{1}{2}$ (f,w) ³	Harmony II, 2(f,w)
Debating, 1(w) ³	Appreciation of Music, 3(f,w)
	Instrumentation and Conducting, (3f,w)
	Home Project, 1 to 3

JUNIOR YEAR

REQUIRED—FIRST TERM

English Classics, 3(f,w)
 Forage Crops and Potatoes, 3(f,w)
 Stock-Judging, 3(f,w)
 Farm Horticulture, 3(f,w)
 Feeds and Feeding, 3(f,w)
 Military Drill, 2(f,w)¹
 Electives, 3

REQUIRED—SECOND TERM

Business English, 3(f,w)
 Cereal Crops, 3(f,w)
 Farm Dairying, 3(f,w)
 Poultry, 3(f,w)
 Military Drill, 2(f,w)¹
 Electives, 6

ELECTIVES

Algebra I, 7(f,w)	Greenhouse Construction and Management, 3(f)
Geometry I, 7(f,w)	Greenhouse Practice, 1(w)
Industrial History, 3(f,w)	Algebra II, 7(f,w)
Insect Pests of Plants, 3(f)	Geometry II, 7(f,w)
Chemistry of Plant and Animal Life I, 3(f,w)	Meats, 3(f,w)
Mechanics and Water Supply, 3(f,w)	Blacksmithing II, 3(w)
Parliamentary Law, 1(f,w)	Chemistry of Plant and Animal Life II, 3(f,w)
Management of Laying Flock, 1(f,w)	Heat and Electricity, 3(w)
Physiology and Hygiene of Breeding, 2(f)	Incubating and Brooding, 3(w)
Orchard Fruit-Growing, 3(f)	Seed-Testing, 2(w)
Small Fruit-Growing, 3(w)	Advanced Plant Propagation, 3(w)
Elements of Bacteriology, 3(w)	Farm Motors II, 3(f,w)
Co-operative Accounting, 3(f,w)	Commercial Vegetable-Gardening, 3(w)
Potato Production, 3(w)	Veterinary Studies, 5(w)
Advanced Landscape Gardening, 3(w)	Weeds, 2(f)
Advanced Beekeeping 3(f,w)	American History, 3(f,w)

SENIOR YEAR

REQUIRED—FIRST TERM

Public Speaking, 3(f,w)
 American Government, 3(f,w)
 Breeding, 3(f,w)
 Farm Management I, 3(f,w)
 Military Drill, 2(f,w)¹
 Electives, 6

REQUIRED—SECOND TERM

English VI, 3(f,w)
 Rural Sociology, 3(f,w)
 Farm Management II, 3(f,w)
 Military Drill, 2(f,w)¹
 Electives, 9

¹ Students excused from Military Drill are required to register for Gymnasium, 2(f,w).

² A special fee of \$10 is charged for this course.

³ Credit for this course is allowed only under the conditions specified in the booklet of Faculty Regulations.

ELECTIVES

Livestock-Feeding and Management, 3(f)	Nursery Organization, 3(w)
Dairy Stock-Feeding, 3(f)	Advanced Public Speaking, 3(f,w)
Farm Crop-Breeding, 2(w)	• Plant Diseases, 3(f)
Drainage and Roads, 3(f)	Farm Buildings, 3(f)
Farm Implements, 3(f)	Rural Economics, 3(f,w)
Animal Parasites, 3(w)	Milk Production, 3(w)
Elementary Economics, 3(f,w)	English Literature II, 5(w)
English Literature I, 5(f)	Dairy Stock Selection, 3(w)
	Judging and Grading Farm Crops, 3(w)

CROP PRODUCTION

FRESHMAN YEAR

REQUIRED—FIRST TERM	REQUIRED—SECOND TERM
English I, 3(f,w)	English II, 3(f,w)
Hygiene, 1(f,w)	Corn, 2(f,w)
Farm Arithmetic, 3(f,w)	Soils, 3(f,w)
Types and Market Classes, 2(f,w)	Farm Horticulture, 3(f,w)
Drawing and Farm Buildings, 3(f,w)	Animal Biology, 3(f,w)
Agricultural Botany, 3(f,w)	Military Drill, 2(f,w) ¹
Military Drill, 2(f,w) ¹	Electives, 4
Social Problems for Boys, 1(f,w)	
Electives, 3	

ELECTIVES

Advanced Farm Arithmetic, 3(f,w)	Elements of Music I, 2(f,w)
Poultry, 3(f,w)	Elements of Music II, 2(f,w)
Physiology, 3(f,w)	Violin, $\frac{1}{2}$ (f,w) ²
Blacksmithing I, 3(f,w)	Piano, $\frac{1}{2}$ (f,w) ²
Carpentry, 3(f,w)	Instrumental Music, $\frac{1}{2}$ (f,w) ²
Farm Motors I, 3(f,w)	Voice, $\frac{1}{2}$ (f,w) ²
Mechanical Laboratory, 3(f,w)	Orchestra, $\frac{1}{2}$ (f,w)
Breeds, 3(f,w)	Chorus, $\frac{1}{2}$ (f,w)
Elementary Beekeeping I, 3(f,w)	Harmony I, 2(f,w)
Spelling, 1(f,w)	Harmony II, 2(f,w)
Penmanship, 1(f,w)	Appreciation of Music, 3(f,w)
Elementary Beekeeping II, 3(f,w)	Instrumentation and Conducting, 3(f,w)
Dramatics, $\frac{1}{2}$ (f,w) ³	Elementary Plant Propagation, 3(f)
Debating, 1(w) ³	Floriculture, 3(w)
	Elementary Landscape Gardening, 3(f,w)
	Home Project, 1 to 3

JUNIOR YEAR

REQUIRED—FIRST TERM	REQUIRED—SECOND TERM
English Classics, 3(f,w)	Business English, 3(f,w)
Forage Crops and Potatoes, 3(f,w)	Cereal Crops, 3(f,w)
Insect Pests of Plants, 3(f)	Seed-Testing, 2(w)
Orchard Fruit-Growing, 3(f) or Commercial Vegetable-Gardening, 3(w)	Feeds and Feeding, 3(f,w)
Chemistry of Plant and Animal Life I, 3(f,w)	Chemistry of Plant and Animal Life II, 3(f,w)
Military Drill, 2(f,w) ¹	Military Drill, 2(f,w) ¹
Electives, 3	Electives, 4

¹ Students excused from Military Drill are required to register for Gymnasium, 2(f,w).

² A special fee of \$10 is charged for this course.

³ Credit for this course is allowed only under the conditions specified in the booklet of Faculty Regulations.

ELECTIVES

Algebra I, 7(f,w)	Potato Production, 3(w)
Geometry I, 7(f,w)	Algebra II, 7(f,w)
Mechanics and Water Supply, 3(f,w)	Heat and Electricity, 3(w)
Stock-Judging, 3(f,w)	Geometry II, 7(f,w)
Physiology and Hygiene of Breeding, 2(f)	Blacksmithing II, 3(w)
Industrial History, 3(f,w)	Incubating and Brooding, 3(w)
Parliamentary Law, 1(f,w)	Elements of Bacteriology, 3(w)
Farm Dairying, 3(f,w)	Advanced Plant Propagation, 3(w)
Management of the Laying Flock, 1(f,w)	Farm Motors II, 3(f,w)
Co-operative Accounting, 3(f,w)	Meats, 3(f,w)
Orchard Fruit-Growing, 3(f)	Veterinary Studies, 5(w)
Small Fruit-Growing, 3(w)	Weeds, 2(f)
Commercial Vegetable-Gardening, 3(w)	American History, 3(f,w)
Advanced Landscape Gardening, 3(w)	Advanced Beekeeping, 3(f,w)
Greenhouse Construction and Management, 3(f)	
Greenhouse Practice, 1(w)	

SENIOR YEAR

REQUIRED—FIRST TERM

Public Speaking, 3(f,w)
 American Government, 3(f,w)
 Plant Diseases, 3(f)
 Farm Management I, 3(f,w)
 Military Drill, 2(f,w)¹
 Electives, 6

REQUIRED—SECOND TERM

English VI, 3(f,w)
 Rural Sociology, 3(f,w)
 Farm Management II, 3(f,w)
 Farm Crop-Breeding, 2(w)
 Military Drill, 2(f,w)¹
 Electives, 7

ELECTIVES

Farm Buildings, 3(f)	Dairy Stock-Feeding, 3(f)
English Literature I, 5(f)	English Literature II, 5(w)
Drainage and Roads, 3(f)	Milk Production, 3(w)
Farm Implements, 3(f)	Rural Economics, 3(f,w)
Breeding, 3(f,w)	Dairy Stock Selection, 3(w)
Livestock-Feeding and Management, 3(f)	Advanced Public Speaking, 3(f,w)
Animal Parasites, 3(w)	Judging and Grading Farm Crops, 3(w)
Elementary Economics, 3(f,w)	Nursery Organization, 3(w)

FARM MECHANICS

FRESHMAN YEAR

REQUIRED—FIRST TERM

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

REQUIRED—SECOND TERM

English II, 3(f,w)
 Corn, 2(f,w)
 Soils, 3(f,w)
 Mechanical Laboratory, 3(f,w)
 Carpentry, 3(f,w) or Blacksmithing I, 3(f,w)
 Military Drill, 2(f,w)¹
 Electives, 4

¹ Students excused from Military Drill are required to register for Gymnasium, 2(f,w).

ELECTIVES

- | | |
|---|--|
| Advanced Farm Arithmetic, 3(f,w) | Elementary Beekeeping II, 3(f,w) |
| Agricultural Botany, 3(f,w) | Violin, $\frac{1}{2}$ (f,w) ² |
| Animal Biology, 3(f,w) | Piano, $\frac{1}{2}$ (f,w) ² |
| Poultry, 3(f,w) | Instrumental Music, $\frac{1}{2}$ (f,w) ² |
| Elements of Music I, 2(f,w) | Voice, $\frac{1}{2}$ (f,w) ² |
| Elements of Music II, 2(f,w) | Orchestra, $\frac{1}{2}$ (f,w) |
| Penmanship, 1(f,w) | Chorus, $\frac{1}{2}$ (f,w) |
| Spelling, 1(f,w) | Harmony I, 2(f,w) |
| Elementary Beekeeping I, 3(f,w) | Harmony II, 2(f,w) |
| Physiology, 3(f,w) | Appreciation of Music, 3(f,w) |
| Breeds, 3(f,w) | Instrumentation and Conducting, 3(f,w) |
| Carpentry, 3(f,w) | Blacksmithing I, 3(f,w) |
| Dramatics, $\frac{1}{2}$ (f,w) ³ | Elementary Plant Propagation, 3(f) |
| Debating, 1(w) ³ | Floriculture, 3(w) |
| | Elementary Landscape Gardening, 3(f,w) |
| | Home Project, 1 to 3 |

JUNIOR YEAR

REQUIRED—FIRST TERM

- English Classics, 3(f,w)
 Forage Crops and Potatoes, 3(f,w)
 Farm Horticulture, 3(f,w) or
 Stock-Judging, 3(f,w)
 Farm Motors I, 3(f,w)
 Mechanics and Water Supply, 3(f,w)
 Military Drill, 2(f,w)¹
 Electives, 3

REQUIRED—SECOND TERM

- Business English, 3(f,w)
 Cereal Crops, 3(f,w) or
 Farm Horticulture, 3(f,w)
 Farm Dairying, 3(f,w)
 Heat and Electricity, 3(w)
 Military Drill, 2(f,w)¹
 Electives, 6

ELECTIVES

- Feeds and Feeding, 3(f,w)
 Algebra I, 7(f,w)
 Insect Pests of Plants, 3(f)
 Parliamentary Law, 1(f,w)
 Chemistry of Plant and Animal Life I,
 3(f,w)
 Geometry I, 7(f,w)
 Farm Horticulture, 3(f,w)
 Stock-Judging, 3(f,w)
 Industrial History, 3(f,w)
 Physiology and Hygiene of Breeding, 2(f)
 Management of Laying Flock, 1(f,w)
 Orchard Fruit-Growing, 3(f)
 Small Fruit-Growing, 3(w)
 Commercial Vegetable-Gardening, 3(w)
 Co-operative Accounting, 3(f,w)
 Weeds, 2(f)
 Potato Production, 3(w)

- Advanced Landscape Gardening, 3(w)
 Greenhouse Construction and Management,
 3(f)
 Greenhouse Practice, 1(w)
 Veterinary Studies, 5(w)
 Algebra II, 7(f,w)
 Meats, 3(f,w)
 Geometry II, 7(f,w)
 Blacksmithing II, 3(w)
 Elements of Bacteriology, 3(w)
 Chemistry of Plant and Animal Life II,
 3(f,w)
 Cereal Crops, 3(f,w)
 Seed-Testing, 2(w)
 Incubating and Brooding, 3(w)
 Advanced Plant Propagation, 3(w)
 American History, 3(f,w)
 Advanced Beekeeping, 3(f,w)

SENIOR YEAR

REQUIRED—FIRST TERM

- Public Speaking, 3(f,w)
 American Government, 3(f,w)
 Farm Buildings, 3(f) or
 Drainage and Roads, 3(f)
 Farm Implements, 3(f)
 Farm Management I, 3(f,w)
 Military Drill, 2(f,w)¹
 Electives, 3

REQUIRED—SECOND TERM

- English VI, 3(f,w)
 Rural Sociology, 3(f,w)
 Farm Management II, 3(f,w)
 Farm Motors II, 3(f,w)
 Military Drill, 2(f,w)¹
 Electives, 6

¹ Students excused from Military Drill are required to register for Gymnasium, 2(f,w).

² A special fee of \$10 is charged for this course.

³ Credit for this course is allowed only under the conditions specified in the booklet of Faculty Regulations.

ELECTIVES

Drainage and Roads, 3(f)	Nursery Organizations, 3(w)
Farm Buildings, 3(f)	Dairy Stock Selection, 3(w)
Livestock-Feeding and Management, 3(f)	Advanced Public Speaking, 3(f,w)
Elementary Economics, 3(f,w)	Milk Production, 3(w)
Dairy Stock-Feeding, 3(f)	Rural Economics, 3(f,w)
Plant Diseases, 3(f)	Farm Crop-Breeding, (2w)
Breeding, 3(f,w)	English Literature II, 5(w)
Animal Parasites, 3(w)	Judging and Grading Farm Crops, 3(w)
English Literature I, 5(f)	

HORTICULTURAL AND NURSERY TRAINING

FRESHMAN YEAR

REQUIRED—FIRST TERM	REQUIRED—SECOND TERM
English I, 3(f,w)	English II, 3(f,w)
Hygiene, 1(f,w)	Soils, 3(f,w)
Farm Arithmetic, 3(f,w)	Drawing and Farm Buildings, 3(f,w)
Agricultural Botany, 3(f,w)	Floriculture, 3(w)
Farm Horticulture, 3(f,w)	Commercial Vegetable-Gardening, 3(w)
Elementary Plant Propagation, 3(f)	Military Drill, 2(f,w) ¹
Types and Market Classes, 2(f,w)	Electives, 3
Social Problems for Boys, 1(f,w)	
Military Drill, 2(f,w) ¹	

ELECTIVES

Corn, 2(f,w)	Elementary Beekeeping II, 3(f,w)
Breeds, 3(f,w)	Farm Motors I, 3(f,w)
Elementary Beekeeping I, 3(f,w)	Carpentry, 3(f,w)
Blacksmithing I, 3(f,w)	Poultry, 3(f,w)
Advanced Farm Arithmetic, 3(f,w)	Chorus, $\frac{1}{2}$ (f,w)
Elements of Music I, 2(f,w)	Violin, $\frac{1}{2}$ (f,w) ²
Elements of Music II, 2(f,w)	Piano, $\frac{1}{2}$ (f,w) ²
Spelling, 1(f,w)	Instrumental Music, $\frac{1}{2}$ (f,w) ²
Penmanship, 1(f,w)	Orchestra, $\frac{1}{2}$ (f,w)
Physiology, 3(f,w)	Voice, $\frac{1}{2}$ (f,w) ²
Dramatics, $\frac{1}{2}$ (f,w) ²	Harmony I, 2(f,w)
Debating, 1(w) ²	Harmony II, 2(f,w)
	Appreciation of Music, 3(f,w)
	Instrumentation and Conducting, 3(f,w)

JUNIOR YEAR

REQUIRED—FIRST TERM	REQUIRED—SECOND TERM
English Classics, 3(f,w)	Business English, 3(f,w)
Chemistry of Plant and Animal Life I, 3(f,w)	Seed-Testing, 2(w)
Animal Biology, 3(f,w)	Farm Motors I, 3(f,w) or Mechanical Laboratory, 3(f,w)
Greenhouse Construction and Management, 3(f)	Advanced Landscape Gardening, 3(w)
Elementary Landscape Gardening, 3(f,w)	Military Drill, 2(f,w) ¹
Military Drill, 2(f,w) ¹	Electives, 7
Electives, 3	

¹ Students excused from Military Drill are required to register for Gymnasium. 2(f,w).

² A special fee of \$10 is charged for this course.

³ Credit for this course is allowed only under the conditions specified in the booklet of Faculty Regulations.

ELECTIVES

Cereal Crops, 3(f,w)	Stock-Judging, 3(f,w)
Forage Crops and Potatoes, 3(f,w)	Meats, 3(f,w)
Feeds and Feeding, 3(f,w)	Blacksmithing II, 3(w)
Farm Motors II, 3(f,w)	Mechanics and Water Supply, 3(f,w)
Orchard Fruit-Growing, 3(f)	Heat and Electricity, 3(w)
Greenhouse Practice, 1(w)	Potato Production, 3(w)
Management of Laying Flock, 1(f,w)	Weeds, 2(f)
Algebra I, 7(f,w)	Incubating and Brooding, 3(w)
Geometry I, 7(f,w)	Algebra II, 7(f,w)
Industrial History, 3(f,w)	Geometry II, 7(f,w)
Elements of Bacteriology, 3(w)	American History, 3(f,w)
Chemistry of Plant and Animal Life II, 3(f,w)	Physiology and Hygiene of Breeding, 2(f)
Advanced Beekeeping, 3(f,w)	Veterinary Studies, 5(w)
Parliamentary Law, 1(f,w)	Farm Dairying, 3(f,w)

SENIOR YEAR

REQUIRED—FIRST TERM	REQUIRED—SECOND TERM
Public Speaking, 3(f,w)	English VI, 3(f,w)
American Government, 3(f,w)	Rural Sociology, 3(f,w)
Plant Diseases, 3(f,w)	Farm Crop-Breeding, 2(w)
Co-operative Accounting, 3(f,w)	Advanced Plant Propagation, 3(w)
Insect Pests of Plants, 3(f)	Small Fruit-Growing, 3(w)
Military Drill, 2(f,w) ¹	Military Drill, 2(f,w) ¹
Electives, 3	Electives, 4

ELECTIVES

Judging and Grading Farm Crops, 3(w)	Farm Management II, 3(f,w)
Farm Implements, 3(f)	Breeding, 3(f,w)
Farm Management I, 3(f,w)	Milk Production, 3(w)
Livestock-Feeding and Management, 3(f)	Dairy Stock Selection, 3(w)
Dairy Stock-Feeding, 3(f)	Animal Parasites, 3(w)
Drainage and Roads, 3(f)	Farm Building, 3(f)
Nursery Organization, 3(w)	English Literature II, 5(w)
English Literature I, 5(f)	Advanced Public Speaking, 3(f,w)
Elementary Economics, 3(f,w)	Rural Economics, 3(f,w)

LIVESTOCK PRODUCTION

FRESHMAN YEAR

REQUIRED—FIRST TERM	REQUIRED—SECOND TERM
English I, 3(f,w)	English II, 3(f,w)
Hygiene, 1(f,w)	Corn, 2(f,w)
Farm Arithmetic, 3(f,w)	Soils, 3(f,w)
Types and Market Classes, 2(f,w)	Breeds, 3(f,w)
Drawing and Farm Buildings, 3(f,w)	Animal Biology, 3(f,w)
Agricultural Botany, 3(f,w)	Military Drill, 2(f,w) ¹
Military Drill, 2(f,w) ¹	Electives, 4
Social Problems for Boys, 1(f,w)	
Electives, 3	

¹ Students excused from Military Drill are required to register for Gymnasium, 2(f,w).

ELECTIVES

Advanced Farm Arithmetic, 3(f,w)	Elements of Music I, 2(f,w)
Physiology, 3(f,w)	Elements of Music II, 2(f,w)
Blacksmithing I, 3(f,w)	Violin, $\frac{1}{2}$ (f,w) ²
Carpentry, 3(f,w)	Piano, $\frac{1}{2}$ (f,w) ²
Farm Motors I, 3(f,w)	Instrumental Music, $\frac{1}{2}$ (f,w) ²
Elementary Beekeeping I, 3(f,w)	Voice, $\frac{1}{2}$ (f,w) ²
Mechanical Laboratory, 3(f,w)	Orchestra, $\frac{1}{2}$ (f,w)
Spelling, 1(f,w)	Chorus, $\frac{1}{2}$ (f,w)
Penmanship, 1(f,w)	Harmony I, 2(f,w)
Poultry, 3(fw)	Harmony II, 2(f,w)
Farm Horticulture, 3(f,w)	Appreciation of Music, 3(f,w)
Elementary Beekeeping II, 3(f,w)	Instrumentation and Conducting, 3(f,w)
Dramatics, $\frac{1}{2}$ (f,w) ³	Elementary Plant Propagation, 3(f)
Debating, 1(w) ³	Floriculture, 3(w)
	Elementary Landscape Gardening, 3(f,w)
	Home Project, 1 to 3

JUNIOR YEAR

REQUIRED—FIRST TERM

English Classics, 3(f,w)
 Forage Crops and Potatoes, 3(f,w)
 Stock-Judging, 3(f,w)
 Physiology and Hygiene of **Breeding**,
 2(f)
 Feeds and Feeding, 3(f,w)
 Military Drill, 2(f,w)¹
 Electives, 4

REQUIRED—SECOND TERM

Business English, 3(f,w)
 Meats, 3(f,w)
 Farm Dairying, 3(f,w)
 Veterinary Studies, 5(w)
 Military Drill, 2(f,w)¹
 Electives, 4

ELECTIVES

Insect Pests of Plants, 3(f)	Greenhouse Construction and Management, 3(f)
Chemistry of Plant and Animal Life I, 3(f,w)	Heat and Electricity, 3(w)
Mechanics and Water Supply, 3(f,w)	Cereal Crops, 3(f,w)
Algebra I, 7(f,w)	Advanced Plant Propagation, 3(w)
Industrial History, 3(f,w)	Blacksmithing II, 3(w)
Parliamentary Law, 1(f,w)	Incubating and Brooding, 3(w)
Geometry I, 7(f,w)	Farm Motors II, 3(f,w)
Management of Laying Flock, 1(f,w)	Commercial Vegetable-Gardening, 3(w)
Orchard Fruit-Growing, 3(f)	Elements of Bacteriology, 3(w)
Small Fruit-Growing, 3(w)	Seed-Testing, 2(w)
Algebra II, 7(f,w)	Chemistry of Plant and Animal Life II, 3(f,w)
Geometry II, 7(f,w)	Weeds, 2(f)
Co-operative Accounting, 3(f,w)	American History, 3(f,w)
Potato Production, 3(w)	Advanced Beekeeping, 3(f,w)
Greenhouse Practice, 1(w)	
Advanced Landscape Gardening, 3(w)	

¹ Students excused from Military Drill are required to register for Gymnasium, 2(f,w).

² A special fee of \$10 is charged for this course.

³ Credit for this course is allowed only under the conditions specified in the booklet of Faculty Regulations.

SENIOR YEAR

REQUIRED—FIRST TERM

Public Speaking, 3(f,w)
 American Government, 3(f,w)
 Livestock-Feeding and Management, 3(f)
 or Milk Production, 3(w)
 Breeding, 3(f,w) for men or
 Problems in Livestock Improvement,
 3(w) for women
 Farm Management I, 3(f,w)
 Military Drill, 2(f,w)¹
 Electives, 3

REQUIRED—SECOND TERM

English VI, 3(f,w)
 Rural Sociology, 3(f,w)
 Farm Management II, 3(f,w)
 Military Drill, 2(f,w)¹
 Electives, 9

ELECTIVES

Livestock-Feeding and Management, 3(f)	Milk Production, 3(w)
Plant Diseases, 3(f)	Nursery Organization, 3(w)
Farm Crop-Breeding, 2(w)	Dairy Stock-Feeding, 3(f)
Farm Buildings, 3(f)	Rural Economics, 3(f,w)
Drainage and Roads, 3(f)	Dairy Stock Selection, 3(w)
Farm Implements, 3(f)	English Literature II, 5(w)
Animal Parasites, 3(w)	Advanced Public Speaking, 3(f,w)
Elementary Economics, 3(f,w)	Judging and Grading Farm Crops, 3(w)
English Literature I, 5(f)	

HOME ECONOMICS

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

FRESHMAN YEAR

REQUIRED—FIRST TERM

Related Science I, 3(f)
 English I, 3 (f,w)
 Selection and Preparation of Food,
 3(f,w)
 Garment-Making I, 2(f,w)
 Drawing and Design I, 1(f,w)
 Physical Training, 2(f,w)
 Electives, 6
 Social Training, 2(f)

REQUIRED—SECOND TERM

Related Science II, 3(w)
 English II, 3(f,w)
 Meal Preparation, 3(f,w)
 Garment-Making II, 2(f,w)
 Drawing and Design II, 1(f,w)
 Electives, 6
 Physical Training, 2(f,w)

¹ Students excused from Military Drill are required to register for Gymnasium, 2(f,w).

ELECTIVES

Elements of Music I, 2(f,w)	Typewriting I, 3(f,w)
Elements of Music II, 2(f,w)	Stenography I, 3(f,w)
Chorus, ½(f,w)	Spelling, 1(f,w)
Violin, ½(f,w) ¹	Penmanship, 1(f,w)
Piano, ½(f,w) ¹	Poultry, 3(f,w)
Voice, ½(f,w) ¹	Elementary Beekeeping I, 3(f,w)
Instrumental Music, ½(f,w) ¹	Elementary Beekeeping II, 3(f,w)
Orchestra, ½(f,w)	General Agriculture, 3(w)
Dramatics, ½(f,w) ²	Farm Horticulture, 3(f,w)
Debating, 1(w) ²	Elementary Landscape Gardening, 3(f,w)
Harmony I, 2(f,w)	Elementary Plant Propagation, 3(f)
Harmony II, 2(f,w)	Floriculture, 3(w)
Appreciation of Music, 3(f,w)	Farm Arithmetic, 3(f,w)
Instrumental and Conducting, 3(f,w)	Advanced Farm Arithmetic 3(f,w)
	Agricultural Botany, 3(w)
	Physiology, 3(f,w)

JUNIOR YEAR

REQUIRED—FIRST TERM

English Classics, 3(f,w)
Foods and Nutrition, 2(f,w)
Textiles and Care of Fabrics, 3(f,w)
Home Nursing and Hygiene I, 2(f)
Electives, 8
Physical Training, 2(f,w)

REQUIRED—SECOND TERM

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

ELECTIVES

Dress Design, 2(w)	Algebra I, 7(f,w)
Advanced Millinery, 5(w)	Algebra II, 7(f,w)
Dressmaking I, 3(f,w)	Geometry I, 7(f,w)
Decorative Needlework, 3(f)	Geometry II, 7(f,w)
Millinery I, 3(f)	Industrial History, 3(f,w)
Dressmaking II, 3(w)	Parliamentary Law, 1(f,w)
Chemistry of Plant and Animal Life I, 3(f,w) ⁴	Chemistry of Plant and Animal Life II, 3(f,w) ⁴
Elements of Bacteriology, 3(w) ⁴	Typewriting II, 3(f,w)
Household Physics, 5(f)	Stenography II, 3(f,w) ⁴
Utilization of Meats, 3(w)	Dictation, 3(f,w)
Advanced Beekeeping, 3(f,w)	Letter-Writing, 3(f,w)
Farm Dairying, 3(f,w)	General Office Practice, 3(f,w)
	Bookkeeping, 3(f,w)
	Insect Pests of Plants, 3(f)
	Orchard Fruit-Growing, 3(f)
	Small Fruit-Growing, 3(w)
	Incubation and Brooding, 3(w)
	Management of Laying Flock, 1(f,w)

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

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

³ Not offered in 1923-24.

⁴ Courses should be elected by those who contemplate taking the nurses' training upon graduation.

SENIOR YEAR

REQUIRED—FIRST TERM

Public Speaking, 3(f,w)
 American Government, 3(f,w)
 Home Management, 3(f,w)
 Electives, 9
 Physical Training, 2(f,w)

REQUIRED—SECOND TERM

English VI, 3(f,w)
 Rural Sociology, 3(f,w)
 Home Nursing and Hygiene II, 2(w)
 Economics of Buying I, 3(w)
 Child Care and Training, 2(w)
 Electives, 5
 Physical Training, 2(f,w)

ELECTIVES

Economics of Buying II, 2(f,w)
 Trade Dressmaking, 5(w)¹
 Trade Millinery, 5(w)¹

Elementary Economics, 3(f,w)
 Rural Economics, 3(f,w)
 Advanced Public Speaking, 3(f,w)
 English Literature I, 5(f)
 English Literature II, 5(w)
 Plant Diseases, 3(f)
 Commercial Law, 3(f)¹

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

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

¹ Not offered in 1923-24.

DESCRIPTION OF COURSES

AGRICULTURAL BIOCHEMISTRY

ROSS A. GORTNER, Chief; GEORGE S. TAYLOR.

COURSE

A1-2. CHEMISTRY OF PLANT AND ANIMAL LIFE. The fundamental principles of chemistry necessary for an understanding of common daily phenomena. The scope of agricultural chemistry and the help which the farmer may expect from the chemical laboratories of the state are outlined. MR. TAYLOR.

AGRICULTURAL ECONOMICS

JOHN D. BLACK, Chief; EDWIN GAUMNITZ.

COURSE

A1. CO-OPERATIVE ACCOUNTING. Study of nature and kind of accounts for co-operative business. Practice in properly recording business transactions, preparation and interpretation of balance sheets and income statements for various types of co-operative organizations. MR. GAUMNITZ.

AGRICULTURAL ENGINEERING

WILLIAM BOSS, Chief; J. GRANT DENT, MAURICE G. JACOBSON, ALLEN D. JOHNSTON, HARRY B. ROE, JULIUS ROMNESS, EARL A. STEWART, JAMES B. TORRANCE, ARTHUR G. TYLER, HALL B. WHITE.

COURSES

- A1. BLACKSMITHING I. Instruction is given in the management of the forge, in bending, shaping, and welding iron, thus familiarizing the student with the operations for blacksmith repair work on the farm. MR. JOHNSTON.
- A2. BLACKSMITHING II. Instruction is given in bending, shaping, and welding steel, and tempering steel tools, thus familiarizing the student with the operations necessary for blacksmith steel work on the farm. MR. JOHNSTON.
- A11. FARM MOTORS I. An elementary course offering theory and practice work in gasoline and kerosene engines. MR. TORRANCE.
- A12. FARM MOTORS II. An advanced course in gasoline and kerosene engines and tractors, giving attention to adjustments, care, and operation. MR. TORRANCE.

- A16. MECHANICAL LABORATORY. Instruction and laboratory practice in rope-splicing, knots, belt-lacing, pulleys and shafting, soldering, pipe-fitting, electric wiring, babbitting, cement work, and work with cold metals. MR. DENT.
- A18. MECHANICS AND WATER SUPPLY. An elementary course in the mechanics of solids, liquids, and gases. Special emphasis is given to water supplies, water systems, sewage disposal, weather conditions, and forecasts. Laboratory work will be a part of the course. MR. STEWART, MR. TYLER.
- A19. HEAT AND ELECTRICITY. An elementary course in heat and electricity as applied to home-heating and lighting with a study of electric batteries, motors, and other appliances. Laboratory work will be given. MR. ROMNESS, MR. STEWART, MR. TYLER.
- A21. CARPENTRY. The care and use of tools is taught by means of shop exercises. Each student is required to sharpen his own tools and is given instruction in painting, estimating building materials, and farm building construction. MR. WHITE.
- A31. DRAWING AND FARM BUILDINGS. Sketching, practice in pictorial drawing, and drawing farm building plans. Set of instruments not required. MR. JACOBSON.
- A32. FARM BUILDINGS. A study of the location, planning, construction, and maintenance of farm buildings. MR. WHITE.
- A41. HOUSEHOLD PHYSICS. A study of household mechanics, air, and water pressure, heat, and electricity. The economics of power, heat, light, and electricity in the home are considered. MR. ROMNESS, MR. STEWART.
- A51. DRAINAGE AND ROADS. Conditions requiring, purposes of, benefits from drainage. Legal organization for extensive drainage. Kinds of drainage; essential features of drainage system; practice ditching and tile-laying to grade. Country road administration; earth road construction and maintenance. MR. ROE.

AGRONOMY AND FARM MANAGEMENT

ANDREW BOSS, Chief; ALBERT C. ARNY, LOUIS B. BASSETT, CHARLES S. DORCHESTER, RUSSELL C. ENGBERG, HERBERT K. HAYES, FLOYD L. HIGGINS.

COURSES

- A1. CEREAL CROPS. Including the history, culture, judging, and uses of the important cereal crops. MR. DORCHESTER.
- A2. CORN. The history and classification with a careful study of the culture, judging, and uses of the corn crop. MR. DORCHESTER and Department of Agricultural Education.

- A3. FORAGE CROPS AND POTATOES. A study of the grasses and legumes and other forage crops, and methods in growing them for forage, and the culture, storage, and use of potatoes. MR. HIGGINS.
- A4. GENERAL AGRICULTURE. Soil formation, tillage, and culture. Classes and varieties of cereal and forage crops, their history, culture, and use in the provision of food and clothing. Types and breeds of livestock and their place in farming. MR. DORCHESTER.
- A5. FARM CROP-BREEDING. Instruction in modern methods of propagating and breeding the various agricultural crops with plans for growing and certifying pedigreed seed. MR. HAYES.
- A6. JUDGING AND GRADING FARM CROPS. A study of the factors which influence the value of crops for seed, feed, and market, with practice in the application of federal grades. MR. ARNY.
- A11. FARM IMPLEMENTS. Studies and discussions of the selection, operation, and care of farm machinery; also the cost, depreciation, efficiency, and adaptability of the various machines to the work to be accomplished. MR. BASSETT.
- A21. FARM MANAGEMENT I (Records). Practice in taking farm inventories and in keeping labor, crop, field, and feed records. Studies of cost of production. The use of farm capital; mortgages; farm loans; contracts; deeds; taxes; insurance; general farm business methods. MR. ENGBERG.
- A22. FARM MANAGEMENT II (Organization). A study of farm organization as related to types of farming, combinations of enterprises, crop rotation, soil management, field and farmstead arrangement, and the efficient use of labor and equipment. MR. BASSETT.

ANIMAL HUSBANDRY

WALTER H. PETERS, Chief; PHILIP A. ANDERSON, NORRIS K. CARNES, ALFRED L. HARVEY, MARK A. MCCARTY.

COURSES

- A1. TYPES AND MARKET CLASSES. The livestock industry; demonstration of types and market classes of cattle, horses, sheep, and swine and their relation to production; score card practice and the fundamentals of livestock-judging. MR. HARVEY, MR. MCCARTY.
- A2. BREEDS. The origin, identification, and adaptability of the breeds of cattle, horses, sheep, and swine. MR. HARVEY, MR. MCCARTY.
- A3. STOCK-JUDGING. Practice in judging from both the type and breed standpoint. Two thirds of this time is given to beef cattle, horses, sheep, and swine, one third to dairy cattle. Same as Dy. Husb. A3. MR. HARVEY, MR. MCCARTY.

- A4. MEATS. Lectures, demonstrations, and practice work in dressing, cutting, and curing meats. MR. ANDERSON.
- A5. BREEDING. Livestock improvement and variation, heredity, environment, and selection as factors therein; line-breeding, inbreeding, cross-breeding, and grading-up; the purebred sire; pedigree registration; practical breeders' problems. MR. CARNES.
- A6. LIVESTOCK-FEEDING AND MANAGEMENT. The business side of stock-farming, buying and selling, record-keeping, economic principles involved in efficient production of beef cattle, horses, sheep, and swine. Study of the several forms of specialization in livestock production. MR. PETERS.
- A7. UTILIZATION OF MEATS. Lectures on methods of utilizing cuts from the beef, pork, and mutton carcass; curing and storing of meats for summer use; laboratory practice in preparing cuts of meat for cooking; sausage-making and lard-rendering. MR. ANDERSON.
- A8. PROBLEMS IN LIVESTOCK IMPROVEMENT. (Offered only to women students who desire to specialize in the course in Livestock Production.) Methods used in improving the various types of livestock. The problems of heredity, variation, environment, and selection as affecting livestock improvement. Herd record-keeping and the registration of purebred livestock. MR. PETERS.

BEE CULTURE

FRANCIS JAGER, Chief; GROVER C. MATTHEWS.

COURSES

- A1. ELEMENTARY BEEKEEPING I. Fundamentals of bee behavior and of beekeeping practice during spring and early summer. Swarm control and increase. MR. MATTHEWS.
- A2. ELEMENTARY BEEKEEPING II. Fundamentals of bee behavior and of beekeeping practice during late summer, fall, and winter. Production of extracted honey, comb honey, and wax. Apiary equipment. Bee diseases, queen-rearing. Marketing of honey. Wintering outside and inside. MR. MATTHEWS.
- A3. ADVANCED BEEKEEPING. Beekeeping practice in commercial apiaries and out-apiaries. Moving bees and migratory beekeeping. Package bees and nuclei versus making increase. Home queen-rearing. Equipment for large apiaries. Marketing of honey. MR. MATTHEWS.

DAIRY HUSBANDRY

CLARENCE H. ECKLES, Chief; CHESTER D. DAHLE, THOR. W. GULLICKSON, JAMES C. HENING, WILLIAM E. PETERSEN, ALLAN B. RAYBURN, LLOYD M. THURSTON.

COURSES

- A1. FEEDS AND FEEDING. The composition of feeds and of the animal body, digestion, assimilation; a study of the various feedstuffs, and of feeding standards. MR. GULLICKSON, MR. RAYBURN, MR. PETERSEN.
- A2. FARM DAIRYING. Milk, its composition, properties, cleanly production, and care. Principles of, and practice in, separating, testing, and farm butter-making. Forms and methods of marketing. MR. ANDERSON, MR. DAHLE, MR. GULLICKSON, MR. HENING, MR. THURSTON.
- A3. STOCK-JUDGING. Practice in judging from both the type and breed standpoints. Two thirds of the time is given to horses, beef cattle, sheep, and hogs; one third to dairy cattle. Same as An. Husb. A3. MR. GULLICKSON, MR. PETERSEN, MR. RAYBURN.
- A5. MILK PRODUCTION. Characteristics of the dairy breeds, selection, care, and management of the dairy herd, selection of the sire, calf-raising; dairy barns. MR. GULLICKSON.
- A6. DAIRY STOCK-FEEDING. Feeding the cow for milk production and the growing animals. Formulation of rations with special attention to economy and efficiency, a study of roughages and concentrates. Rations for cows on official tests. MR. RAYBURN.
- A7. DAIRY STOCK SELECTION. A study of type, comparative judging, a study of pedigrees in relation to values. Visits to noted herds near the Twin Cities. MR. RAYBURN.

ENTOMOLOGY AND ECONOMIC ZOOLOGY

WILLIAM A. RILEY, Chief; RICHARD B. FALKENSTEIN, GLADYS HOKE, CARL J. OSTROM.

COURSES

- A1. ANIMAL BIOLOGY. Study of fundamental principles of animal life such as metabolism, respiration, digestion, growth, and reproduction. A consideration of the more important groups of the animal kingdom and their relation to man. MR. RILEY, MR. FALKENSTEIN, MR. OSTROM.
- A3. BIOLOGY. An elementary course dealing with such topics as inheritance, reproduction, natural selection, nervous activity, and metamorphosis. MISS HOKE.
- A11. ANIMAL PARASITES. A study of life histories and methods of prevention and control of various external and internal parasites of domestic animals. MR. RILEY.

- A16. INSECT PESTS OF PLANTS. A study of life cycles of insect pests injurious to cultivated plants and methods of combating them.

GYMNASIUM AND PHYSICAL TRAINING

VICTOR A. CHRISTGAU, Director; EVELYN V. WISE.

Men

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

Interclass games, etc., are maintained as well as the regular school teams.

COURSE

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

Women

The aim of this department is to maintain the health of the students; to give gymnastic exercises and deep breathing; to stimulate functional activity, and to give co-ordination and poise. The department offers opportunities for swimming in the gymnasium swimming pool, organized games, cross-country tramps, and skating. Every girl is required to pass a swimming test before graduating, proving that she can save her life in case of an accident on the water.

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

COURSES

- A1-2. FRESHMAN PHYSICAL TRAINING. Games, drill, beginning apparatus work, swimming, and beginning life-saving. MRS. WISE.
- A3-4. JUNIOR PHYSICAL TRAINING. Games, drill, apparatus work, swimming, diving, and life-saving. MRS. WISE.
- A5-6. SENIOR PHYSICAL TRAINING. Advanced drill, games, advanced apparatus work, swimming with practice in life-saving, diving, and fancy swimming. MRS. WISE.

HOME ECONOMICS

WYLLE B. McNEAL, Chief; EDNA AMIDON, CARLOTTA BROWN, RUETTA DAY,
AMANDA EBERSOLE, FLORENCE FALLGATTER, AURA KEEVER.

COURSES

- A1. GARMENT-MAKING I. Qualities and prices of standard muslins; construction and care of the sewing machine; reading and alteration of commercial patterns; application of hand sewing and machine stitching to the making of an apron and undergarments. MISS AMIDON, MISS EBERSOLE.
- A2. GARMENT-MAKING II. A study of design in children's garments; suitable materials for garments; processes involved in construction of children's clothing; repair of clothing. MISS AMIDON, MISS EBERSOLE.
- A3. DRESSMAKING I. Selection of suitable fabrics, and design and construction of simple washable dress and blouse. MISS EBERSOLE, MISS KEEVER.
- A4. TEXTILES AND CARE OF FABRICS. Study of textile fibers and standard fabrics; methods of determining fastness of color and durability of fabrics; storage, cleaning, and dyeing of clothing and household fabrics. MISS EBERSOLE, MISS KEEVER.
- A5. DRESSMAKING II. Making of tight fitting lining and padding of dress form; study of fabrics suitable for, and construction of, a wool dress of tailored design using commercial patterns and simple modeling. MISS KEEVER.
- A6. DECORATIVE NEEDLEWORK. Applied design in needlework, adapted to decoration of clothing, hats, and household furnishings; emphasis on attaining sufficient skill and speed to have work of commercial value.
- A7. MILLINERY I. Design and color harmony in hats; paper patterns, making of wire frames, modeling and blocking of frames, alteration of frames; construction and trimming of simple hats. Renovation of used materials. MISS BROWN.
- A8. ADVANCED MILLINERY. Continuation of Millinery I with more emphasis on trimming and high-class finishing processes. Remodeling of hats. Work planned on a shop basis. MISS BROWN.
- A9. ECONOMICS OF BUYING I. The budget and its use; information regarding hosiery, shoes, underwear, outer garments, household furnishings, and home marketing which is necessary for intelligent shopping. Standards of dress. MISS KEEVER.
- A10. ECONOMICS OF BUYING II. Supplementary course to be carried parallel with Economics of Buying I in which opportunity will be given to do a certain amount of shopping and to get acquainted with the various wholesale houses. MISS KEEVER.

- A11. DRESS DESIGN. A study of the human figure; line, color, and texture suited to the individual; laboratory work giving practice in modeling and draping in inexpensive materials. MISS EBERSOLE.
- A12. TRADE DRESSMAKING. To be offered in co-operation with city dress-making shops, giving students actual trade experience. (Not offered in 1923-24.)
- A13. TRADE MILLINERY. To be offered in co-operation with city millinery shops, giving students actual trade experience. (Not offered in 1923-24.)
- A21. DRAWING AND DESIGN I. Principles of design and color harmony with special emphasis upon design as expressed in clothing; one lettering problem.
- A22. DRAWING AND DESIGN II. Continuation of Course A21 with special emphasis on color-harmonizing.
- A26. HOUSE-PLANNING AND FURNISHING. A consideration of the house in regard to location, convenient arrangement of floor space, and heating and plumbing equipment; selection and cost of interior finish, wall and floor coverings, furniture, curtains, and pictures. MISS FALLGATTER.
- A31. SELECTION AND PREPARATION OF FOOD. Selecting, preparing, and serving food for simple breakfasts and luncheons. MISS DAY, MISS FALLGATTER.
- A32. MEAL PREPARATION. The selection, preparation, and serving of food for simple family dinners.
- A33. FOODS AND NUTRITION. A study of the adequate diet for adults and children of varying ages. The planning of a family dietary, cost of the day's meals, and food for the sick and convalescent. MISS DAY.
- A34. HOME MANAGEMENT. The home maker's responsibilities; distribution of the family income, household accounts, scheduling and dispatching of work in connection with meal preparation; care of the house and its equipment. Especial attention to labor-saving devices. MISS AMIDON.
- A35. CHILD CARE AND TRAINING. Physical care of infants and small children. Habit formation and methods of control; games and reading suitable for the pre-school child. MISS FALLGATTER.

HORTICULTURE

WILLIAM H. ALDERMAN, Chief; LEROY CADY, FRANC P. DANIELS, FRED A. KRANTZ, WILLIAM T. TAPLEY.

COURSES

- A1. FARM HORTICULTURE. Growing fruits, vegetables, and ornamentals for use on the farm. Location and planning of the orchard and garden

and the culture of the important crops. Propagation of common plants. Culture and use of ornamentals. Text, lectures, and references. MR. DANIELS.

- A2. ORCHARD FRUIT-GROWING. Commercial orcharding with a special consideration of the profitable management of an orchard on the Minnesota farm. Location; planting; selection of varieties; cultural systems; pruning; pest control; harvesting and marketing of fruit. MR. DANIELS.
- A3. COMMERCIAL VEGETABLE-GARDENING. Growing of vegetable crops for market. Locating, planting, and care of the commercial garden; consideration of the important crops; marketing methods; types of glass structures, their uses, and the production of vegetables under glass. MR. DANIELS.
- A4. SMALL FRUIT-GROWING. A practical study of berry-growing as a commercial enterprise in Minnesota and the Northwest, covering the establishing and management of plantations of strawberries, raspberries, blackberries, gooseberries, currants, and grapes. MR. DANIELS.
- A5. PLANT PROPAGATION. Methods of propagation of plants by seeds, cuttings, layers, grafting, and budding are studied. The principles of greenhouse management, transplanting, watering, and ventilation are studied. Lectures and laboratory. MR. CADY.
- A6. ADVANCED PLANT PROPAGATION. A continuation of A5. Special attention being given to handling nursery stock in nursery and nursery management. Lectures and assigned readings. MR. CADY.
- A7. FLORICULTURE. The purpose of this course is to give the student a working knowledge of the culture and use of house plants, annuals, and perennials. Lectures, reference reading, laboratory, and field trips. MR. CADY.
- A8. ELEMENTARY LANDSCAPE GARDENING. A general course in practice and principles of ornamental plantings as applied to the home and community. A study of common trees, shrubs, and herbaceous perennials. Lectures, reference reading, and field trips. MR. CADY.
- A9. ADVANCED LANDSCAPE GARDENING. A continuation of A8, giving more attention to arrangement of trees, shrubs, and herbaceous plants on home and public grounds. Special features of construction and maintenance will be considered. Lectures and laboratory. MR. CADY.
- A10. GREENHOUSE CONSTRUCTION, MANAGEMENT, AND PRACTICE. Construction and management of the greenhouse from the standpoint of the fruit, vegetable, or flower grower. Various crops in relation to types of glass construction. Practice work in crops in the greenhouse. MR. TAPLEY.

- A12. GREENHOUSE PRACTICE. Practice work under supervision at University Farm and other approved greenhouses. MR. CADY, MR. TAPLEY.
- A13. NURSERY ORGANIZATION. Types of nurseries; specialized departments; trade policies; office organization; advertising and selling; records, field labels; field and cellar handling of stock; grading; packing; traffic problems; federal and state regulations. MR. DANIELS.
- A14. POTATO PRODUCTION. A study of the growth, climatic requirements, regional distribution, standardization of varieties according to soil, climate, and markets. Identification, exhibiting, judging, handling of seed plots, certification, cultural methods, storage, and marketing. MR. KRANTZ.

MILITARY SCIENCE AND TACTICS

(Junior Reserve Officers' Training Corps)

COLONEL GIRARD STURTEVANT, CAPTAIN NEWTON W. SPEECE, SERGEANT EDMUND T. MCCANN.

The Reserve Officers' Training Corps is provided for by the National Defense Act of June 3, 1916, which is essentially a peace-time measure.

The Junior R.O.T.C. is designed, through standardized physical training, the teaching of the fundamentals of military training and leadership as well as a respect for lawful authority, to offer just the kind of training which will best enable the average educated man to perform his civic duties in time of war as well as in time of peace.

The School of Agriculture, being a duly authorized institution, receives the following support from the Federal government:

1. The services of a regular army officer to devote all his time to the military work.
2. Each student enrolled to receive annually:

1 coat wool O. D.	1 hat service
1 breeches wool O. D.	2 collar ornaments
1 shirt wool O. D.	1 belt
1 leggings pair canvas	Chevrons

The following is copied from the official circular: "The R.O.T.C. in no way undertakes to assume any military control of the schools where units are authorized. Parents and school authorities lose none of their control over the students. The members are not enlisted in the army, they sign no oath, they are not subject to calls for military duty any more than are other citizens of the same age."

In accordance with the spirit of this act all male students not physically unfit are required to attend military drill.

Military instruction is intended to be so conducted as to develop a soldier-like bearing and foster a spirit of gentlemanly courtesy, soldierly honor, and obedience to lawful authority, as well as to familiarize students with battalion maneuvers, guards, and the theoretical and practical use of firearms.

The officers and non-commissioned officers are required to be good students in the other departments, soldier-like in the performance of their duties, exemplary in their general deportment, and able to pass a creditable examination in drill regulations.

In general, the officers are selected from the senior class; sergeants and corporals from the junior class.

Practice playing in the school military band will be given to such students as desire to take their military training in the band. Any desiring this work should bring band instruments with them.

The military drill includes certain time set aside for gymnasium and athletic work. It has for its object the betterment of health conditions on the campus and to make the farm boys more agile. Emphasis is laid upon free arm gymnastics, apparatus work, and competitive games. Shower baths and a swimming pool are provided.

PLANT PATHOLOGY AND BOTANY

EDWARD M. FREEMAN, Chief; HENRY C. GILBERT, ALVIN H. LARSON.

COURSES

- A1. AGRICULTURAL BOTANY. A brief study is made of the parts of economic flowering plants, emphasizing their significance in relation to agricultural practice. A brief study of seeds, fungi causing diseases of plants, and decay organisms is included. MR. GILBERT.
- A2. SEED-TESTING. The seeds of the common farm weeds, with special attention to those of noxious weeds, are studied. A set of seed cases is made and practice is given in testing seeds for purity and germination. MR. LARSON.
- A4. AGRICULTURAL BOTANY. A study of economic flowering plants is made. The course also contains a brief study of molds, mushrooms, rots or decays, and yeast. MR. GILBERT.
- A11. PLANT DISEASES. A study of important diseases of Minnesota crop plants with special emphasis on methods of control.
- A12. WEEDS. A practical study of farm weeds with special emphasis on their identification, control, and eradication. MR. LARSON.

POULTRY HUSBANDRY

ARTHUR C. SMITH, Chief; CARL J. AAMODT.

COURSES

- A1. POULTRY. Principles of general management, house construction, important commercial breeds and types, feeding for egg production; common ailments and simple treatments. MR. SMITH.

- A2. MANAGEMENT OF LAYING FLOCK. Practice in feeding and management, mixing feeds, a study of laying rations, selections for laying qualities, selections for breeding qualities, keeping accounts. MR. SMITH, MR. AAMODT.
- A3. 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. MR. SMITH, MR. AAMODT.

PREVENTIVE MEDICINE AND PUBLIC HEALTH

HAROLD S. DIEHL, Director; RUTH E. BOYNTON, HALLY J. FISHER, LEONARD W. LARSON.

COURSES

- A1. HOME NURSING AND HYGIENE I. Home nursing equipment and methods practicable in the household. Communicable diseases, methods of prevention, control, and disinfection. DR. BOYNTON, MISS FISHER.
- A2. HOME NURSING AND HYGIENE II. Hygiene requirements during infancy, childhood, womanhood, maturity. Household emergencies, preparation for maternity, care of infant. DR. BOYNTON, MISS FISHER.
- A8. HYGIENE. Methods for promotion of health and prevention of disease will be considered with a view to acquainting the student with the fundamentals of right living and the individual and community activities against the spread of disease. DR. LARSON.

RHETORIC

ROBERT C. LANSING, Chief; FAE BRADLEY, ELIZABETH HAUSE, KATHERINE KESTER, MONICA LANGTRY.

COURSES

- A1. ENGLISH I. The sentence, parts of speech, punctuation, spelling, supplementary reading. MISS BRADLEY, MRS. HAUSE, MISS LANGTRY.
- A2. ENGLISH II. Paragraphs and themes in narration, description, and exposition. Supplementary reading. MISS BRADLEY, MRS. HAUSE, MISS LANGTRY.
- A3. ENGLISH CLASSICS. A study of the works of American and English authors. MISS BRADLEY, MRS. HAUSE, MISS KESTER, MISS LANGTRY.
- A4. BUSINESS ENGLISH. Practice in various forms of correspondence and business forms. MISS BRADLEY, MRS. HAUSE, MISS LANGTRY.
- A5. PUBLIC SPEAKING. Voice exercise, platform deportment. Practice in delivery of memorized and extemporaneous speeches. MISS KESTER, MISS LANGTRY.

- A6* ENGLISH VI. Exposition and argument. Gathering and outlining material. Instruction in the writing of senior thesis. Debating. MISS BRADLEY, MISS KESTER, MISS LANGTRY.
- A14. ADVANCED PUBLIC SPEAKING. A continuation of Course A5. Selecting and organizing material for speeches and the presentation of speeches effectively before a given audience. MISS KESTER.
- A21-22. ENGLISH LITERATURE I, II. The history of English literature with a study of selections. For students planning to enter the College of Agriculture, Forestry, and Home Economics. MISS KESTER.
- A31. DRAMATICS. Students who are selected by the coach of dramatics to take major parts in a play will receive one-half point credit upon the recommendation of the coach. MISS KESTER.
- A32. DEBATING. Students participating in intersociety debates under the supervision of a teacher of debating will receive a one-point credit upon completing a required amount of work. Debaters should report to the coach as soon as they are chosen. MISS LANGTRY.

SCHOOL (GENERAL)

DEXTER D. MAYNE, Principal; OSCAR F. CUTKOSKY, JOHANNA HOGNADON, FREDERICK B. JOHNSON, PEDER L. JOHNSRUD, GEORGINA LOMMEN, GUSTAV A. LUNDQUIST, CHRISTINE ROLLEFSON, ROSE SCHAEITGEN, WILLIAM R. WEHREND, MABEL WILLSON, WILBERT L. WITTE.

COURSES

- A1. FARM ARITHMETIC. Training in simple mathematical processes, applications of principles to problems requiring measurements of material, extension, capacity. Practical applications to farm and home life. Assists in the mathematics of the technical school courses. MR. JOHNSRUD.
- A2. ADVANCED FARM ARITHMETIC. Similar in outline to Course A1. Special emphasis on farming as a business. MR. JOHNSRUD.
- A4. ALGEBRA I. Fundamental operations: Properties of algebraic numbers, addition, subtraction, multiplication, division, factoring simple equations. MR. CUTKOSKY.
- A5. ALGEBRA II. Fractions, fractional equations, literal numbers, proportion, simultaneous equations, radicals, quadratics. Emphasis upon the development and use of formulae. Problems taken from fields allied to agriculture. MR. CUTKOSKY.

*Students given advanced standing in this course will be required to write a thesis under the direction of the Rhetoric Section as one of the requirements for graduation.

- A6. GEOMETRY I. Parallel and perpendicular lines, triangles, loci, polygons, proportion, similar polygons. Theorems developed both inductively and deductively. In this term's work emphasis is placed upon geometry as a reasoning process. MR. CUTKOSKY.
- A7. GEOMETRY II. Inequalities, circles, numerical relations, areas, regular polygons. Special emphasis on those problems relating to farm life such as the calculation of areas, surveying, and problems taken from mechanics. MR. CUTKOSKY.
- A21. ELEMENTS OF MUSIC I. Fundamental principles of musical notation, pitch, rhythm, musical terms, formation of major scales, sight reading, singing, and ear-training. MISS ROLLEFSON.
- A22. ELEMENTS OF MUSIC II. Continuation of musical principles, formation of minor scales, sight singing, intervals, ear-training, how music is related to mental processes. MISS ROLLEFSON.
- A23. CHORUS. Sight reading and ear-training. From this chorus, students with unusual ability and experience will be chosen for the school chorus, which is divided into men's glee club, girls' chorus, mixed chorus and quartet. MISS ROLLEFSON.
- A24. VIOLIN. Elementary: Rosenkranz, *Kayser Etudes*, *Schradieck Scales*, *Solos in Comparison*. Intermediate: scales in all positions, Seveik, Mazas, Dont, compositions of medium difficulty. Advanced: Kreutzer, Fiorillo, Rode, Gavinie, sonatas of Handel, Gade, David, concertos of Viotti, DeBeriot, Mendelssohn. Ten thirty-minute lessons, \$10 per term. MISS SCHAETGEN.
- A25.* PIANO. Elementary and advanced technical training, scales, arpeggios, octaves, chords, selected technical studies. Bach: Inventions, Well-Tempered Clavicorn. Sonatinas: Clementi, Kuhlman. Sonatas: Haydn, Mozart, Beethoven. Solos for all grades; classics and best modern material. Ten thirty-minute lessons, \$10 per term. MISS WILLSON.
- A26. INSTRUMENTAL. Instruction on band and orchestral instruments, such as cornet, clarinet, flute, saxophone, trombone, baritone, horn, bass, etc., scales and technical exercises with practical playing. Ten thirty-minute lessons, \$10 per term. MR. WEHREND.
- A27.* ORCHESTRA. Standard orchestral literature and accompaniment of vocal and instrumental solos. Instruction and laboratory experience for those not sufficiently equipped technically, to improve the sense of rhythm, intonation, phrasing, and interpretation. MR. WEHREND.

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

- A28. VOICE. Voice-placing, breath development, enunciation, diction, illustrated by elementary studies and exercises by Sieber, Clippinger, Con Cone; songs of medium difficulty. Ten thirty-minute lessons, \$10 per term. MISS ROLLEFSON.
- A29. HARMONY I. Formation and progression of triads, seventh and ninth chords, harmonizing a given bass. MISS WILLSON.
- A30. HARMONY II. Harmonizing simple melodies, cadences, modulations, transposition, accompaniment-writing and melody-building. MISS WILLSON.
- A32. APPRECIATION OF MUSIC. Appreciation of music; brief history; biographies of well-known composers; and a knowledge of standard musical literature for the orchestra, band, chorus, solo work, and any combination or group of instruments or voices. MR. WEHREND.
- A33. INSTRUMENTATION AND CONDUCTING. A knowledge of instruments of the band and orchestra, their origin and development, construction, part they play, and how played. Combinations of instruments. Essentials of conducting and actual practice in directing band and orchestra. MR. WEHREND.
- A41. PARLIAMENTARY LAW. Instruction in principles of parliamentary law, how to organize a society, duties of officers, how to record proceedings, and how to conduct meetings. Students will be given practice under the direction of the instructor. MR. MAYNE.
- A42. AMERICAN GOVERNMENT. Origin, necessity, nature, and various forms of government. The legislative, judicial, and executive departments and the functions of each. The relations of the state to the Federal government. MR. LUNDQUIST.
- A43. ELEMENTARY ECONOMICS. Fundamental laws governing production, consumption, distribution, and exchange. Subjects of special interest to farmers, such as taxation, rural credit, co-operation, and the growth of tenantry. The subject is given in lectures and assigned readings. MR. WITTE.
- A44. RURAL ECONOMICS. The general principles of economics as applied to the farmer's relationships, as a producer and as a consumer. Special topics considered. Marketing of farm products, co-operative societies, rural credits, taxation, farm labor, and tenancy. MR. WITTE.
- A45. INDUSTRIAL HISTORY. Sanford's *Story of Agriculture*, supplemented by Moore's *Industrial History*. Recitation and written summaries from the texts, special reports, and outlines. Agricultural history is emphasized in this study of general industrial development in the United States. MR. WITTE.

- A46. RURAL SOCIOLOGY. A practical course including a study of rural conditions, how to make a survey, the cause of present conditions and how they may be improved. Study of rural organizations, religions, and educational institutions. MR. LUNDQUIST.
- A47. AMERICAN HISTORY. Causes and effects of great movements are emphasized, and the history of the westward migration is especially stressed. How the United States became a "world power" in 1900. Lectures, recitations, special topics, reports, and outlines. MR. LUNDQUIST.
- A90. RELATED SCIENCE I. A study of certain scientific facts and principles and their application in the field of home-making.
- A91. RELATED SCIENCE II. A continuation of Course A90.
- A61. SPELLING. Students poor in spelling should elect this course and continue until able to spell words in ordinary conversation and correspondence. A spelling text is used and drills on lists of commonly misspelled words are given. MR. JOHNSON.
- A62. PENMANSHIP. A standard musical movement system is taught and the Curtis tests are applied. Students who are poor in penmanship should elect this course. MR. JOHNSON.

BUSINESS COURSES FOR GIRLS

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

The subject-matter of the course in home-making and agriculture fits students, with the training in business subjects, to take positions as office assistants in farm bureaus, co-operative creameries, and local elevator.

- A63. TYPEWRITING I. The touch method of typewriting is taught. Following the acquirements of the command of the keyboard, repetition drills to assist in memorizing the keyboard, concentration drills, and acceleration drills are given.
- A64. TYPEWRITING II. The continuous development of speed and accuracy through carefully planned speed drills. Tabulating, lessons on different machines and their care.
- A65. STENOGRAPHY I. Principles of phonography are taught by the Gregg system. Thoro drill is given in word forms and in combining them into phrases and sentences. MR. JOHNSON.
- A66. DICTATION. Students review carefully the principles of stenography, and take short letters by dictation, which are transcribed on the typewriter. Accuracy of transcription is the aim, rather than speed. MR. JOHNSON.

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

- A67. **STENOGRAPHY II.** Continuation of Stenography I. Drills on words, forms, and phrases. Copying exercises for speed and taking short paragraphs by dictation.
- A68. **BOOKKEEPING.** Principles of double entry illustrated by keeping a set of books for a firm, making out the forms necessary for the various transactions and closing the books.
- A69. **LETTER-WRITING.** Business correspondence from typist's viewpoint. Business letters and documents which help in gaining correct first impression are studied and copied. Construction work requiring judgment in arrangement, and developing initiative and power to solve original problems.
- A70. **GENERAL OFFICE PRACTICE.** This course gives an insight into office routine. Letters are taken from dictation, transcribed upon the typewriter, and filed according to approved methods. The use of the mimeograph, a duplicating device, is also taught. MR. JOHNSON.
- A72. **COMMERCIAL LAW.** (Not offered in 1923-24.)
- A81. **SOCIAL TRAINING.** Fundamental principles governing the individual in social contacts; attention to the rights and the responsibilities of the individual in institutional life; the home as the social center; discussion of problems arising in current social activities. MISS LOMMEN.
- A82. **SOCIAL PROBLEMS FOR BOYS.** An open forum for the discussion of social conventions of home, school, and public life. MISS HOGNASON.
- A90. **RELATED SCIENCE I.** A study of certain scientific facts and principles and their application in the field of home-making.
- A91. **RELATED SCIENCE II.** A continuation of Course A90.

SOILS

FREDERICK J. ALWAY, Chief; GEORGE H. NESOM.

COURSES

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

VETERINARY MEDICINE

CLIFFORD P. FITCH, Chief; WILLIAM L. BOYD, RAYMOND E. LUBBEHUSEN, MYRON H. REYNOLDS.

COURSES

- A1. **PHYSIOLOGY.** This course consists of the study of the body, its functions and care. MR. REYNOLDS.
- A4. **ELEMENTS OF BACTERIOLOGY.** Lectures and demonstrations of the fundamental principles underlying the science of bacteriology, with special reference to organisms which cause disease. Instruction will be given in the preparation and use of vaccines, bacterines, antitoxins, immune sera. MR. LUBBEHUSEN.
- A5. **PHYSIOLOGY AND HYGIENE OF BREEDING.** A study of the gross anatomy of the reproductive organs; physiology of reproduction; the breeding season; gestation and care of the female during parturition and lactation. MR. BOYD.
- A7. **VETERINARY STUDIES.** The animal body in health; causes and prevention of animal diseases in general; specially important diseases in detail, including treatment; simple surgical operations, e.g., castration, dehorning, tapping for bloat, abscess drainage, etc. MR. REYNOLDS.

TABULAR STATEMENT AND PROGRAM OF COURSES

EXPLANATION OF TABULAR STATEMENT

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

Credits and prerequisites.—The number of credits which each course counts toward graduation, the classes of students to which the course is offered, and the prerequisite courses are indicated in parentheses, immediately below the descriptive name of the course. For example: (2 cred.; sr. agr.; prereq., A1,A2) means that the course counts two credits; that it is offered to senior students in agriculture (not home economics); and that before registering for the course, Courses A1 and A2, offered by the same division, must have been satisfactorily completed. If neither agriculture or home economics students are designated the course may be taken by both.

ABBREVIATION OF BUILDINGS

Ad	Administration	HE	Home Economics
BB	Beef Barn	Hr	Horticulture
Ch	Agricultural Chemistry	MS	Meat Shop
DB	Dairy Barn	PP	Plant Pathology
DH	Dairy Hall	St	Stock Pavilion
En	Agricultural Engineering	Ve	Veterinary
FH	Farm House	WH	Women's Hall
Gy	Gymnasium		

CLASS HOURS

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

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

PROGRAM

AGRICULTURAL BIOCHEMISTRY

No.	Title	Hour	Day	Bldg.	Instructor
A1f-2w	Chemistry of Plant and Animal Life	II	MWF	201Ch	Mr. Taylor
	(6 cr.; jr., sr.; no prereq.)				
A1w	Chemistry of Plant and Animal Life	IV	TThS	201Ch	Mr. Taylor
	(3 cr.; jr., sr.; no prereq.)				
A2f	Chemistry of Plant and Animal Life	III	TThS	201Ch	Mr. Taylor
	(3 cr.; jr., sr.; prereq., A1)				

AGRICULTURAL ECONOMICS

No.	Title	Hour	Day	Bldg.	Instructor
A1f,w	Co-operative Accounting.....	VI	TTh	24Ad	Mr. Gaumnitz
	(3 cr.; jr., sr. agr.; no prereq.)	VII,VIII	T	24Ad	Mr. Gaumnitz

AGRICULTURAL ENGINEERING

No.	Title	Hour	Day	Bldg.	Instructor
A1f,w	Blacksmithing I.....				
	(3 cr.; all agr.; no prereq.)				
	Sec. 1	VI, VII, VIII	TTh	20En	Mr. Johnston
	2	VI, VII, VIII	WF	20En	Mr. Johnston
A2w	Blacksmithing II.....	I, II	TThS	20En	Mr. Johnston
	(3 cr.; jr., sr. agr.; prereq., A1)				
A11f,w	Farm Motors I.....				
	(3 cr.; all agr.; no prereq.)				
	Sec. 1	VI, VII, VIII	TTh	216,37En	Mr. Torrance
	2	VI, VII, VIII	WF	216,37En	Mr. Torrance
A12f,w	Farm Motors II.....	III, IV	TThS	216,37En	Mr. Torrance
	(3 cr.; jr., sr. agr.; prereq., C grade in A11)				
A16f,w	Mechanical Laboratory				
	(3 cr.; all agr.; no prereq.)				
	Sec. 1	VI, VII, VIII	TTh	56En	Mr. Dent
	2	VI, VII, VIII	WF	56En	Mr. Dent
A18f	Mechanics and Water Supply..				
	(3 cr.; jr., sr. agr.; no prereq.)				
	Lect.	I	MW	101En	Mr. Tyler
	Lab. Sec. 1	I, II	F	102En	Mr. Tyler
	2	VII, VIII	M	102En	Mr. Tyler
A18w	Mechanics and Water Supply..	II	ThS	101En	Mr. Tyler
	(3 cr.; jr., sr. agr.; no prereq.)	I, II	T	102En	Mr. Tyler

SCHOOL OF AGRICULTURE

No.	Title	Hour	Day	Bldg.	Instructor		
A19w	Heat and Electricity..... (3 cr.; jr., sr. agr.; no prereq.)	Sec. 1	I	MW	101En	Mr. Tyler	
			I, II	F	102En	Mr. Tyler	
			2	IV	TTh	101En	Mr. Stewart
			III, IV	S	102En	Mr. Romness	
A21f,w	Carpentry (3 cr.; all agr.; no prereq.)	Sec. 1	VI, VII, VIII	TTh	48En	Mr. White	
			2	VI, VII, VIII	WF	48En	Mr. White
A31f,w	Drawing and Farm Buildings (3 cr.; all agr.; no prereq.)	Sec. 1	VI, VII, VIII	TTh	303En	Mr. Jacobson	
			2	VI, VII, VIII	WF	303En	Mr. Jacobson
			3	II, III, IV	TTh	303En	Mr. Jacobson
A32f	Farm Buildings (3 cr.; sr. agr.; prereq., A21, A31)		I	M	305En	Mr. White	
			I, II	WF	305En	Mr. White	
A41f	Household Physics (5 cr.; jr., sr. H.E.; no prereq.)		VIII	MTThF	101En	Mr. Stewart	
A51f	Drainage and Roads..... (3 cr.; sr. agr.; no prereq.)		VIII, IX	W	102En	Mr. Romness	
			I, II	MWF	215En	Mr. Roe	

AGRONOMY AND FARM MANAGEMENT

No.	Title	Hour	Day	Bldg.	Instructor		
A1f,w	Cereal Crops (3 cr.; jr., sr. agr.; no prereq.)	Sec. 1	Lect. I	TS	4Ad	Mr. Dorchester	
			Lab. I, II	Th	4Ad	Mr. Dorchester	
			2	Lect. II	ThS (f)2Ad	Mr. Dorchester	
			Lab. I, II	T (f)2Ad	Mr. Dorchester		
A2f,w	Corn (2 cr.; all agr.; no prereq.)	Sec. 1	II	MWF	4Ad	Mr. Dorchester	
			2	III	MWF	4Ad	Mr. Dorchester
			3	IV	MWF	4Ad	Mr. Dorchester
			4	VI	MWF	4Ad	Mr. Dorchester
			5	VII	MWF	4Ad	Mr. Dorchester
A3f,w	Forage Crops and Potatoes... (3 cr.; jr., sr. agr.; no prereq.)	Sec. 1	III	TS	4Ad	Mr. Higgins	
			III, IV	Th	4Ad	Mr. Higgins	
			2	IV	ThS	2Ad	Mr. Higgins
			III, IV	T	2Ad	Mr. Higgins	
A4w	General Agriculture (3 cr.; all H.E.; no prereq.)		I	MWF	307Ad	Mr. Dorchester	
A5w	Farm Crop-Breeding (2 cr.; sr. agr.; prereq., A1, A2)		I	MW	4Ad	Mr. Hayes	

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
A6w	Judging and Grading Farm Crops (3 cr.; sr. agr.; prereq., A1, A2)	VI, VII	MWF	2Ad	Mr. Army
A11f	Farm Implements (3 cr.; sr. agr.; no prereq.)	III, IV	MWF	BA	Mr. Bassett
A21f,w	Farm Management I..... (3 cr.; sr. agr.; no prereq.)	Sec. 1 III, IV 2 III, IV	MWF TThS	24Ad 24Ad	Mr. Engberg Mr. Bassett
A22f,w	Farm Management II..... (3 cr.; sr. agr.; no prereq.)	VI, VII	MWF	24Ad	Mr. Bassett, Mr. Engberg

ANIMAL HUSBANDRY

No.	Title	Hour	Day	Bldg.	Instructor
A1f,w	Types and Market Classes.... (2 cr.; all agr.; no prereq.)				
	Sec. 1	I, II	MW	ES	Mr. Harvey, Mr. McCarty
	2	I, II	TTh	ES	Mr. Harvey, Mr. McCarty
	3	III, IV	TTh	ES	Mr. Harvey, Mr. McCarty
A2f,w	Breeds (3 cr.; all agr.; no prereq.)				
	Sec. 1	III	MWF	WSt	Mr. Harvey, Mr. McCarty
	2	III	TThS	WSt	Mr. Harvey, Mr. McCarty
	3	IV	TThS	WSt	Mr. Harvey, Mr. McCarty
A3f,w	Stock-Judging (3 cr.; jr., sr. agr.; prereq., A1, A2)				
	Sec. 1	III, IV	MWF	ES	Mr. Harvey, Mr. McCarty
	2	VI, VII	MWF	ES	Mr. Harvey, Mr. McCarty
A4f	Meats (3 cr.; jr., sr.; prereq., A1, A2)	VI, VII, VIII	WF	MS	Mr. Anderson
A4w	Meats (Same as A4f)	VI, VII, VIII	TTh	MS	Mr. Anderson
A5f	Breeding (3 cr.; sr. agr.; prereq., A1, A2)	VI	MWF	3St	Mr. Carnes
A5w	Breeding (3 cr.; sr. agr.; prereq., A1, A2)	III	MWF	MS	Mr. Carnes
A6f	Livestock-Feeding and Management (3 cr.; sr. agr.; prereq., A3)	IV	MWF	3St	Mr. Peters

SCHOOL OF AGRICULTURE

No.	Title	Hour	Day	Bldg.	Instructor
A7w	Utilization of Meats..... (3 cr.; jr., sr. H.E.; no prereq.)	VI, VII, VIII	M	MS	Mr. Anderson
A8w	Problems in Livestock Im- ment (3 cr.; sr. women spec. in livestock production; prereq., A1, A2)	I	TThS	3St	Mr. Peters

BEE CULTURE

No.	Title	Hour	Day	Bldg.	Instructor
A1f	Elementary Beekeeping I.... (3 cr.; all; no prereq.)				
	Sec. 1	I	TThS	39DH	Mr. Matthews
	2	II	TThS	1FH	Mr. Matthews
A1w	Elementary Beekeeping I..... (Same as A1f)				
	Sec. 1	I	MWF	1FH	Mr. Matthews
	2	IV	MWF	1FH	Mr. Matthews
A2f	Elementary Beekeeping II.... (3 cr.; all; prereq., A1)	I	MWF	1FH	Mr. Matthews
A2w	Elementary Beekeeping II... (Same as A2f)				
	Sec. 1	I	TThS	102Hr	Mr. Matthews
	2	II	TThS	1FH	Mr. Matthews
A3f	Advanced Beekeeping..... (3 cr.; jr., sr.; prereq., A1, A2 and one summer experi- ence advised)	IV	MWF	1FH	Mr. Matthews
A3w	Advanced Beekeeping..... (Same as A3f)	IV	TThS	1FH	Mr. Matthews

DAIRY HUSBANDRY

No.	Title	Hour	Day	Bldg.	Instructor
A1f	Feeds and Feeding..... (3 cr.; jr., sr. agr.; no prereq.)				
	(Sections limited to Sec. 1	II	MWF	40DH	Mr. Rayburn
	40 students each) 2	IV	TThS	3St	Mr. Gullickson
A1w	Feeds and Feeding..... (3 cr.; jr., sr. agr.; no prereq.)				
	(Limited to Sec. 1	II	MWF	40DH	Mr. Rayburn
	40 students each) 2	IV	TThS	40DH	Mr. Petersen
	3	IV	TThS	39DH	Mr. Gullickson
A2f	Farm Dairying (3 cr.; jr., sr.; no prereq.)				
	(Limited to Sec. 1	III, IV	MWF	40DH	Mr. Dahle
	40 students each) 2	VI, VII	MWF	40DH	Mr. Gullickson
A2w	Farm Dairying (3 cr.; jr., sr.; no prereq.)				
	(Limited to Sec. 1	III, IV	MWF	40DH	Mr. Dahle
	40 students each) 2	VI, VII	MWF	39DH	Mr. Hening
	3	I, II	TThS	40DH	Mr. Gullickson
A3f,w	Stock-Judging	See	Animal Husbandry 3,	p. 51.	

No.	Title	Hour	Day	Bldg.	Instructor
A5w	Milk Production (3 cr.; sr. agr.; no prereq.)	I	MWF	39DH	Mr. Gallickson
A6f	Dairy Stock-Feeding..... (3 cr.; sr. agr.; prereq., A1)	IV	TThS	40DH	Mr. Rayburn
A7w	Dairy Stock Selection..... (3 cr.; sr. agr.; prereq., A3, A5)	I, II	TThS	39DH	Mr. Rayburn

ENTOMOLOGY AND ECONOMIC ZOOLOGY

No.	Title	Hour	Day	Bldg.	Instructor	
A1f,w	Animal Biology (3 cr.; all agr.; no prereq.)	Sec. 1	I	TThS	307Ad	Mr. Falkenstein
		2	II	MWF	307Ad	Mr. Ostrom
		3	III	MWF	307Ad	Mr. Ostrom
		4	VI	MWF	307Ad	Mr. Falkenstein
A3f	Biology (3 cr.; jr., sr. H.E.; no prereq.)	Not offered in 1923-24.				
A11w	Animal Parasites (3 cr.; sr. agr.; no prereq.)	II	ThS	306Ad	Mr. Riley	
A16f	Insect Pests of Plants..... (3 cr.; jr., sr.; no prereq.)	I, II	T	306Ad	Mr. Riley	
		VI, VII	MWF	317Ad		

GYMNASIUM AND PHYSICAL TRAINING

No.	Title	Hour	Day	Bldg.	Instructor
<i>Men</i>					
A1f,w	Gymnasium (2 cr.; all agr.; no prereq.)	Sec. 1	IX	TTh	Gy Ar
		2	VII	TTh	Gy Ar
<i>Women</i>					
A1f,w-2w,f	Freshman Physical Training.. (2 cr.; all H.E.; no prereq.)	VIII	MW	Gy	Ar
		VIII, IX	F	Gy	Ar
A3f,w-4w,f	Junior Physical Training..... (2 cr.; jr., sr. H.E.; prereq., A1-2)	III	TThS	Gy	Ar
A5f,w-6w,f	Senior Physical Training..... (2 cr.; sr. H.E.; prereq., A3-4)	IV	TThS	Gy	Ar

HOME ECONOMICS

No.	Title	Hour	Day	Bldg.	Instructor	
A1f	Garment-Making I..... (2 cr.; all H.E.; no prereq.)	Sec. 1	I, II	MW	112HE	Miss Ebersole
		2	VI, VII	MW	112HE	Miss Ebersole
A1w	Garment-Making I..... (Same as A1f)	III, IV	ThS	112HE	Miss Amidon	

SCHOOL OF AGRICULTURE

No.	Title	Hour	Day	Bldg.	Instructor
A2f	Garment-Making II..... (2 cr.; all H.E.; prereq., A1)	III, IV	ThS	112HE	Miss Amidon
A2w	Garment-Making II..... (Same as A2f)				
	Sec. 1	I, II	MW	114HE	Miss Ebersole
	2	VI, VII	MW	114HE	Miss Ebersole
A3f	Dressmaking I..... (3 cr.; jr., sr. H.E.; prereq., A2)				
	Sec. 1	I, II	MWF	114HE	Miss Keever
	2	I, II	TThS	114HE	Miss Ebersole
A3w	Dressmaking I..... (Same as A3f)	I, II	WMF	112HE	Miss Keever
A3f	Textiles and Care of Fabrics.. (3 cr.; jr., sr. H.E.; prereq., A2)				
	Sec. 1	VI, VII	MWF	309HE	Miss Ebersole
	2	III, IV	MWF	309HE	Miss Keever
A4w	Textiles and Care of Fabrics.. (Same as A4f)	III, IV	MWF	309HE	Miss Keever
A5w	Dressmaking II..... (3 cr.; jr., sr. H.E.; prereq., A3, A4)	I, II	TThS	114HE	Miss Keever
A6f	Decorative Needlework..... (3 cr.; jr., sr. H.E.; prereq., A2, A22)	VI, VII, VIII	TTh	114HE	
A7f	Millinery I..... (3 cr.; jr., sr. H.E.; prereq., A2, A22)	VI, VII, VIII	MF	112HE	Miss Brown
A8w	Advanced Millinery..... (5 cr.; jr., sr. H.E.; prereq., A7)	VI, VII	MTWThF	112HE	Miss Brown
A9w	Economics of Buying I..... (3 cr.; sr. H.E.; prereq., A4)	I	TThS	112HE	Miss Keever
A10w	Economics of Buying II..... (2 cr.; sr. H.E.; parallel A9)	Ar	Ar	Ar	Miss Keever
A11w	Dress Design..... (2 cr.; jr., sr. H.E.; prereq., A2, A22)	VI, VII	TTh	114HE	Miss Ebersole
A12	Trade Dressmaking..... (5 cr.; sr. H.E.; prereq., A5, A6, A11)	Not offered in 1923-24.			
A13	Trade Millinery..... (5 cr.; sr. H.E.; prereq., A8)	Not offered in 1923-24.			
A21f	Drawing and Design I..... (1 cr.; all H.E.; no prereq.)				
	Sec. 1	I, II	F	112HE	
	2	VI, VII	F	112HE	
A21w	Drawing and Design I..... (Same as A21f)	III, IV	T	112HE	
A22f	Drawing and Design II..... (1 cr.; all H.E.; prereq., A21)	III, IV	T	112HE	
A22w	Drawing and Design II..... (Same as A22f)				
	Sec. 1	I, II	F	114HE	
	2	VI, VII	F	114HE	

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
A26f,w	House-Planning and Furnishing (3 cr.; jr., sr. H.E.; prereq., A22)	VI, VII	MWF	106HE	Miss Fallgatter
A31f	Selection and Preparation of Food (3 cr.; all H.E.; no prereq.) Sec. 1 2	III, IV VI, VII	TThS MWF	105HE 105HE	Miss Fallgatter Miss Day
A31w	Selection and Preparation of Food (Same as A31f)	I, II	MWF	103HE	
A32f	Meal Preparation (3 cr.; all H.E.; prereq., A31) Sec. 1 2	I, II I, II	MWF TThS	103HE 105HE	
A32w	Meal Preparation (Same as A32f) Sec. 1 2	III, IV VI, VII	TThS MWF	103HE 103HE	
A33f,w	Foods and Nutrition (2 cr.; jr., sr. H.E.; prereq., A32)	VI, VII	TTh	103HE	Miss Day
A34f,w	Home Management (3 cr.; sr. H.E.; prereq., A33)	III, IV	MWF	105HE	Miss Amidon
A35w	Child Care and Training (2 cr.; sr. H.E.; prereq., Prev. Med. A1)	I	MWF	106HE	Miss Fallgatter

HORTICULTURE

No.	Title	Hour	Day	Bldg.	Instructor
A1f,w	Farm Horticulture (3 cr.; all; no prereq.) Sec. 1 2	I IV	MWF MWF	102Hr 102Hr	Mr. Daniels Mr. Daniels
A2f	Orchard Fruit-Growing (3 cr.; jr., sr.; no prereq.)	II	MWF	8aHr	Mr. Daniels
A3w	Commercial Vegetable-Gardening (3 cr.; jr., sr. agr.; no prereq.)	II	MWF	102Hr	Mr. Daniels
A4w	Small Fruit-Growing (3 cr.; jr., sr.; no prereq.)	II	TThS	8aHr	Mr. Daniels
A5f	Elementary Plant Propagation (3 cr.; all; no prereq.)	IV I, II	TTh S	8Hr 8Hr	Mr. Cady
A6w	Advanced Plant Propagation (3 cr.; jr., sr. agr.; prereq., A5)	II	MWF	8Hr	Mr. Cady
A7w	Floriculture (3 cr.; all; no prereq.)	IV	MWF	8aHr	Mr. Cady
A8f,w	Elementary Landscape Gardening (3 cr.; all; no prereq.)	III	MWF	8aHr	Mr. Cady
A9w	Advanced Landscape Gardening (3 cr.; jr., sr. agr.; prereq., A8)	III VI, VII	MW M	8Hr 8Hr	Mr. Cady

SCHOOL OF AGRICULTURE

No.	Title	Hour	Day	Bldg.	Instructor
A10f	Greenhouse Construction, Management, and Practice..... (3 cr.; jr., sr. agr.; no prereq.)	II VI, VII	MW T	8Hr 8Hr	Mr. Tapley
A12w	Greenhouse Practice (1 cr.; jr., sr. agr.; prereq., A3, A5, A7)	VI, VII, VIII	W	102Hr	Mr. Cady Mr. Tapley
A13w	Nursery Organization (3 cr.; sr. agr.; prereq., A6 and A11)	III	TThS	102Hr	Mr. Daniels
A14w	Potato Production (3 cr.; jr., sr. agr.; prereq., Agron. A3)	II VI, VII	MW M	8aHr 8aHr	Mr. Krantz

MILITARY SCIENCE AND TACTICS

No.	Title	Hour	Day	Bldg.	Instructor
	Military Science (2 cr.;* no prereq.)	IX	MWF	Gy	Capt. Speece

PLANT PATHOLOGY AND BOTANY

No.	Title	Hour	Day	Bldg.	Instructor
A1f,w	Agricultural Botany (3 cr.; all agr.; no prereq.)				
	Lect. Sec. 1	VI	M	4PP	Mr. Gilbert
	Rec.	II	F	4PP	Mr. Gilbert
	Lab.	III, IV	F	3PP	Mr. Gilbert
	Lect. 2	VI	M	4PP	Mr. Gilbert
	Rec.	VI	F	4PP	Mr. Gilbert
	Lab.	VI, VII	W	3PP	Mr. Gilbert
	Lect. 3	VI	T	4PP	Mr. Gilbert
	Rec.	VI	Th	4PP	Mr. Gilbert
	Lab.	VI, VIII	T	3PP	Mr. Gilbert
	Lect. 4	IV	M	4PP	Mr. Gilbert
	Rec.	IV	F	4PP	Mr. Gilbert
	Lab.	III, IV	W	3PP	Mr. Gilbert
A2w	Seed-Testing (2 cr.; jr., sr. agr.; prereq., A1)	VI, VII, VIII	M	3, 4PP	Mr. Larson
A4w	Agricultural Botany (3 cr.; all H.E.; no prereq.)				
	Lect.	I	T	4PP	Mr. Gilbert
	Rec.	I	S	4PP	Mr. Gilbert
	Lab.	VII, VIII	Th	3PP	Mr. Gilbert
A11f	Plant Diseases (3 cr.; sr.; prereq., A1 or A4)	IV	MWF	1PP	
A12f	Weeds (2 cr.; jr., sr. agr.; prereq., A1)	VI VI, VII	T Th	3PP 3PP	Mr. Larson Mr. Larson

* A maximum of 12 credits in Military Science may be counted toward graduation.

POULTRY HUSBANDRY

No.	Title	Hour	Day	Bldg.	Instructor
A1f,w	Poultry				
	(3 cr.; all; no prereq.)				
	Sec. 1	II	TThS	104Ve	Mr. Smith
	2	IV	TThS	104Ve	Mr. Smith
	3	VII	MWF	104Ve	Mr. Smith
A2f,w	Management of Laying Flock..	Ar	Ar	Ar	Mr. Smith,
	(1 cr.; jr., sr.; prereq., A1				Mr. Aamodt
	or parallel)				
A3w	Incubating and Brooding....				
	(3 cr.; jr., sr.; prereq., A1)				
	Lect.	III	MF	104Ve	Mr. Smith
	Lab.	Ar	Ar	Ar	Mr. Aamodt

PREVENTIVE MEDICINE AND PUBLIC HEALTH

No.	Title	Hour	Day	Bldg.	Instructor
A1f	Home Nursing and Hygiene I				
	(2 cr.; jr., sr. H.E.; no				
	prereq.)				
	Lect.	I	W	106HE	Dr. Boynton
	Lab. Sec. 1	III, IV	W	WH	Miss Fisher
	2	VI, VII	W	WH	Miss Fisher
A2w	Home Nursing and Hygiene II				
	(2 cr.; sr. H.E.; no prereq.)				
	Lect.	I	W	106HE	Dr. Boynton
	Lab.	VI, VII	W	WH	Miss Fisher
A8f,w	Hygiene				
	(1 cr.; all agr.; no prereq.)				
	Sec. 1	II	S	9Ve	Dr. Larson
	2	III	S	(f)9Ve	Dr. Larson
				(w)2Ve	

RHETORIC

No.	Title	Hour	Day	Bldg.	Instructor
A1f	English I.....				
	(3 cr.; all; no prereq.)				
	Sec. 1	I	MWF	308En	Mrs. Hause
	2	I	TThS	312En	
	3	II	TThS	312En	Miss Bradley
	4	III	MWF	306En	Miss Langtry
	5	III	TThS	308En	Mrs. Hause
	6	VI	MWF	312En	Miss Bradley
A1w	English I.....				
	(Same as A1f)				
	Sec. 1	II	MWF	308En	Mrs. Hause
	2	IV	TThS	306En	Miss Langtry
A2f	English II.....				
	(3 cr.; all; prereq., A1)				
	Sec. 1	II	MWF	308En	Mrs. Hause
	2	IV	TThS	312En	Miss Bradley
	3	III	TThS	312En	Miss Bradley

SCHOOL OF AGRICULTURE

No.	Title	Hour	Day	Bldg.	Instructor
A2w	English II..... (Same as A2f)				
	Sec. 1	I	MWF	312En	
	2	I	TThS	312En	
	3	III	MWF	312En	Miss Bradley
	4	III	TThS	308En	Mrs. Hause
	5	IV	MWF	308En	Mrs. Hause
A3f	English Classics (3 cr.; jr., sr.; prereq., A2)				
	Sec. 1	I	TThS	308En	Mrs. Hause
	2	III	MWF	308En	Mrs. Hause
	3	IV	MWF	306En	Miss Langtry
A3w	English Classics (Same as A3f)				
	Sec. 1	II	MWF	312En	Miss Bradley
	2	III	MWF	308En	Miss Kester
	3	III	TThS	306En	Miss Langtry
A4f	Business English (3 cr.; jr., sr.; prereq., A3)				
	Sec. 1	III	MWF	312En	Miss Bradley
A4w	Business English (Same as A4f)				
	Sec. 1	I	TThS	308En	Mrs. Hause
	2	III	MWF	306En	Miss Langtry
	3	IV	MWF	312En	
	4	IV	TThS	312En	Miss Bradley
A5f	Public Speaking (3 cr.; sr.; prereq., A4)				
	Sec. 1	I	TThS	306En	Miss Langtry
	2	II	MWF	306En	Miss Langtry
	3	III	TThS	306En	Miss Langtry
	4	IV	TThS	307En	Miss Kester
A5w	Public Speaking (Same as A5f)				
	Sec. 1	I	MWF	306En	Miss Langtry
	2	II	TThS	306En	Miss Kester
A6f	English VI (3 cr.; sr.; prereq., A4)				
		II	TThS	306En	Miss Kester
A6w	English VI (Same as A6f)				
	Sec. 1	I	TThS	306En	Miss Langtry
	2	II	MWF	306En	Miss Langtry
	3	III	TThS	312En	Miss Bradley
	4	IV	MWF	306En	Miss Langtry
A14f,w	Advanced Public Speaking.... (3 cr.; sr.; prereq., A5)	III	TThS	307En	Miss Kester
A21f-22w	English Literature I, II..... (10 cr.; sr.; prereq., A4)	VIII	MTWThF	307En	Miss Kester
A31f,w	Dramatics ($\frac{1}{2}$ cr. under special conditions. See Faculty Regulations)	Ar	Ar	307En	Miss Kester
A32w	Debating (1 cr.* under special conditions. See Faculty Regulations)	Ar	Ar	306En	Miss Langtry

* No credit allowed until both quarters have been completed.

SCHOOL (GENERAL)

No.	Title	Hour	Day	Bldg.	Instructor
A1f,w	Farm Arithmetic (3 cr.; all agr.; no prereq.)				
	Sec. 1	I	TThS	216En	Mr. Johnsrud
		2	TThS	216En	Mr. Johnsrud
		3	TThS	106En	Mr. Johnsrud
		4	III	MWF	105En Mr. Johnsrud
A1f,w	Farm Arithmetic (3 cr.; all H.E.; no prereq.)				
	Sec. 5	IV	MWF	106En	
A2f,w	Advanced Farm Arithmetic... (3 cr.; all; prereq., 1 or high school cr. in arith.)	I	MWF	216En	Mr. Johnsrud
A4f,w	Algebra I (7 cr.; all; no prereq.)	III	MTWThFS	217En	Mr. Cutkosky
A5f,w	Algebra II (7 cr.; all; no prereq.)	IV	MTWThFS	217En	Mr. Cutkosky
A6f,w	Geometry I (7 cr.; all; no prereq.)	I	MTWThFS	217En	Mr. Cutkosky
A7f,w	Geometry II (7 cr.; all; prereq., algebra or parallel advised)	II	MTWThFS	215En	Mr. Cutkosky
A21f,w	Elements of Music I. (2 cr.; all; no prereq.)				
	Sec. 1	III	TTh	WH	Miss Rollefson
		2	VII	TTh	WH Miss Rollefson
A22f,w	Elements of Music II. (2 cr.; all; prereq., A21)	I	TTh	WH	Miss Rollefson
A23f,w	Chorus ($\frac{1}{2}$ -3* cr.; all; no prereq.)				
	Mixed Chorus	4:30	T	WH	Miss Rollefson
	Girls' Chorus	4:30	Th	WH	Miss Rollefson
	Men's Glee Club	6:15	F	WH	Miss Rollefson
A24f,w	Violin ($\frac{1}{2}$ -3* cr.; all; no prereq.)	Ar	Ar	WH	Miss Schaettgen
A25f,w	Piano ($\frac{1}{2}$ -3* cr.; all; no prereq.)	Ar	Ar	WH	Miss Willson
A26f,w	Instrumental Music ($\frac{1}{2}$ -3* cr.; all; no prereq.)	Ar	Ar	WH	Mr. Wehrend
A27f,w	Orchestra ($\frac{1}{2}$ -3* cr.; all; no prereq.)	6:30	T	WH	Mr. Wehrend
A28f,w	Voice ($\frac{1}{2}$ -3* cr.; all; no prereq.)	Ar	Ar	WH	Miss Rollefson
A29f,w	Harmony I (2 cr.; all; prereq., A22)	Ar	Ar	WH	Miss Willson
A30f,w	Harmony II (2 cr.; all; prereq., A29)	Ar	Ar	WH	Miss Willson
A32f,w	Appreciation of Music. (3 cr.; all; no prereq.)	Ar	Ar	WH	Mr. Wehrend
A33f,w	Instrumentation and Conducting (3 cr.; all; prereq., A21)	Ar	Ar	WH	Mr. Wehrend
A41f,w	Parliamentary Law (1 cr.; jr., sr.; no prereq.)	VI	T	307Ad	Mr. Mayne
A42f,w	American Government (3 cr.; sr.; no prereq.)	III	TThS	105En	Mr. Lundquist

SCHOOL OF AGRICULTURE

No.	Title	Hour	Day	Bldg.	Instructor
A43f,w	Elementary Economics (3 cr.; sr.; no prereq.)	II	MWF	105En	Mr. Witte
A44f,w	Rural Economics (3 cr.; sr.; no prereq.)	VI	MWF	105En	Mr. Witte
A45f,w	Industrial History (3 cr.; jr., sr.; no prereq.)	IV	TThS	105En	Mr. Witte
A46f,w	Rural Sociology (3 cr.; sr.; no prereq.)	II	TThS	105En	Mr. Lundquist
A47f,w	American History (3 cr.; jr., sr.; no prereq.)	IV	TThS	215En	Mr. Lundquist
A61f,w	Spelling (1 cr.; all; no prereq.)				
	Sec. 1	II	S	WH	Mr. Johnson
	2	IV	S	WH	Mr. Johnson
	3	VII	F	WH	Mr. Johnson
A62f,w	Penmanship (1 cr.; all; no prereq.)				
	Sec. 1	II	TTh	WH	Mr. Johnson
	3	IV	TTh	WH	Mr. Johnson
	3	VI	TTh	WH	Mr. Johnson
A63f,w	Typewriting I (3 cr.; all H.E.; no prereq.)				
	Sec. 1	III, IV	MWF	WH	Mr. Johnson
	2	III, IV	TThS	WH	
	3	VI, VII	MWF	WH	
A64f,w	Typewriting II (3 cr.; jr., sr. H.E.; prereq., A63)				
	Sec. 1	I, II	MWF	WH	
	2	I, II	TThS	WH	
	3	VI, VII, VIII	TTh	WH	
A65f,w	Stenography I (3 cr.; all H.E.; no prereq.)	IV	MWF	WH	Mr. Johnson
A66f,w	Dictation (3 cr.; jr., sr. H.E.; prereq., A65)	II	MWF	WH	Mr. Johnson
A67f,w	Stenography II (3 cr.; jr., sr. H.E., prereq., A65)	III	MWF	WH	
A68f,w	Bookkeeping (3 cr.; jr., sr. H.E.; no prereq.)	VI, VII, VIII	TTh	WH	
A69f,w	Letter-Writing (3 cr.; jr., sr. H.E.; prereq., A63)	VI	MWF	WH	
A70f,w	General Office Practice (3 cr.; jr., sr. H.E.; no prereq.)	III, IV	TThS	WH	Mr. Johnson
A72f	Commercial Law (3 cr.; sr. H.E.; no prereq.)	Not offered in 1923-24.			
A81f	Social Training (2 cr.; all H.E.; no prereq.)				
	Sec. 1	II	TTh	106HE	Miss Lommen
	2	III	MW	106HE	Miss Lommen

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

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
A82f,w	Social Problems for Boys..... (1 cr.; all agr.; no prereq.)				
	Sec. 1	I	Th	4PP	Miss Hognason
	2	II	T	4PP	Miss Hognason
	3	III	S	4PP	Miss Hognason
A90f	Related Science I..... (3 cr.; all H.E.; no prereq.)				
	Lect. Sec. 1	I	M	Ar	Ar
	Lab	I, II	WF	Ar	Ar
	Lect. Sec. 2	III	T	Ar	Ar
	Lab	III, IV	ThS	Ar	Ar
A91w	Related Science II..... (3 cr.; all H.E.; no prereq.)				
	Lect. Sec. 1	I	M	Ar	Ar
	Lab	I, II	WF	Ar	Ar
	Lect. Sec. 2	III	T	Ar	Ar
	Lab	III, IV	ThS	Ar	Ar

SOILS

No.	Title	Hour	Day	Bldg.	Instructor
A1f,w	Soils (3 cr.; all agr.; no prereq.)				
	Sec. 1	I	TTh	251Ch	Mr. Nesom
		I, II	S	251Ch	Mr. Nesom
	2	IV	TTh	251Ch	Mr. Nesom
		III, IV	S	251Ch	Mr. Nesom

VETERINARY MEDICINE

No.	Title	Hour	Day	Bldg.	Instructor
A1f	Physiology (3 cr.; all; no prereq.)	IV	MWF	2Ve	Mr. Reynolds
A1w	Physiology (Same as A1f)	II	TThS	2Ve	Mr. Reynolds
A4w	Elements of Bacteriology..... (3 cr.; jr., sr.; no prereq.)	II	MWF	2Ve	Mr. Lubbehusen
A5f	Physiology and Hygiene of Breeding (2 cr.; jr., sr. agr.; no prereq.)	II	WF	2Ve	Mr. Boyd
A7w	Veterinary Studies (5 cr.; jr., sr. agr.; no prereq.)	I	MTWThF	9Ve	Mr. Reynolds

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Gymnasium	35, 53		

NOTICE TO PROSPECTIVE STUDENTS

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

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

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

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

The Bulletin
of the University of
Minnesota

West Central School and Station
Morris, Minnesota

Announcement for the Year
1923-1924



Vol. XXVI No. 19 June 5 1923

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SCHOOL CALENDAR

1923-1924

1923			
October	1	Monday	First term opens; registration
October	2	Tuesday	Organization of classes
October	27	Saturday	Field Day
November	29	Thursday	Thanksgiving Day; a holiday
December	8	Saturday	Intersociety debate
December	21	Friday	First term closes; Christmas vacation begins
December	31	Monday	Christmas vacation ends; second term opens; registration
1924			
January	1	Tuesday	Organization of classes
February	12	Tuesday	Lincoln's Birthday; (special exercises)
February	22	Friday	Washington's Birthday; (special exercises)
March	14	Friday	Commencement activities begin
March	20	Thursday	Junior-senior-alumni banquet
March	21	Friday	Commencement Day
March	26	Wednesday	Boys' and Girls' Club Week opens
March	29	Saturday	Boys' and Girls' Club Week closes
June	1	Wednesday	Short course for farm women opens
June	21	Saturday	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
———, Librarian
CHARLOTTE E. MACARTHUR, Secretary

AGRICULTURAL ENGINEERING

OLE O. BYE, Carpentry and Farm Structures
ALBERT C. HEINE, Farm Motors and Drainage
LUDWIG LEWIS, 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

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 Home Management
IRENE C. PEYTON, B.S., Foods and Cookery
HULDAH M. JOHNSON, R.N., Nursing
ETHEL I. JEWETT, B.S., Dressmaking and Millinery

ASSOCIATED SUBJECTS

PAULINE E. ANNIN, B.A., English and Public Speaking
———, English
EDWIN J. VOLDEN, Mathematics
CECIL C. CHASE, B.A., History
MARTIN J. SORFLATEN, B.A., Music
FLORENCE E. KING, Business Training

OFFICERS OF ADMINISTRATION

OLE O. BYE, Superintendent of Buildings
LOLA M. CREMEANS, M.S., Matron
HULDAH M. JOHNSON, R.N., School Nurse
EDWIN J. VOLDEN, Business Office Manager
BLANCHE MUMBLEAU, Office Clerk

GENERAL INFORMATION

PURPOSE

The West Central School of Agriculture was organized in 1910 as a part 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 not only a fairly complete technical knowledge of the business of production, but a working basis for the economical and sociological aspects of farm life. The farmer must have a broad grasp of his profession in its relationship to other callings, as well as a realization of the possibilities of its social development. 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 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, October 1 and close December 21. The winter term will open Monday, December 31 and close Friday, March 21. 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, a bedspread, 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 ordinary 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.

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 matron 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 \$30 to \$35.

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
Deposits 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 physical 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. Students who wish to carry more than 28 credit hours of work must obtain special permission.
3. All fees must be paid or arranged for at the time of registration.
4. No student will be allowed to register after the second week of the term except by special permission.

Cancellation of Registration

5. No student may drop a subject for which he is registered without special permission.
6. 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.
7. 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.

8. 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

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

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

Classification

11. 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.

12. 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

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

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

15. 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.

16. 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.

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

18. 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

19. In all interscholastic athletic contests the same eligibility rules will apply as are now used by the Minnesota State High School Association. Rule VIII of this agreement provides:

1. He must be enrolled in the school not less than two weeks before the contest.

2. 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 department.

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 preceptor and preceptress have charge of the students in their dormitories, and regulations enforced are for the best interests of all students.

From 8 a.m. to 4 p.m. students are busy with their school work. From 4 to 6 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 only upon permission of the preceptor or preceptress.

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

Infraction of dormitory rules will mean dismissal from the dormitories.

BUILDINGS AND EQUIPMENT

The institution now has nine brick buildings: 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; Hospital, equipped with eighteen beds, dispensary, and nurses' quarters.

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

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

ASSEMBLY PERIOD

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

HOLIDAYS

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

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 Agricola Literary Society, and the Ceres Club.

An intersociety debate cup for the promotion of interest in civic and political questions has been offered by the superintendent.

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.

Students' Christian Association

The Young Men's and Young Women's Christian associations are voluntary organizations which have for their objects the maintenance of a positive moral and religious atmosphere and the development of complete Christian manhood and womanhood—physical, intellectual, social, and spiritual. The associations carry on various lines of activity. A general reception is given at the beginning of each term. Each Sunday morning special Bible classes are conducted, and at 6:15 each Sunday evening a joint service is conducted by both organizations.

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 complete record of the 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 fund is \$2,000, 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 basket-ball teams. These teams schedule games with the high schools of this section.

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, Guernsey, Shorthorn, and Angus 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

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 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 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 of Minnesota.

DEPARTMENT OF MUSIC

For those who are interested, credit courses in piano instruction are offered. 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.

HOME PROJECT WORK

For the last several years students have done some home project work. In 1918 this work was definitely organized and placed on a credit basis. 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 farm 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 numerous visits to each student.

The projects for boys include swine management, management of the dairy herd, corn-growing, alfalfa-growing, potato-growing, fertilizer tests, forage crops, orchard management, and farm accounts. For girls the projects include canning, bread-baking, sewing, home management, and home decoration.

BOYS' AND GIRLS' CLUB WEEK

During the week following the close of the regular school session, will be held the ninth annual junior short course, March 26 to 29. 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 wood-work 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 1924 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, 1924.

SHORT COURSE FOR FARM WOMEN

An annual short course for farm women is held during the third 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 28.

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 Spelling, 1 Corn-Growing, 5 Types and Breeds, 5 Milk-Testing, 1 Carpentry I, 2 Blacksmithing I, 2 Gymnasium, 1
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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	}	Farm Records and Accounts, 3 Elementary Beekeeping, 3 Poultry Production, 3 Cereal Crops, 5 Industrial Geography, 5 Automotive Engineering, 9 Steam Tractors, 4 Automotive Electricity, 2 Farm Shop Work, 2 Piano, 2 Violin, 2 Chorus, 1 Orchestra, 1
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JUNIOR YEAR

Required—first term	}	English III, 5 Soils, 5 Chemistry, 4 Gymnasium, 1
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Required—second term	}	English IV, 5 Physics I, 5 Gymnasium, 1
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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.	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	}	First term only
	Management of the Laying Flock, 5 Piano, 2 Violin, 2 Orchestra, 1 Glee Club, ½	}	May be taken either term
	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 Welding, 2 Incubation and Brooding, 3 Farm Management, 5 Elementary Beekeeping, 3	}	Second term only

SENIOR YEAR

Required—first term	{	English V, 5 United States History, 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	} First term only
		Farm Structures II, 2	
		Agricultural Physics II, 5	
		Rural Sanitation, 3	
		Animal-Breeding, 3	
	Bookkeeping I, 5		
	}	} May be taken either term	Stock-Judging IV, 2
			Meats, 2
			Piano, 2
			Violin, 2
			Orchestra, 1
	}	} Glee Club, ½	
	}	} Second term only	Geometry II, 5
			Bookkeeping II, 5
Agricultural Botany, 5			
Advanced Electricity, 2			
Farm Marketing, 3			
Farm Mechanics, 5			
Animal Diseases, 3			
Incubation and Brooding, 3			
Public Speaking, 3			

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 I, 3
		Foods and Cookery II, 4
		Drawing and Design II, 2
		Gymnasium, 1

Eleven to 14 credit hours must be chosen from this group each term	}	Textiles, 3	} May be taken either term
		Spelling, 1	
		Piano, 2	
		Penmanship, 1	
		General Science, 5	
		Gardening, 5	
		Home Accounts, 5	
		Nursing I, 3	
		Nursing II, 3	
		Glee Club, ½	
Social Training, 1	} Must be taken both terms		
Elementary Beekeeping, 3			
Poultry, 3			
Chorus, 1			
Spelling and Penman- ship, 5			
Typewriting, 2			

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			
Required—first or second term	}	House-Planning and Decoration, 3	}		
Four to 9 credit hours must be chosen from this group each term or from electives not taken in freshman year	}	Algebra I, 5	} First term only		
		Bookkeeping I, 5			
		Shorthand I, 5			
		Typewriting, 2			
		Chemistry I, 5			
		Laundering, 2			
		Nursing III, 3	}	Algebra II, 5	} Second term only
				Bookkeeping II, 5	
				Shorthand II, 5	
				Typewriting, 2	
Chemistry II, 5					
Management of Laying Flock, 3	}	Glee Club, ½	} Either term		
		Piano, 2			
		Chorus, 1			

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 from this group or from electives not taken in the junior year { Nursing IV, 3
Geometry I, 5
Chemistry I, 5
Algebra I, 5
Bookkeeping I, 5
Dictation I, 2
Business Training I, 5 } First term only

Seven to 12 credit hours from this group or from electives not taken in the junior year { Chemistry II, 5
Algebra II, 5
Geometry II, 5
Bookkeeping II, 5
Dictation II, 2
Business Training II, 5
Landscape Gardening, 3 } Second term only

{ Public Speaking, 3
Piano, 2
Glee Club, 1/2
Chorus, 1 } 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. 2, 2 hrs.; 2 credits; 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.
- RURAL SANITATION. Lighting, heating, and ventilation of farm buildings; a study of lighting systems; plumbing; systems of water supply and sewage disposal. Rec. 2 hrs.; Lab. 1, 2 hrs.; 3 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. 5 hrs.; Lab. 8 hrs.; 9 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.
- FARM MECHANICS. Farm machinery and farm motors. Selection, use, and care of tilling, seeding, harvesting, threshing, and fertilizing machinery. Work is given with pumping and grinding machinery; transmission of power, grading machinery, etc. Rec. 3 hrs.; Lab. 2, 2 hrs.; 5 credits.
- 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.

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.
- LANDSCAPE GARDENING. A general course in practice and principles of ornamental planting as applied to the home and community. A study of common trees, shrubs, and herbaceous perennials. Lectures, reference reading, and field trips. Rec. 3 hrs.; 3 credits.

ENGLISH

- ENGLISH I. Reading, spelling, and a brief review of the principles of grammar. Considerable time is devoted to oral reports. Short written 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, expository, and argumentative types continued. The derivation, usage, and meaning of words. 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 for boys. Drill in voice exercise, platform deportment, and memorized selections for expression; extemporaneous speaking and debate. Rec. 3 hrs.; 3 credits.
- ENGLISH X. Public speaking for girls. Drill in voice exercise, platform deportment, and memorized selections for expression. Students are trained to present readings before the public. 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. 5 hrs.; 5 credits.

ALGEBRA I. Designed to cover the usual first-year academic credit work in elementary algebra. Rec. 5 hrs.; 5 credits.

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

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. Rec. 1; 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. Includes a series of lectures on proper speech, table etiquette, and dress; also conversation and social correspondence. Rec. 1; 1 credit.

CLOTHING

GARMENT-MAKING I. An apron, holder, chemise, and petticoat 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 and the process involved in making a gingham dress and a middy blouse. Simple problems in decorative needlework are given. Lab. 3, 2 hrs.; 3 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. 2, 2 hrs.; 2 credits.

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. Design and color harmony in hats, alteration of frames, making and trimming of simple hats. Lab. 3, 2 hrs.; 2 credits; fee, \$1.25.

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.

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.

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. Rec. 3; 3 credits.

MUSIC

All courses in music except group organizations include a group of ten 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 Haydn and Mozart. *Graded Pieces*, Grades III and IV; Tapper, *Graded Pieces*, Grade III, 2 credits; fee, \$9.50.

PIANO VI. Studies: Schmitt finger exercises; major and minor scales, hand separate, legato and staccato in varied rhythms; octave studies. Solos: pieces by Schumann, Mendelssohn, Jensen, 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, Schobrick, 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.

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. Students are required to secure one credit in spelling. Rec. 2 hrs.; 1 credit.

PENMANSHIP. Students are required to secure one credit in penmanship. Rec. 5 hrs.; 3 credits.

SPELLING AND PENMANSHIP I. 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, \$3.

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.

DICTION 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.

DICTION 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.

.....
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
1923-1924*



Vol. XXVI No. 18 June 2 1923

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SCHOOL CALENDAR

1923

FIRST TERM

October	1	Monday	Registration.
	2	Tuesday	Organization of classes.
November	12	Monday	Armistice Day exercises and Home Coming Day.
	29	Thursday	Thanksgiving Day.
December	21	Friday	First term closes. Christmas recess begins.

1924

SECOND TERM

January	2	Wednesday	Registration of new students.
	3	Thursday	Second term begins; organization of classes.
February	4-8	Week	Northwest School Farmers' Week.
March	28	Friday	Second term closes
March	31-		
April	4	Week	Junior Short Course.

COMMENCEMENT WEEK

March	22	Saturday	Interclass field meet.
	23	Sunday	Baccalaureate address.
	24	Monday	Intersociety declamatory contest.
	25	Tuesday	Superintendent's reception to graduating class.
	26	Wednesday	Music recital and class play.
	27	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.

MILDRED SCHENCK, B.S., Preceptress, Foods and Cookery.

FANNY B. LIPPITT, Matron, Dining Hall, Foods and Nutrition.

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.

DeETTE CENFIELD, English, Assistant Preceptress.

ELMER R. CLARK, B.S.A., Pure Seed Work and Home Projects.

LUCILLE M. DOKKEN, Piano.

RAY S. DUNHAM, B.S., Farm Crops and Soils.

ARNOLD M. FOKER, Carpentry and Farm Engineering.

JAMES L. HARTNEY, B.S., M.E., Farm Motors and Mechanics.

ALMA JOHNSON, R.N., School Nurse, Home Nursing.

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.

MARY BLANCHE MEADE, B.S., Clothing and Textiles, Assistant Preceptress.

ADOLPH K. PIERCE, Business Training, Assistant Preceptor.

ALVEY M. PILKEY, Poultry.

SEVERIN RISHOVD, Farm Motors and Mechanics.

ANNE SIMLEY, B.A., English.

GENERAL INFORMATION

LOCATION

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

PURPOSES

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.

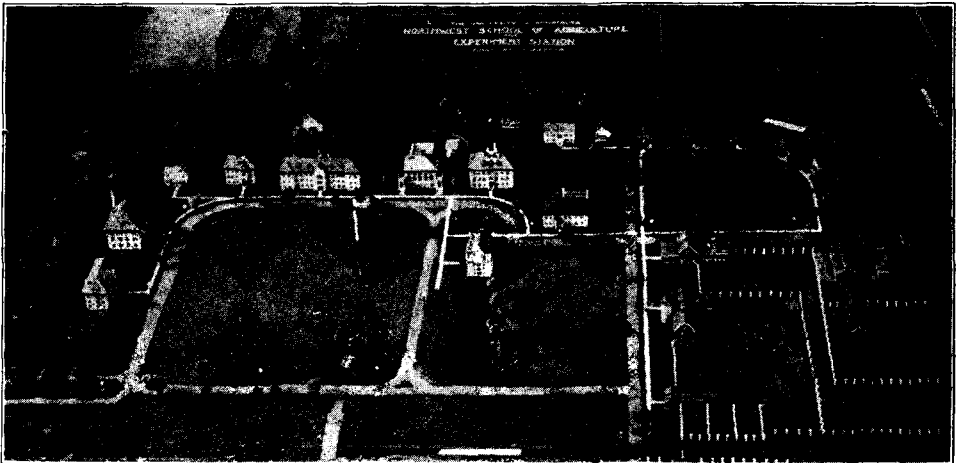
TIME OF OPENING

The fall term of the Northwest School of Agriculture will open for registration on October 1, 1923, and classes will begin at 8:00 o'clock on Tuesday, October 2. The fall term closes on December 21, 1923.

The winter term will open for registration on January 2, and classes will begin at 8:00 o'clock on January 3, 1924. The winter term closes March 28, 1924.

COURSES OF STUDY

The course of study offered covers a wide range of subjects, and is largely technical in character. It is briefly outlined on pages 16



VIEW OF NORTHWEST SCHOOL OF AGRICULTURE

to 19. The regular course for both young men and young women requires three winters of six months each for completion.

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

The Advanced Course aims to prepare graduates of the three-year course for college entrance.

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 can not 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.

Parents are advised not to send pupils under sixteen years of age.

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

GENERAL INFORMATION

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light and heated by steam. Preferences as to room mates 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 night-gowns.

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.

Text books 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 sur-charge 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 in case of serious sickness, where such are necessary.

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 department.

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. Six 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.

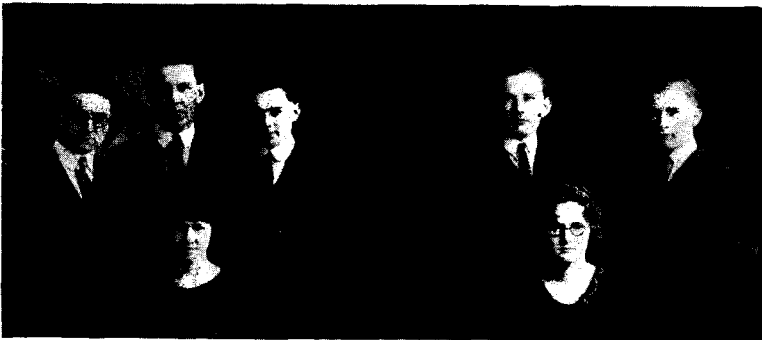
From 8:15 a.m. to 4:30 p.m., students not at recitation or chapel are expected to be in their rooms or in the library, studying or reading; also after 7:30 in the evening. The rooms shall at all times be quiet, especially in the evening, so that no student may be disturbed.

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



WINNERS OF THE 1923 INTERSCHOOL DEBATES

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, and quartets contribute greatly toward creating an interest in music.



EXCELLENT OPPORTUNITIES FOR TRAINING IN MUSIC

For those who are interested, credit courses in piano instruction are offered. 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.

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.

NORTHWEST SCHOOL AND STATION

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 from 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 2, 1924.

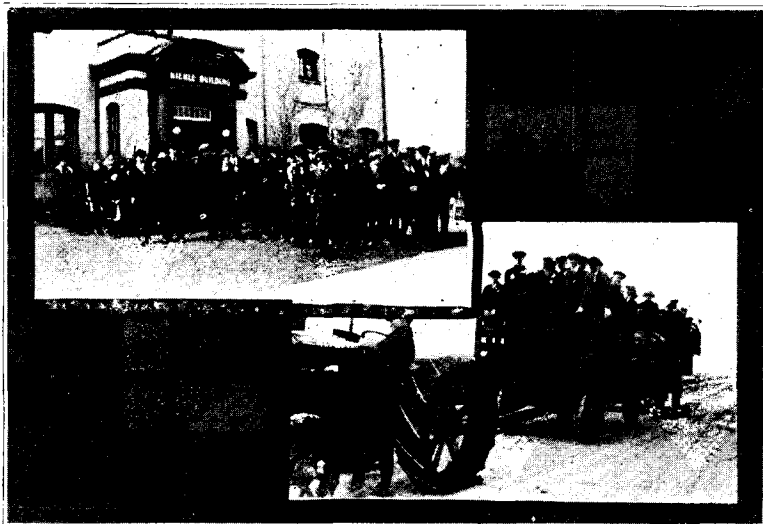
DRESSMAKERS

Two three-month courses, beginning in October, 1923, and January, 1924, 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 twelfth annual Junior Short Course, from March 31 to April 4, 1924, 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



AN AFTERNOON EXCURSION FOR THE JUNIORS

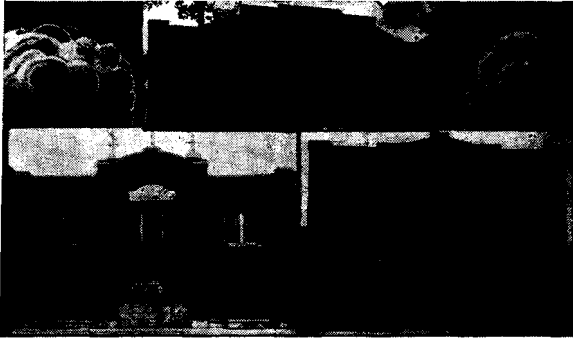
life on the farm. Special emphasis is placed on boys' and girls' club work. Instruction is given for the planning and carrying out of work in such projects and contests as gardening, corn and potato growing, pig, calf, and chicken raising, cooking, sewing, and canning. Illustrated lectures, moving pictures 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.



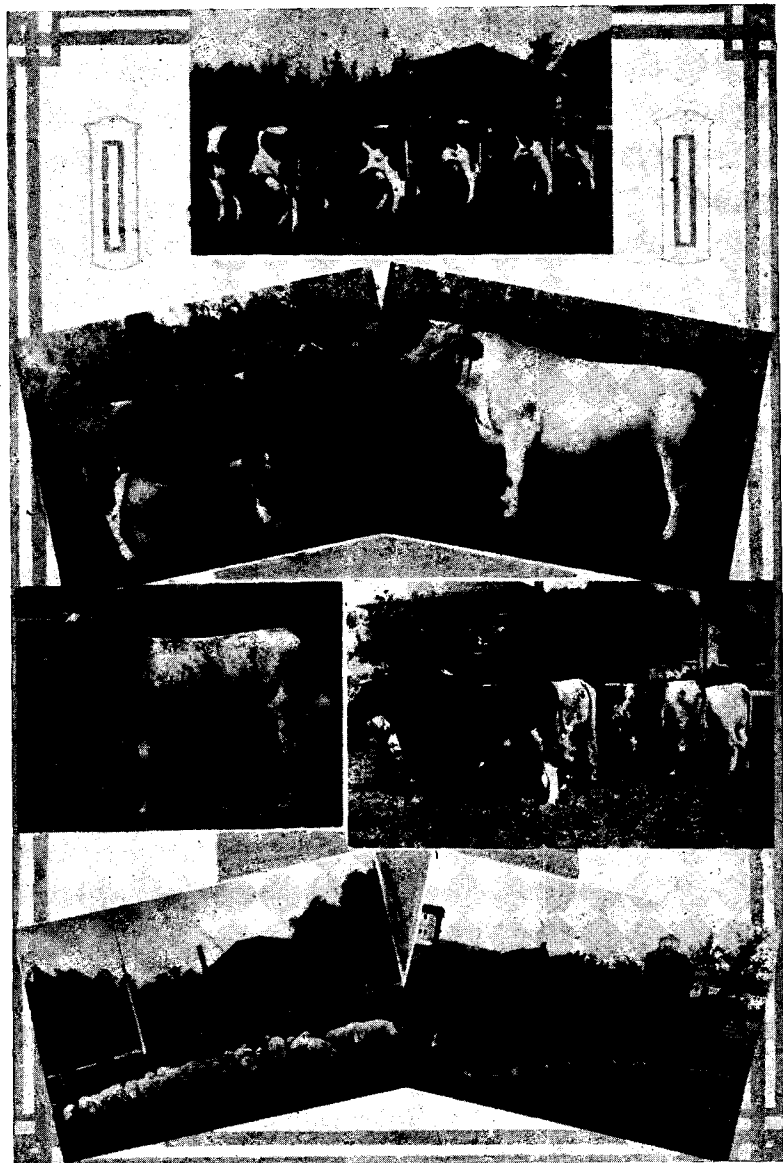
LIVESTOCK PAVILION AND ANNEXES
Where Northwest School Farmers' and Womens' Week and
Red River Valley winter shows are held.

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. Pure-bred Holstein, Guernsey, Shorthorn and Hereford cattle; grade and pure-bred 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.



LIVESTOCK AVAILABLE FOR CLASS ROOM WORK

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 Carpentry C*
5 Farm Motors H	5 Farm Motors I
5 Farm Mechanics F*	5 Industrial History B
5 Industrial Geography A	1 Music B

Typewriting will be offered without credit.

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 Farm Accounts E
5 Forage Crops B	Gymnasium
Gymnasium	1-3 Summer Home Projects
5 Elective from the following:	5 Elective from the following:
—	—
25	25

5 Ancient History C	5 Commercial Law B
5 Bookkeeping A	3 Field Machinery G
5 Heating, Lighting and Cement Work E	5 Modern History C
5 Mechanical Drawing D*	1 Music B
1 Music B	1 Parliamentary Law E

Typewriting will be offered without credit.

*Will be offered both terms.

THIRD YEAR

Required of All

FALL TERM		SPRING TERM	
Credit Hours		Credit Hours	
5	English C	5	English C
5	Livestock	5	Livestock
	Herd Management C		Livestock Business Management D
	Poultry B	5	Farm Crops
5	Farm Crops		Soil Fertility C
	Forestry D		Farm Management F
	Plant Breeding E	5	Physics A
5	Civics and Farm Law D		Gymnasium
	Gymnasium	2	Farm Marketing C
2	Farm Marketing C	3	Rural Economics A
3	Rural Sociology B	1	Music B
1	Music B	—	
—		26	
26			

CREDIT REGULATIONS REGARDING BOYS' THREE-YEAR COURSE

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

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.

CREDIT FOR HIGH SCHOOL WORK

A graduate of an approved high school course shall be allowed a total of 48 credits toward graduation.

A graduate of an approved high school course who present four units of work in agriculture shall be allowed 96 credits toward graduation.

For each four units of credit of approved high school work presented on entrance, 12 credit hours shall be granted in the School of Agriculture, and 12 additional credit hours for each unit of agriculture offered.

Capital letters following the names of courses refer to descriptions given on pages 20 to 33.

HOME MAKERS' COURSE

Capital letters following the names of courses refer to descriptions given on pages 20 to 33.

FIRST YEAR

Required of All

FALL TERM	SPRING TERM
Credit Hours	Credit Hours
5 English A	5 English A
3 Physiology and Public Health C	5 Arithmetic A**
4 Foods and Cookery A	2 Public Health C
3 Elementary Garment-Making P	4 Foods and Cookery A
1 Drawing and Design M	3 Garment-Making P
1 Music B	1 Music B
1 Social Training I	Physical Training C
Physical Training C	1-3 Summer Home Projects
6 Elective from the following:	4 Elective from the following:
—	—
24	24

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
3 } Spelling G	3 } Penmanship G
3 } Penmanship G	5 Shorthand
5 Shorthand	3 Typewriting
3 Typewriting	

SECOND YEAR

Required of All

FALL TERM	SPRING TERM
Credit Hours	Credit Hours
5 English B	5 English B
4 Foods and Cookery B	3 House Planning and Furnishing J
2 Textiles R	2 Home Nursing E
4 Elementary Dressmaking K	3 Dressmaking N
2 Home Nursing E	1 Music B
1 Music B	Physical Training D
Physical Training D	1-3 Summer Home Projects
1 Costume Design L	10 Electives
6 Electives	—
—	—
24	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

*Required for students who do not have a pass plus in arithmetic on State Board certificate.

**Offered both terms.

COURSES OF STUDY

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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	SPRING TERM
Credit Hours	Credit Hours
5 English C	5 English C
5 Physics A	4 Civics D
3 Home Management D	3 Institutional Management F
1 Art Needlework K	2 Dressmaking N
1 Music B	1 Music B
Physical Training	Physical Training
3 Rural Economics A	3 Rural Sociology
6 Electives	6 Electives
24	24

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, Home Economics and 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 farm 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

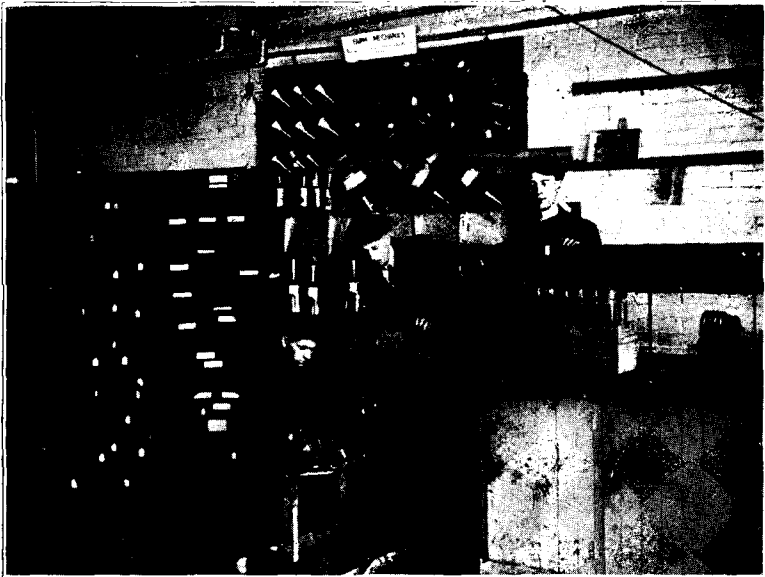


REPAIRING AND OVERHAULING GAS ENGINES

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. Hartney.
- 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.



A CORNER OF THE FARM MECHANICS LABORATORY

- 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 babbitting, scraping bearings, belt-lacing, soldering, rope work, and pipe-fitting. Pulleys and ropes, their construction and care; belts and their treatment; soldering fluxes; pipe fittings and layout; farm electric lighting plants. Mr. Hartney, 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. Hartney, Mr. Rishovd.
- H. **MOTORS. CARE AND OPERATION.** Principles, construction, and handling of stationary and traction gasoline engines, including timing, ignition, starting, and lighting system, carburetion, cooling, and lubrication. The student is given a thoro knowledge of the care and operation of the gas engine. Mr. Hartney, Mr. Rishovd.



TRACTORS REQUIRE TRAINED OPERATORS

- 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. Hartney, 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 pure-bred sires. Problems of sanitation and disease. Mr. Kiser.
- D. **LIVESTOCK BUSINESS 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 practice. 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, supplemented by visits to nearby stock farms. 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.

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.**
(1) **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.

(2) Vegetable Gardening.—The value of the home vegetable garden, preparation of the ground, and selection of plants and seeds are given attention. Includes tillage, rotation, transplanting, preparation and care of hotbeds, and insects dangerous to the garden. Mr. McCall.

(3) Potato Culture.—The importance of the potato as a crop for Minnesota is recognized in this laboratory course. Includes the study of potato soils; seed selection, growing the crop, harvesting, storing, marketing, diseases and their control. Mr. McCall.

- D. FARM FORESTRY. Why, how, when, and where to plant windbreaks and wood lots is taught; also characteristics and adaptability of the more common trees; methods of propagation, and the conservation of planted and natural forests. 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 Cenfield.

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 Cenfield.

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. Avery.
- B. **INDUSTRIAL HISTORY.** A study of the growth of industry, commerce, labor, population, and agriculture in the United States. Mr. Avery.
- 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. Avery.
- 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

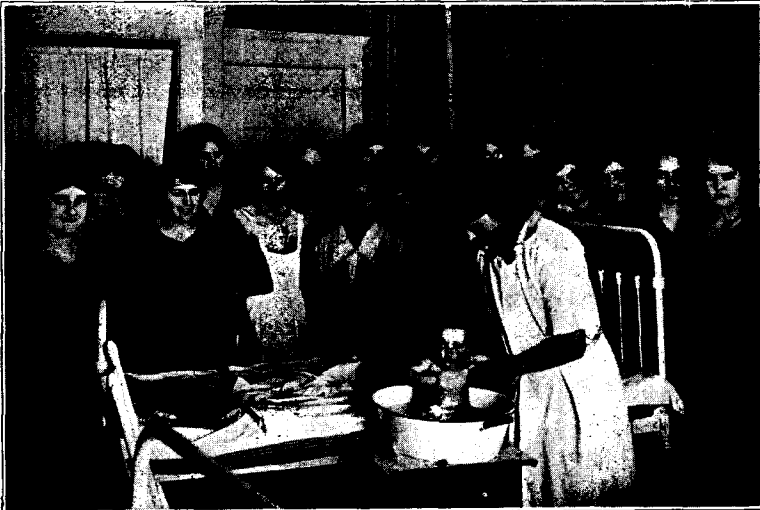
- A. **RURAL ECONOMICS.** Attention is given to the consideration of factors affecting agricultural production and farm products. Mr. McCall.
- B. **RURAL SOCIOLOGY.** The problems of rural communities, of rural health and sanitation, and of rural social institutions will receive attention. Mr. Selvig.

- C. **FARM MARKETING.** Fundamentals in connection with the problems confronting the farmer to-day 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

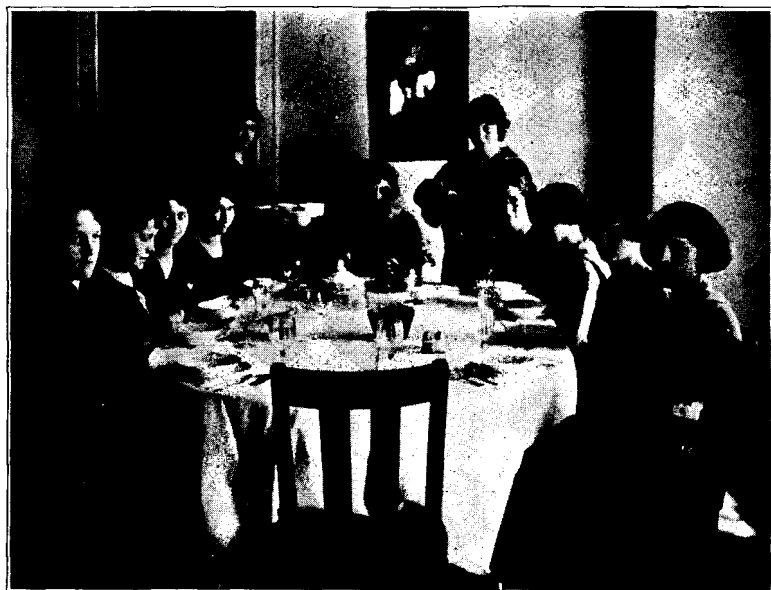
- A. **FOODS AND COOKERY.** Elementary cooking. Classification of foods and a study of the scientific principles underlying the cooking of the carbohydrate, fat, and protein foods; doughs and batters; beverages, desserts, and salads. Miss Schenck.
- B. **FOODS AND COOKERY.** Advanced cooking. Canning 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 Johnson.
- D. **HOME MANAGEMENT.** Distribution of family income; household accounts; purchasing supplies; planning and serving meals; relation of cost to income. Miss Schenck.



PRACTICAL LESSONS IN HOME NURSING

- 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 Johnson.

- 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.



THE DINING ROOM OF THE SCHOOL PRACTICE HOUSE

- 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.** Study of design and color harmony in hats, simple decorative stitches and their methods of application. Miss Meade.

- L. **COSTUME DESIGN.** Study of color and line in relation to the individual. Designing of dresses. (Prerequisite: Drawing and Design.) Miss Meade.
- M. **DRAWING AND DESIGN.** This course treats with the fundamental principles in designs and color harmony, with special emphasis on house furnishings. Miss Meade.
- 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 Meade.



LEARNING THE PRINCIPLES OF GOOD TASTE IN DRESS

- O. **ELEMENTARY DRESSMAKING.** Making of wool middy; wool dress; afternoon or informal party dress and infant's layette. Miss Meade.
- P. **ELEMENTARY GARMENT-MAKING.** Hand stitches as applied to simple under garments and household articles; middy blouse and wash dress are additional problems of this course. Care of sewing machines. Use of commercial patterns. Miss Meade.
- Q. **LAUNDERING.** Care of laundry room and utensils, study of water, soap, starch, removal of stains, washing of woollen garments, ironing; also the principles of dry cleaning. Miss Meade.
- R. **TEXTILES.** Survey of processes concerned in the manufacture of cotton, wool, silk, and flax, and tests for adulteration and substitution. Miss Meade.

MATHEMATICS

- A. **ARITHMETIC.** Drill for speed and accuracy; application of principles to every day 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 and Miss Dokken.

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.



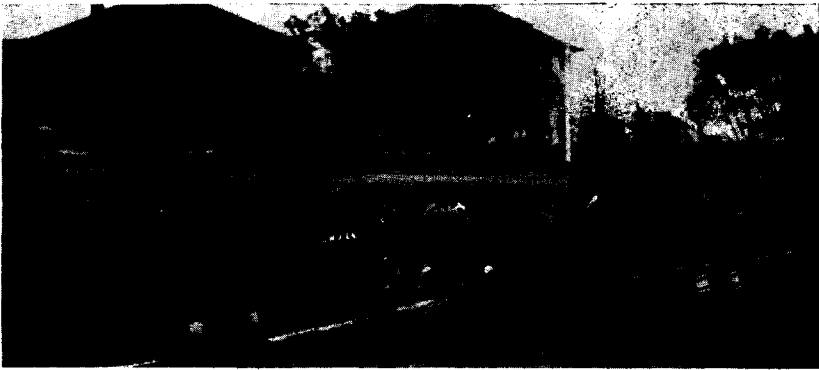
ONE OF THE CHORUS ORGANIZATIONS

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.



A SOUND BODY IS INVALUABLE FOR SUCCESS

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.



COURSES IN BUSINESS PROVE POPULAR

- 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 every day requirements. Mr. Pierce.
- 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. 2 to 3 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. 1 to 3 credits. Mr. Kiser.
3. SHEEP-RAISING. Care of farm flock for one season, with complete records of feeding and management. 1 credit. 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. 1 to 3 credits. Mr. McCall.
5. GARDEN PRODUCTION. Growing $\frac{1}{8}$ 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. 1 to 3 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. 1 to 3 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 AND SWEET CLOVER. 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 credit. 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. 1 to 3 credits. Mr. Dunham.

11. **POULTRY PRODUCTION.** Feeding and care of a farm flock for egg production, with complete records of production and cost. 1 credit. 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. **FARM CARPENTRY.** Problems in construction of small farm buildings and equipment. 1 credit. Mr. Foker.
14. **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. 1 to 3 credits. Mr. Hartney.

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 Meade.
6. **MADE OVER DRESS.** Make over a dress for self or other member of the family. 1 credit. Miss Meade.
7. **CLOTHING REPAIR.** Repair not less than twelve pieces of clothing. The assortment must include: children's clothing, underwear, stockings, house linen. 1 credit. Miss Meade.
8. **STUDY OF HOUSE FURNISHINGS.** Study of home kitchen to show convenient and inconvenient features, and the possibilities of managing the working units so that steps and extra work may be saved; also a study of the living room, giving specifications and cost of furnishing. 1 credit. Miss Schenck.

SUMMARY OF ATTENDANCE

1922-23

Regular School Course	Men	Women	Total
Advanced	8	0	8
Seniors	17	10	27
Juniors	49	22	71
Freshmen	54	30	84
	<hr/>	<hr/>	<hr/>
	128	62	190
Junior Short Course, 1923	54	54	108
	<hr/>	<hr/>	<hr/>
	182	116	298



WINTER OUTDOOR SCENES AT NORTHWEST SCHOOL

STUDENTS—1922-23

ADVANCED

Briden, Roger, Crookston
Courtney, Harry, Bagley
Gronner, John, Underwood
Homme, James, Highlanding

Johnson, William, Duluth
Peterson, Harold, Bagley
Peterson, LaVern, Brooks
Wold, Milo, Beltrami

SENIORS

Anderson, Earl, Crookston
Anderson, Jesse, Erie
Anderson, Selmer, Erie
Burk, Walter, Brooks
Christopherson, Gladys, Oklee
Drotts, David, Viking
Edgar, Klaire, Bagley
Engelbrakson, Alma, Drayton, N. Dak.
Friday, Clarissa, Hawley
Halvorson, Claire, Fosston
Halvorson, Julian, Fergus Falls
Harstad, Eva, Fertile
Hoper, William, Stephen
Ingwalson, Arthur, Beltrami

Johnson, Iver, Crookston
Kopecky, Albert, Angus
Lee, Archie, Pencer
Lundin, Joseph, Bagley
McCrum, Donald, Thief River Falls
Meyer, Clarence, Red Lake Falls
Murray, Laura, Northcote
Nabben, Johanna, Thief River Falls
Nakken, John, Rosewood
Nelson, Alma, Gatzke
Nyberg, Della, Gully
Raymond, Adele, Red Lake Falls
Synnes, Arthur, Clearbrook

JUNIORS

Aakre, Theresa, Goodridge
Amundson, Alice, East Grand Forks
Baker, Harry, Ventura, Iowa
Balk, Howard, Guthrie
Brustad, Melvin, Bagley
Davids, Robert, Bagley
Dunn, Mildred, Northcote
Eidsmoe, Melvin, Nielsville
Ellingson, Mable, Waukon, Iowa
Engelstad, Alice, Nielsville
Erickson, Johanna, Lengby
Estenson, Morris, Halstad
Fraser, Ronald, Grand Rapids
Gandrud, Allen, Detroit
Gandrud, Ebenhard, Detroit.
Gibbons, Helen, Crookston
Groven, Ole, Bagley
Gunufson, Gladys, Fertile
Hagen, Eiven, Underwood
Hamre, Mabel, Fertile
Hamrick, Marie, Angus
Hanson, Harry, Karlstad
Hanson, Hector, Fertile
Hanson, James, Cass Lake
Harstad, Martin, Fertile
Henderson, Harry, Halstad
Hermanson, Ruth, Fertile
Hofdahl, Orlie, Hazel
Hogenson, Raymond, Winger
Hoialmen, Reuben, Clearbrook

Howard, Oliver, Highlanding
Jenson, Richard, Badger
Johnson, Arthur, Rhoda
Johnson, Bert, Kratka
KenKnight, Lester, Clearbrook
Larmoe, Stanley, Middle River
Larson, Carl, Crookston
Lee, Harold, Gonvick
Lindahl, Frances, Hallock
Lindberg, Rudolph, Plummer
Lofthus, Edwin, East Grand Forks
Luchau, Walter, Gary
Lundeen, Inger, Erskine
Mackowiak, Henry, Crookston
Mansfield, Howard, Roosevelt
Miller, Lydia, Roseau
Miller, Wallace, Roseau
Nelson, Emma, Gatzke
Nelson, Noble, Oslo
Nelson, Robert, Radium
Nornes, Gunhild, Winger
Olson, Edgar, Middle River
Oswald, Mildred, Fertile
Paulsrud, John, Nielsville
Pearson, John, Crookston
Peterson, Russell, Pelican Rapids
Pulkrabek, Gertrude, Angus
Rice, Gladys, Bronson
Saugen, Otto, Thief River Falls
Sharpe, Jacob, Shelly

Sherva, Gena, Gonvick
 Solem, Arnie, Thief River Falls
 Stegner, Sylvia, Kennedy
 Strickler, Marie, Euclid
 Swanson, Arnold, Hallock
 Taplin, Frank, Crookston

Turgeon, Walter, Brooks
 Voxland, Alfred, McIntosh
 Wardeberg, Andrew, McIntosh
 Young, Herman, Middle River
 Zeiders, Vernon, Bemidji.

FRESHMEN

Amundson, Harold, East Grand Forks
 Amundson, Oscar, Newfolden
 Anderson, Anna, Cottonwood
 Anderson, Elmer, Clearbrook
 Anderson, Evelyn, Erie
 Anderson, Marguerite, St. Vincent
 Anderson, Nels, Cottonwood
 Bodahl, Hannah, Fertile
 Bratvold, Agnes, Erskine
 Breivold, Ole, Wanke
 Buus, Harold, Crookston
 Carlson, Lester, Beltrami
 Carlson, Stella, Hallock
 Dale, Gertie, Fertile
 Dale, Hilda, Fertile
 Degagne, Joseph, East Grand Forks
 Deutchman, Richard, Red Lake Falls.
 Durand, Raymond, Oslo
 Eilertson, Einar, Drayton, N. Dak.
 Flateland, Knute, Trail
 Flekke, Helen, Thief River Falls
 Forseth, Oscar, Halstad
 Gagner, Florestine, Mentor
 Gullekson, Virgil, Beltrami
 Gustafson, Helga, Hallock
 Halvorson, Raymond, Viking
 Hamre, Selma, McIntosh
 Hanson, Elmer, Kärilstad
 Harleman, Maurice, Gary
 Hoff, Kenneth, Battle Lake
 Hoper, Anna, Stephen
 Iverson, Edwin, Bagley
 Jennings, Paul, Angus
 Johnson, Chester, Fergus Falls
 Jones, Margaret, Lancaster
 Johnson, Marlin, Dent
 Johnson, Oscar, Fertile
 Johnson, Oscar, Karlstad
 Kotrba, Anton, Erie
 Krogstad, Elmer, Fertile
 Laliberti, Edna, Gentilly
 LaVoi, Leo, Fosston

Lervold, Ellen, Halstad
 Lindstrom, Astrid, Bronson
 Loven, Einar, Gatzke
 Loyland, Theodora, Erie
 Lund, Thor, Trail
 Lundin, Teckla, Stephen
 Magnell, Otto, Rhoda
 Mattsen, Hubert, Greenbush
 Metcalf, Edith, Gonvick
 Meyer, Lawrence, Strathcona
 Miller, Elmer, Erie
 Miska, Charles, Angus
 Morinville, Walter, Red Lake Falls
 Nelson, Claire, Radium
 Nelson, Julius, Radium
 Nelson, Verner, Hallock
 Ness, Manda, Gully
 Nornes, Anna, Winger
 Ofstedal, Clarence, Winger
 Onneland, Amy, East Grand Forks
 Osterloh, Amber, Angus
 Peterson, Gladys, Stephen
 Powers, Wilmer, East Grand Forks
 Sandem, Soffus, Beltrami
 Sharpe, Benneth, Shelly
 Skatvold, Joe, Twin Valley
 Skaurud, James, Twin Valley
 Sollie, Norman, Fertile
 Strand, Arthur, Perley
 Strickler, Esther, Euclid
 Strommer, Della, Clearbrook
 Thompson, Cora, McIntosh
 Vesledahl, Martin, Erskine
 Viker, Russell, Halstad
 Wagner, Earl, Gonvick
 Walhoug, Clarence, Plummer
 Warnes, Daniel, Karlstad
 Weiby, Alma, Erskine
 Widseth, George, Gonvick
 Williams, Vernon, Crookston
 Wold, Dewey, Thief River Falls.
 Wold, Roy, Thief River Falls

The Bulletin
of the University of
Minnesota

The Law School
Announcement for the Year
1923-1924



Vol. XXVI No. 27 July 10 1923

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

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	Monday	First semester evening extension classes begin
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	17-20		Senate meeting, 4:30 p.m. Final examination period
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.
January	18	Friday	First semester evening extension classes close
January	28	Monday	Second semester evening extension classes begin
February	12	Tuesday	Lincoln's Birthday; a holiday
February	14	Thursday	Charter Day Convocation Senate meeting, 4:30 p.m.
February	22	Friday	Washington's Birthday; a holiday
March	18-21		Final examination period
March	21	Friday	Winter quarter ends, spring vacation begins, 5:20 p.m.

THE LAW SCHOOL

April	2	Wednesday	Spring vacation ends. spring quarter begins, 8:30 a.m.
April	18	Friday	Good Friday; a holiday
May	15	Thursday	Cap and Gown Day Convocation
May	15	Thursday	Senate meeting, 4:30 p.m.
May	16	Friday	Second semester evening extension classes close
May	30	Friday	Memorial Day; a holiday
June	15	Sunday	Baccalaureate service
June	13-17		Final examination period
June	18	Wednesday	Fifty-second annual commencement
June	21	Saturday	Spring quarter closes, 5:20 p.m. 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

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.

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
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
R. JUSTIN MILLER, B.A., J.D., Professor of Law
JAMES PAIGE, M.A., LL.M., Professor of Law
HENRY ROTTSCHAEFER, B.A., LL.B., S.J.D., Professor of Law
CEPHAS D. ALLIN, M.A., LL.B., Professor of Political Science
WESLEY A. STURGES, Ph.B., LL.B., Assistant Professor of Law
REX H. KITTS, B.A., LL.B., Instructor in Law
MELKEOR U. S. KJORLAUG, B.A., LL.B., Instructor in Practice
ERNEST C. CARMAN, 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
PAUL J. THOMPSON, M.A., LL.B., Minneapolis

SPECIAL LECTURERS

CALVIN L. BROWN, Chief Justice of the Supreme Court of Minnesota
ROME G. BROWN, B.A., Minneapolis
CHARLES W. BUNN, B.S., St. Paul
BERT FESLER, Duluth, Judge of the District Court
FRANK B. KELLOGG, LL.D., St. Paul, United States Senator
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 Arts¹ 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 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.

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

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

Students preparing to enter the Law School after two or more years in the College of Science, Literature, and the Arts of this University are required to comply with the rules of the Junior College. The following

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

course, available under the 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 3-4 and 33-34
7. Economics 3-4

Other subjects recommended for pre-legal students are Psychology 1-2; Public Speaking 45-46, 15-16-17; 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, 65, 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-four thousand volumes, including all the American reports, state and federal (excepting a few reports of inferior state courts), Interstate Commerce and other commission reports, nearly all the English, Australian, New Zealand, 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.

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.

EXPENSES

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

INQUIRIES

Further particulars as to any phase of the work of the Law School not given herein, or in the bulletin of general information, will be cheerfully given upon request. Communications addressed at any time to the dean of the Law School 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 24 to September 5, 1924. The quarter will be divided into two terms, the first from June 24 to August 1, the second from August 4 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

COURSE OF STUDY

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

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 & Hinton, *Cases on Common Law Pleading*. Cook, *Cases on Equity Jurisdiction*, Vol. I. Two hours. MR. STURGES.

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. STURGES.

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. MILLER.

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 Practice*. Three hours. MR. CHERRY, MR. THOMPSON, 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. (Not given in 1923-24.) 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*. Two hours. MR. STURGES.

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; functions 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, first half year. MR. MILLER.

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, second half year. MR. FLETCHER.

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. ROTTSCHAEFFER.

TAXATION. This course deals only with the legal questions arising in connection with the assessment of property and the levying and collection of taxes. Selected cases. Two hours, second half year. MR. ROTTSCHAEFFER.

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. ROTTSCHAEFFER.

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, second half year. MR. KITTS.

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 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.

ATTENDANCE FOR 1922-23

Third-year class	54
Second-year class	87
First-year class	135
Total	<hr/> 276

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 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

Acceptance for mailing at special rate of postage provided for in section 1103,
Act of October 3, 1917, authorized July 12, 1918

1923							1924																
JULY							JULY																
Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa			
1	2	3	4	5	6	7	1	2	3	4	5	1	2	3	4	5			
8	9	10	11	12	13	14	6	7	8	9	10	11	12	6	7	8	9	10	11	12			
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..	31			
SEPTEMBER							SEPTEMBER																
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DECEMBER							DECEMBER																
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23	24	25	26	27	28	29	29	30	28	29	30	31			
30	31			

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.

THE MEDICAL SCHOOL

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

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 Medi-
cal 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
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RICHARD E. SCAMMON, Ph.D., Member-elect Representing the Faculty

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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 unclassified 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-Laryngol- ogy	116*
Pathology	352	Roentgenology	11
Preventive Medicine and Public Health	57	Electives†	924
Pharmacology	187		
Medicine	692*	Total.....	4,518

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	4‡
Surg. 50 (Bandaging).....	1	..	..
Ped. 100 (Ped. Diag.).....	1
Electives	6	6
Total clock hours per week..	24	33	33	33	36	35‡

* 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 interuships. 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 small-pox 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-anti-toxin 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.:

<i>Minnesota Daily</i> , per quarter.....	\$0.50
Post-office box, per quarter.....	.20
<i>University Address Book</i>.....	.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 III. 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 I. 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. Prerequisites: 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. 108 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.

STAFF OF STATE BOARD OF HEALTH

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,sl. **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 F. 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. LOGEFEL, 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

- I. 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,8of,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. OPTHALMOLOGY. 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. OTOTOLOGY. 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. OPTHALMOSCOPY. 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. ROHR, 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. ORTHOPEDIC 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. ROBIT-SHEK, 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 Hospital. 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. BEERSTECHEER, 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. I 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 II (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, vitamins, 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 III-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 III-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

*The School of Nursing
Announcement for the Year
1923-1924*



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

1923							1924													
JULY							JANUARY							JULY						
Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa
1	2	3	4	5	6	7	..	..	1	2	3	4	5	..	..	1	2	3	4	5
8	9	10	11	12	13	14	6	7	8	9	10	11	12	6	7	8	9	10	11	12
15	16	17	18	19	20	21	13	14	15	16	17	18	19	13	14	15	16	17	18	19
22	23	24	25	26	27	28	20	21	22	23	24	25	26	20	21	22	23	24	25	26
29	30	31	27	28	29	30	31	27	28	29	30	31
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AUGUST							FEBRUARY							AUGUST						
..	1	2	3	4	1	2	1	2
5	6	7	8	9	10	11	3	4	5	6	7	8	9	3	4	5	6	7	8	9
12	13	14	15	16	17	18	10	11	12	13	14	15	16	10	11	12	13	14	15	16
19	20	21	22	23	24	25	17	18	19	20	21	22	23	17	18	19	20	21	22	23
26	27	28	29	30	31	..	24	25	26	27	28	29	..	24	25	26	27	28	29	30
..	..	..	..	..	..	..	..	..	..	..	..	..	..	31	..	..	..	..	..	..
SEPTEMBER							MARCH							SEPTEMBER						
..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	1
2	3	4	5	6	7	8	2	3	4	5	6	7	8	7	8	9	10	11	12	13
9	10	11	12	13	14	15	9	10	11	12	13	14	15	14	15	16	17	18	19	20
16	17	18	19	20	21	22	16	17	18	19	20	21	22	21	22	23	24	25	26	27
23	24	25	26	27	28	29	23	24	25	26	27	28	29	28	29	30
30	30	31
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OCTOBER							APRIL							OCTOBER						
..	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4
7	8	9	10	11	12	13	6	7	8	9	10	11	12	5	6	7	8	9	10	11
14	15	16	17	18	19	20	13	14	15	16	17	18	19	12	13	14	15	16	17	18
21	22	23	24	25	26	27	20	21	22	23	24	25	26	19	20	21	22	23	24	25
28	29	30	31	27	28	29	30	26	27	28	29	30	31	..
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NOVEMBER							MAY							NOVEMBER						
..	1	2	3	1	2	3	1
4	5	6	7	8	9	10	4	5	6	7	8	9	10	2	3	4	5	6	7	8
11	12	13	14	15	16	17	11	12	13	14	15	16	17	9	10	11	12	13	14	15
18	19	20	21	22	23	24	18	19	20	21	22	23	24	16	17	18	19	20	21	22
25	26	27	28	29	30	..	25	26	27	28	29	30	31	23	24	25	26	27	28	29
..	..	..	..	..	..	..	..	..	..	..	..	..	..	30	..	..	..	..	..	..
DECEMBER							JUNE							DECEMBER						
..	..	..	..	..	..	1	1	2	3	4	5	6	7	..	1	2	3	4	5	6
2	3	4	5	6	7	8	8	9	10	11	12	13	14	7	8	9	10	11	12	13
9	10	11	12	13	14	15	15	16	17	18	19	20	21	14	15	16	17	18	19	20
16	17	18	19	20	21	22	22	23	24	25	26	27	28	21	22	23	24	25	26	27
23	24	25	26	27	28	29	29	30	..	..	..	..	..	28	29	30	31	..	..	..
30	31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

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	Payments 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	20	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	17-20		Final examination period
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	18-21		Final examination period
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.

* 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, bulletin of general information, page 48.

UNIVERSITY CALENDAR

April	18	Friday	Good Friday; a holiday
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	13-17		Final examination period
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

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

THE SCHOOL OF NURSING

LOUISE M. POWELL, B.S., R.N., 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 each quarter. 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. In the order of their scholarship, they are given a choice of the hospital of their principal residence, but they are later assigned to rotation services in the several members of the hospital group.

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 wards, private rooms, diet kitchens, dressing rooms, operating rooms, 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., 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., Director of the Department of Anatomy
ARTHUR D. HIRSCHFELDER, B.S., M.D., Director of the Department of Pharmacology
ELEXIUS 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., 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
¹JULIUS P. SEDGWICK, B.S., 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
RICHARD E. SCAMMON, Ph.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, B.S., R.N., 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

¹ Died February 25, 1923.

* 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.

BESSIE BAKER, B.S., R.N., Superintendent of Nurses (b) and Assistant Professor of Nursing
 KATHERINE DOUGHERTY, R.N., Superintendent of Nurses (c) and Assistant Professor of Nursing
 IRENE R. ENGLISH, R.N., Superintendent of Nurses (d) and Assistant Professor of Nursing
 DOROTHY KURTZMAN, R.N., Assistant Superintendent of Nurses (a) and Instructor in Nursing
 JANE G. MAHANEY, R.N., Assistant Superintendent of Nurses (b) and Instructor in Nursing
 IRENE WALSH, R.N., Assistant Superintendent of Nurses (c) and Instructor in Nursing
 OLENA ORDAHL, R.N., Assistant Superintendent of Nurses (d) and Instructor in Nursing
 GERTRUDE I. THOMAS, Instructor in Theory and Practice of Dietetics (a)
 BARBARA A. THOMPSON, R.N., Instructor in Nursing (a)
 LOUISE NEWCOMBE, R.N., Instructor in Nursing (b)
 M. FRANCES MADIGAN, B.S., R.N., Instructor in Nursing (c)
 HELEN IRENE ERICKSON, R.N., Instructor in Nursing (c)
 ESTHER ANDREASON, Instructor in Nursing (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., Assistant Professor of Medicine
 RICHARD O. BEARD, M.D., Secretary of the Faculty and Associate Professor of Physiology
 EDGAR D. BROWN, Phm.D., M.D., Associate Professor of Pharmacology
 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
 HOWARD C. CLARK, B.S., M.D., F.A.C.S., Assistant 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
- CLARENCE M. JACKSON, M.S., M.D., Professor of Anatomy and Director of the Department of Anatomy
- JAMES A. JOHNSON, M.D., F.A.C.S., Assistant Professor of Surgery
- ¹WILLIAM 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
- ARTHUR A. LAW, M.D., F.A.C.S., Associate Professor of Surgery
- WILLIAM W. LEWIS, M.D., Instructor in Ophthalmology and Oto-Laryngology
- 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., Dean of the Medical School, Professor of Physiology and Director of the Department of Physiology
- RAE T. LAVAKE, B.A., M.D., Assistant Professor of Obstetrics and Gynecology
- CHAUNCEY A. MCKINLAY, B.A., M.D., Assistant Professor of Medicine
- J. CHARNLEY MCKINLEY, M.D., Ph.D., Assistant Professor of Neurology
- HENRY E. MICHELSON, B.Sc., 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.B., M.D., F.A.C.S., Professor of Ophthalmology and Oto-Laryngology and Chief of the Department of Ophthalmology and Oto-Laryngology
- J. ANNA NORRIS, M.D., Professor of Physical Education for Women and Director of Physical Education for Women
- GEORGE M. OLSON, M.D., Assistant Professor of Dermatology and Syphilis
- NABOTH O. PEARCE, M.D., Assistant Professor of Pediatrics
- CHAUNCEY J. V. PETTIBONE, Ph.D., Associate Professor of Physiologic Chemistry
- 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., Assistant Professor of Medicine
- HARRY P. RITCHIE, Ph.B., M.D., F.A.C.S., Associate Professor of Surgery

¹ On leave, 1923-24.

- FREDERICK C. RODDA, M.D., Associate Professor of Pediatrics
¹JULIUS P. SEDGWICK, B.S., M.D., Professor of Pediatrics and Chief of the
 Division of Pediatrics
 MAX SEHAM, M.D., Assistant Professor of Pediatrics
 JALMAR H. SIMONS, B.S., M.D., F.A.C.S., Assistant Professor of Obstetrics
 and Gynecology
 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
 FREDERICK J. WULLING, Phm.G., Phm.D., LL.M., Professor of Pharma-
 cology
 S. MARX WHITE, B.S., M.D., 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
 HERVEY H. BARBER, M.A., Instructor in Chemistry
 ANNE BENTON, M.A., Instructor in Bacteriology
 CHARLES E. CONNOR, B.A., M.D., Instructor in Ophthalmology and Oto-
 Laryngology
 GEORGE R. DUNN, Ph.B., M.D., Instructor in Surgery
 PAUL W. GIESSLER, B.S., M.D., Instructor in Orthopedic Surgery
 BERYL S. GREEN, B.A., Instructor in Bacteriology
 MANLEY H. HAYNES, Phm.D., B.S., M.D., Instructor in Obstetrics and
 Gynecology
 GLADSTONE B. HEISIG, M.S., M.A., Instructor in Chemistry
 EDGAR T. HERRMANN, B.S., M.D., Instructor in Medicine
 FRANK L. JENNINGS, M.D., Instructor in Medicine
 HELEN M. KEPLER, B.S., M.A., Instructor in Anatomy
 RALPH T. KNIGHT, B.A., M.D., Instructor in Surgery
 ERNEST S. MARIETTE, B.S., M.D., Instructor in Medicine
 ELSIE MARTIN, Instructor in Dietetics
 JOSEPH C. MICHAEL, B.S., M.D., Instructor in Nervous and Mental Diseases
 HENRY ODLAND, B.S., M.D., Instructor in Dermatology and Syphilis
 THOMAS A. PEPPARD, M.D., Instructor in Medicine
 ALBERT G. SCHULZE, M.D., Instructor in Obstetrics
 FREDERICK J. SOUBA, B.S., M.D., Instructor in Obstetrics and Gynecology
 ROSCOE C. WEBB, B.A., M.D., F.A.C.S., Instructor in Surgery
 ADA BEERSTECHER, R.N., Assistant in Nursing
 IONE CORLISS, R.N., Assistant in Nursing
 AGNES FLEMING, R.N., Assistant in Nursing

¹ Died February 25, 1923.

RUTH HJERMSTAD, R.N., Assistant in Nursing
HERMAN H. JENSEN, B.A., M.S., Teaching Fellow in Pharmacology
MARGARET JONES, R.N., Assistant in Nursing
ARTHUR E. MARK, B.S., M.D., Assistant in Medicine
MARTIN D. OTT, B.S., M.D., Assistant in Pediatrics
WILLARD C. PETERSON, B.S., M.D., Teaching Fellow in Surgery
BLANCHE PINKUS, R.N., Assistant in Nursing
LAWRENCE F. RICHDORF, B.S., M.D., Teaching Fellow in Pediatrics
JENNIE SCHEY, R.N., Assistant in Nursing
W. RAY SHANNON, B.S., M.D., Assistant in Pediatrics
HARRIE SOLOMON, R.N., Assistant in Nursing

LECTURERS GIVING VOLUNTARY SERVICE IN THE SCHOOL OF NURSING
AND IN PUBLIC HEALTH NURSING COURSES

JOHN A. EVERT, M.D.	ALEXANDER JOSEWICH, M.D.
F. E. B. FOLEY, M.D.,	WALTER J. MARCLEY, 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. In the past year 15,898 new patients have been entered and 69,548 visits have been recorded.

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 reforwarded 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 each of the four quarters of the year.

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 Miss Louise M. Powell, director of the School of Nursing, 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 examinations 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.....	4
Chemistry 6-7-8.....	15
English-Rhetoric A-B-C.....	15
Foreign Language.....	15
History 1-2	
or	
History 2-3.....	10
Home Economics 21.....	5
Human Anatomy 2.....	4
Human Physiology 4.....	5
Metrology 51 (College of Pharmacy).....	½
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 pharmacology, lettering, history and ethics of nursing, hospital economics, personal hygiene, nursing practice, and dietetics; with general work in the wards for a portion of each day under supervision.

THIRD AND FOURTH YEARS

In the succeeding spring and summer quarters of this year and in the four quarters of the fourth year the student is assigned to graded services and to lecture and recitation courses in the associated hospitals.

FIFTH YEAR

During the final year the first two quarters are devoted to advanced nursing in hospital 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 class or 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 theoretic^{al} 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.

* 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.:

<i>Minnesota Daily</i>	\$0.50 a quarter
Post-office box	0.20 a quarter
<i>University Address Book</i>	0.35

THE COURSE IN NURSING EDUCATION

The course in Nursing Education is offered by the School of Nursing, with the co-operation of the College of Education, to graduate nurses who have the high school prerequisite. Additional prerequisites of this course are as follows: General Psychology, Courses 1-2, 3, nine credits; Introduction to Sociology, Course 1, five credits.

The outline of the course proposed for the guidance of the graduate student, given below, may be varied, with due respect to sequence, to suit the individual need.

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. 3f,w,s. EDUCATIONAL SOCIOLOGY. The school as a community factor; the present peculiar relation of the school to social problems; the function of the school in these relations. Three credits.
- 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.
- 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.
- Med. Sch. 105f,w,s. HYGIENE AND SANITATION. The essentials of personal hygiene, the practice of household hygiene; the fundamental principles of disease prevention. One credit.
- Sch. of Nurs. 101f,w,s. TEACHING PRACTICE. Experience in teaching, under supervision, in the classes of the School of Nursing, upon subjects included in the education of undergraduate nursing students. Five credits.
- Sch. of Nurs. 102f,w,s. THE HISTORY OF NURSING. The historical development of nursing; the public health movement; the relation of nursing to medicine and to the welfare of society. Three credits.

- Sch. of Nurs. 103f,w,s. **THE TEACHING OF NURSING PRINCIPLES AND METHODS.** The scientific principles underlying the nursing care of patients; the selection of subject-matter, the sequence of study; the choice of method; the planning of lessons and demonstrations. Two credits.
- Sch. of Nurs. 104f,w,s. **THE CURRICULUM IN SCHOOLS OF NURSING.** The content, selection, and arrangement of subjects; correlation of theoretical and practical teaching; special methods of instruction; the materials of teaching. Two credits.
- Sch. of Nurs. 105f,w,s. **NURSING PRACTICE.** Including observation and practice in the associated hospital services; with regular practice teaching in some one subject. Two credits.
- Sch. of Nurs. 106f,w,s. **SUPERVISION IN HOSPITALS AND NURSING SCHOOLS.** A course of study for head nurses, supervisors, teachers, and administrators; for all who require a knowledge of organization in hospitals and schools of nursing. The relations of departments and the problems of supervision. Two credits.
- Sch. of Nurs. 107f,w,s. **CURRENT PROBLEMS OF NURSING EDUCATION.** Special problems of education in schools of nursing; economic status of schools; tuition fees; scholarships; loan funds; entrance requirements; hours of service; sanitary, recreational, and social aspects of nursing education. Two credits.

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. JACKSON.

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. Thirty-six 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; U. S. P. preparations; fundamentals of prescription-reading; reference works. Eleven hours.

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, MISS BENTON.

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 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. 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. Twenty-two 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. MISS THOMAS.

PRACTICAL NURSING

- 21-27f,w,s,su. Courses of lectures, demonstrations, and practical exercises. Eighty hours. MISS THOMPSON.
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, vomites. 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; method of giving drugs by inunction.
27. **INFECTIOUS DISEASES.** Precautions of care; details of disinfection; care of typhoid fever cases; venereal diseases; preparation of rooms for fumigation.

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. **THE CARE OF SURGICAL CASES.** Anesthesia and anesthetics. Surgical emergencies; inflammation; wounds; hemorrhage; shock; fractures; dislocations. Surgical infections; toxemia; wound infections; erysipelas, gangrene, etc. Surgical tuberculosis. Plastic surgery; orthopedics. Sixteen hours.

30. SPECIAL SURGICAL CONDITIONS. The stomach; carcinoma, gastric ulcer; the liver and gall tract; abscess, gallstones, etc.; the intestines; appendicitis, obstruction, etc.; the kidneys and bladder; the uterus and appendages; the brain. Sixteen 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. Diseases of the heart; diseases of the blood; diseases of the blood vessels.
33. GENERAL NURSING MEASURES. Diet, drugs, rest. Observation of symptoms. Taking and recording pulse. Recording intake and output of fluids. Treatment of emergencies. Demonstrations of enteroclysis; packs; preparation for phlebotomy, vein puncture; transfusion; bladder irrigation. Weight, temperature, blood pressure. Fresh air treatment.
34. DISEASES OF RESPIRATORY SYSTEM. Laryngitis; bronchitis; asthma; broncho-pneumonia. Lobar pneumonia and complications. Pleurisy; empyema.
35. NURSING CARE. Isolation and disinfection; prevention of infection. Methods of observing and saving sputum. Fresh air treatment. Methods of reducing temperature; packs. Methods of pain relief. Inhalation. Counter irritants. Preparation for aspiration. Dietary.
36. DISORDERS OF DIGESTIVE SYSTEM. Mouth infections. Gastritis; gastric and duodenal ulcer. Carcinoma of stomach. Intestinal disturbances. Nursing methods: oral hygiene; test meals; lavage, gastric expression; duodenal catheterization; abdominal massage; colon irrigation.
37. DISEASES OF LIVER. Cholecystitis. Cirrhosis of liver. Observation of symptoms. Preparation for abdominal paracentesis. Diseases of urinary tract. Nephritis and complications. Cystitis.
38. DISORDERS OF METABOLISM. Diabetes. Obesity. Acute articular rheumatism; arthritis. Nursing care. Collection of specimens. Dietary. Massage; dental treatment; vaccines.
39. MEDICAL EMERGENCIES. Heat prostration; sunstroke. Cases of poisoning. Fainting. Nursing measures in treatment of emergencies.

Courses Nos. 32 to 39 cover a period of 32 hours.

TUBERCULOSIS

40. 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.

COMMUNICABLE DISEASES

41. INFECTIOUS AND CONTAGIOUS DISEASES. Typhoid fever. Typhus. Dysentery. Hookworm. Malaria. Yellow fever. Tetanus. Rabies. Social, economic, and educational factors in the prevention and treatment of communicable diseases. Four hours.
42. GENERAL MEASURES AND NURSING CARE. Protection of nurse and public. Health regulations. Care of room and patient; destruction of insects. Case-charting. Dietary. Sponge and pack baths. Colon irrigation. Vaccination. Pasteur treatment of rabies. Care in convulsions. Emergency treatment of infected wounds. Four hours.

GYNECOLOGY

43. 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. Twelve hours.

NURSING OF INFANTS AND CHILDREN

44. 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.
45. DISEASES OF DIGESTIVE TRACT. Disorders of respiratory system. Diseases of circulatory system; of genito-urinary tract. Nervous disorders. Constitutional diseases. Syphilis; gonorrhoea.
46. CONTAGIOUS DISEASES. Diphtheria; scarlet fever; smallpox; chickenpox; whooping-cough; measles; mumps; meningitis; poliomyelitis.
- Courses Nos. 44 to 46 cover a period of thirty-eight hours.

MASSAGE

47. 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. Eighteen hours.

OBSTETRICS

48. 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. Fourteen hours.

THE DIETETIC TREATMENT OF DISEASE

49. 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.

THE SCHOOL OF NURSING

50. **THE DIETETIC TREATMENT OF SPECIAL DISEASES.** The dietary of continued fevers; gastro-intestinal disorders; respiratory disorders; disorders of nutrition; renal diseases, cardiac disorders, and diabetes. Courses 49 and 50 cover a period of ten hours.

PUBLIC HEALTH AND HYGIENE

51. Relation of the nurse to the new public health; infectious diseases from a public health standpoint; maternal and infant hygiene; school hygiene; industrial hygiene and occupational diseases; mental hygiene; community hygiene. Twelve hours.

DISEASES OF THE SKIN

52. **THE NURSING CARE OF THE SKIN.** A course upon methods of treatment of disorders of the skin of general occurrence. Twelve hours.

NERVOUS AND MENTAL DISEASES

53. **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. Twelve hours.

DISEASES OF THE EYE, EAR, NOSE, AND THROAT

54. **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

55. **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. Six hours.

SOCIAL RELATIONS

56. **PROFESSIONAL PROBLEMS.** Social and civic status of nurses. Professional ethics and etiquette. Nursing education; legislation; organizations. Six 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* *1923-1924*



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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	Payments 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	17-20		Final examination period
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	18-21		Final examination period
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.

* 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, bulletin of general information, p. 48.

April	18	Friday	Good Friday; a holiday
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	13-17		Final examination period
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

* First hour classes begin 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 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 class or 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.

Requests for further information may be addressed to the Director of the Public Health Nursing Course, Millard Hall, University of Minnesota.

THE MEDICAL SCHOOL

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MEMBERS OF THE COMMITTEE ON PUBLIC HEALTH NURSING

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- FRED L. ADAIR, B.S., M.D., M.A., F.A.C.S., Associate Professor of Obstetrics and Gynecology
- 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 Assistant Director, Students' Health Service
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- WALTER E. CAMP, M.A., M.D., Instructor in Ophthalmology and Oto-Laryngology
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- 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 and Chairman of the Department of Psychology
- LESTER W. FREEZER, B.S., LL.B., Instructor in Preventive Medicine and Public Health and Assistant Director of Division of Venereal Diseases, Minnesota State Board of Health
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- WILLIAM HOBSON, B.A., LL.D., 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
- ANNA JONES, B.A., R.N., Instructor in Public Health Nursing and Director of Public Health Nursing Course
- ORIANNA McDANIEL, M.D., Assistant Professor of Preventive Medicine and Public Health and Director of Division of Preventable Diseases, Minnesota State Board of Health
- ERNEST S. MARIETTE, B.S., M.D., Instructor in Medicine and Superintendent of Glen Lake Tuberculosis Sanitarium
- 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., Assistant Professor of Nervous and Mental Diseases
- MILDRED D. MUDGETT, B.A., 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

NABOTH O. PEARCE, M.D., Assistant Professor of Pediatrics
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MAX SEHAM, M.D., Assistant Professor of Pediatrics
WILLIAM P. SHEPARD, B.S., M.D., Instructor in Preventive Medicine and
Public Health and Assistant Director, Students' Health Service
MARION A. TEBBETS, B.A., Director of Department of Hospital Social
Service
ALICE J. H. TOLG, M.D., Assistant Professor of Physical Education for
Women
HAROLD A. WHITTAKER, B.A., Assistant Professor of Preventive Medicine
and Public Health and Director of Division of Sanitation, State Board
of Health

SPECIAL LECTURERS AND DEMONSTRATORS

CAROLINE BEDFORD, B.A., Chief Social Worker, Associated Charities, Min-
neapolis
MAY BRYNE, Mental Examiner, Minneapolis Public Schools
AGNES CROWLEY, B.S., Supervisor of Department of Feeble-Minded, Chil-
dren's Bureau, State Board of Control
ALICE H. FULLER, B.A., R.N., Supervisor of Instruction, Visiting Nurse
Association, Minneapolis
F. E. HARRINGTON, B.S., LL.D., Director, Minneapolis Board of Health
ALMA HAUPT, B.A., R.N., Superintendent of Nurses, Visiting Nurse Asso-
ciation, Minneapolis
CORA HELGERSON, R.N., Chief School Nurse, Minneapolis Public Schools
HILDE HENDRICKSON, R.N., Industrial Nurse for the Minneapolis Street
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EDITH MARSH, Executive Secretary for the Minneapolis Society for the
Blind
E. A. MEYERDING, M.D., Director of Division of Health, Board of Educa-
tion, St. Paul
HELEN C. PECK, R.N., Acting Executive Secretary, Infant Welfare Society,
Minneapolis
ABIGAIL E. STEBBINS, R.N., Supervisor, Hennepin County Nurses
NETTIE STRAIT, Director, Department Health Education, Minneapolis Board
of Education
MABEL ULRICH, M.D., Lecturer in Social Hygiene
AUDREY WALTON, Chief Social Worker, Division of Venereal Diseases,
State Board of Health

REGULATIONS

CANDIDATES FOR ADMISSION

Students eligible to the course in Public Health Nursing are of two groups:

a. Graduate registered nurses, eligible to active membership in the National Organization of Public Health Nursing.

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.

Applicants of either group must be the graduates of a four-year accredited-high school course.

FEEES AND EXPENSES

Tuition fees (per quarter).....	\$20.00
Health fee (per quarter).....	2.00
Shevlin Hall (per quarter)	1.00
General deposit	5.00

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.:

<i>Minnesota Daily</i> (per quarter).....	\$0.50
Post-office box (per quarter).....	0.20
<i>University Address Book</i>	0.35

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.

Loan scholarships are sometimes available for graduate students of proficiency in study and definite objective in public health work.

OPPORTUNITIES OF PUBLIC HEALTH SERVICE

Given a knowledge of the fundamental principles of public health nursing, it should be readily possible for the student to specialize, with further study, in any one of the fields of service which are open to the adequately prepared graduate nurse. It is to be expected that as these fields of public health activity develop special courses must be provided for preparation in each service.

Visiting nursing, medical social service, infant and child welfare work, public school health service, tuberculosis or venereal disease control, industrial nursing, and rural community nursing are among the opportunities of service, for any one of which the student may qualify.

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. Thirty-six hours. Three 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 organization, institutions, and progress; bearing of sociology upon other social sciences and arts. Sixty hours. Five 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. Thirty-six hours. Three credits. MISS BINZEL.
52. ELEMENTARY SOCIAL CASE WORK. The methods of case work as applied to the treatment of the socially inadequate. Thirty-six hours. Three credits. MR. BRUNO.
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. Forty-eight hours. Three credits. DR. DIEHL, DR. SHEPARD.
90. ELEMENTARY FIELD WORK. Designed to give first-hand knowledge of the conditions out of which dependency develops by field work with a social service agency. Seventy-two hours. Two credits. MRS. MUDGETT.

WINTER QUARTER

2. GENERAL PSYCHOLOGY. A continuation of 1f. Thirty-six hours. Three credits. MR. ELLIOTT and others.
58. MATERNAL AND CHILD HYGIENE. The maternal welfare program; the 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, fatigue, physical defects, cardiac and nervous disorders. Eighteen hours. One and one-half credits. DR. ADAIR, DR. HUENEKENS, DR. BOYNTON, and others.

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 nurses. Prevention and control of venereal diseases; clinics; follow-up systems. Twelve hours. One credit. DR. ULRICH.
60. THE TUBERCULOSIS PROBLEM. History of tuberculosis movement and campaign in United States. Early diagnosis and sanatorium care. Tuberculosis in children. The psychology of tuberculosis. The supervision of returned sanatorium patients. State program for the eradication of tuberculosis; legislation. Twelve hours. One 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. Thirty-six hours. Three credits. MR. HODSON.
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. Twelve hours. One credit. DR. HAMILTON and others.
62. PRINCIPLES OF PUBLIC HEALTH NURSING. 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. Thirty-six hours. Three credits. MISS JONES.
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.

SPRING AND SUMMER QUARTER

63. FIELD PRACTICE IN VISITING NURSING. Lectures, demonstrations, supervision, and field practice in bedside care of general and maternity patients; tuberculosis and mental diseases, with special emphasis upon recognition of social problems, co-operation with social agencies, and accurate record-keeping. One hundred seventy-six hours. Five credits. MISS HAUPT, MISS FULLER.
64. FIELD PRACTICE IN INFANT WELFARE NURSING. Supervised practice in teaching the value of breast feeding, in determining the eligibility for clinic, in keeping adequate records. Practice in the conduct of infant welfare and pre-school age clinics with necessary follow-up home visits. One hundred eight hours. Three credits. MISS PECK.

65. FIELD PRACTICE IN SCHOOL NURSING. Routine inspection with the school nurse; assistance at medical examination; general sanitary inspections, home visits, visits to special classes as sight-saving, defective speech and hearing, subnormal, open air, and tuberculosis schools. Eighty hours. Two credits. MISS JONES.
66. FIELD PRACTICE IN COUNTY NURSING. The student observes and assists the nurse in her rounds in the county; in the routine physical inspections of school children; the home calls; the health talks and classes in home nursing, as well as the organizing, advertising, and conducting of the rural clinic. Eighty hours. Two credits. MISS JONES.
67. FIELD PRACTICE IN A COUNTY TUBERCULOSIS SANATORIUM. Required only of those who have had no tuberculosis nursing in their training. Observation and practical care of pulmonary, osseous, and laryngeal tuberculosis; tuberculous enteritis; general sanatorium treatment; exercise; occupational therapy; the reading of literature on tuberculosis. One hundred twelve hours. Two credits. DR. MARIETTE.

The Bulletin
of the University of
Minnesota

The College of Dentistry
Announcement for the Year
1923 - 1924



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1923							1924													
JULY							JANUARY							JULY						
Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa
1	2	3	4	5	6	7	..	..	1	2	3	4	5	..	..	1	2	3	4	5
8	9	10	11	12	13	14	6	7	8	9	10	11	12	6	7	8	9	10	11	12
15	16	17	18	19	20	21	13	14	15	16	17	18	19	13	14	15	16	17	18	19
22	23	24	25	26	27	28	20	21	22	23	24	25	26	20	21	22	23	24	25	26
29	30	31	..	..	..	..	27	28	29	30	31	..	..	27	28	29	30	31	..	..
..
AUGUST							FEBRUARY							AUGUST						
..	..	..	1	2	3	4	..	..	..	..	1	2	..	..	..	..	1	2		
5	6	7	8	9	10	11	3	4	5	6	7	8	9	3	4	5	6	7	8	9
12	13	14	15	16	17	18	10	11	12	13	14	15	16	10	11	12	13	14	15	16
19	20	21	22	23	24	25	17	18	19	20	21	22	23	17	18	19	20	21	22	23
26	27	28	29	30	31	..	24	25	26	27	28	29	..	24	25	26	27	28	29	30
..	..	..	..	..	..	..	..	..	..	..	..	..	..	31	..	..	..	..	..	..
SEPTEMBER							MARCH							SEPTEMBER						
..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	2	3	4	5	6	
2	3	4	5	6	7	8	2	3	4	5	6	7	8	7	8	9	10	11	12	13
9	10	11	12	13	14	15	9	10	11	12	13	14	15	14	15	16	17	18	19	20
16	17	18	19	20	21	22	16	17	18	19	20	21	22	21	22	23	24	25	26	27
23	24	25	26	27	28	29	23	24	25	26	27	28	29	28	29	30	..	..	..	..
30	..	..	..	..	..	..	30	31	..	..	..	..	..	..	..	..	..	..	..	..
OCTOBER							APRIL							OCTOBER						
..	1	2	3	4	5	6	..	..	1	2	3	4	5	..	..	..	1	2	3	4
7	8	9	10	11	12	13	6	7	8	9	10	11	12	5	6	7	8	9	10	11
14	15	16	17	18	19	20	13	14	15	16	17	18	19	12	13	14	15	16	17	18
21	22	23	24	25	26	27	20	21	22	23	24	25	26	19	20	21	22	23	24	25
28	29	30	31	..	..	..	27	28	29	30	..	..	..	26	27	28	29	30	31	..
..
NOVEMBER							MAY							NOVEMBER						
..	..	..	..	1	2	3	..	..	..	..	1	2	3	..	..	..	..	..	..	1
4	5	6	7	8	9	10	4	5	6	7	8	9	10	2	3	4	5	6	7	8
11	12	13	14	15	16	17	11	12	13	14	15	16	17	9	10	11	12	13	14	15
18	19	20	21	22	23	24	18	19	20	21	22	23	24	16	17	18	19	20	21	22
25	26	27	28	29	30	..	25	26	27	28	29	30	31	23	24	25	26	27	28	29
..	..	..	..	..	..	..	..	..	..	..	..	..	..	30	..	..	..	..	..	..
DECEMBER							JUNE							DECEMBER						
..	..	..	..	..	..	1	1	2	3	4	5	6	7	..	1	2	3	4	5	6
2	3	4	5	6	7	8	8	9	10	11	12	13	14	7	8	9	10	11	12	13
9	10	11	12	13	14	15	15	16	17	18	19	20	21	14	15	16	17	18	19	20
16	17	18	19	20	21	22	22	23	24	25	26	27	28	21	22	23	24	25	26	27
23	24	25	26	27	28	29	29	30	..	..	..	..	..	28	29	30	31	..	..	..
30	31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

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 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
May	15	Thursday	Senate meeting, 4:30 p.m.

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

SCHOOL FOR DENTAL NURSES

May	15	Thursday	Cap and Gown Day Convocation
May	30	Friday	Memorial Day; a holiday
June	15	Sunday	Baccalaureate service
June	13-17		Final examination period
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

THE COLLEGE OF DENTISTRY

FACULTY

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WILLIAM WATTS FOLWELL, LL.D., President Emeritus
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ARCHIBALD B. BUTTER, D.D.S., Assistant Professor of Operative Dentistry
ANGUS L. CAMERON, B.A., M.S., M.D., Ph.D., Assistant Professor of Surgery
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RAYMOND R. HENRY, D.D.S., Assistant Professor of Operative Dentistry
ARTHUR D. HIRSCHFELDER, BS., M.D., Professor of Pharmacology
HOUGHTON HOLLIDAY, B.A., D.D.S., Assistant Professor of Oral Surgery and Oral Diagnosis
WILLIAM H. HUNTER, Ph.D., Professor of Chemistry
¹CLARENCE M. JACKSON, M.S., M.D., Professor of Anatomy

¹ Absent on leave, 1923-24.

RAY R. KNIGHT, B.A., M.D., Associate Professor of Roentgenology and Physical Diagnosis

WINFORD P. LARSON, M.D., Professor of Bacteriology and Immunology

WILLIAM F. LASBY, B.A., D.D.S., Professor of Prosthetic Dentistry and Orthodontia and Chairman of the Division of Prosthetic Dentistry

HARRY C. LAWTON, D.D.S., Associate Professor of Prosthetic Dentistry and Orthodontia

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HAROLD J. LEONARD, B.A., D.D.S., Associate Professor of Oral Hygiene and Pathology, Superintendent of the School for Dental Nurses, and Chairman of the Division of Oral Hygiene and Pathology

JOSEPH M. LITTLE, D.D.S., Associate Professor of Operative Dentistry

ELIAS P. LYON, Ph.D., M.D., LL.D., Professor of Physiology

JAMES S. McCARTNEY, JR., B.A., M.D., Assistant Professor of Pathology

JESSE F. McCLENDON, Ph.D., Professor of Physiology

EVERETT E. MACGIBBON, D.D.S., Associate Professor of Oral Surgery

HERMAN A. MAVES, D.D.S., Professor of Oral Surgery and Chairman of the Division of Oral Surgery

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WILLIAM C. NAEGELI, D.D.S., Assistant Professor of Operative Dentistry

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MARK O. PATTRIDGE, D.D.S., Associate Professor of Operative Dentistry

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- LEHMAN WENDELL, B.S., D.D.S., Assistant Professor of Orthodontia and Prosthetic Dentistry
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- DANIEL E. ZISKIN, D.D.S., Assistant Professor of Oral Surgery
- RALPH L. DOWDELL, Met.E., M.S., Instructor in Metallography
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- BERYL S. GREEN, M.A., Instructor in Bacteriology
- AMBERT B. HALL, D.D.S., Instructor in Oral Anatomy and Crown and Bridge Work
- 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
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- HELEN M. KEPLER, M.A., M.D., Instructor in Anatomy
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- LESTER C. MCCARTHY, D.D.S., Instructor in Crown and Bridge Work
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- EARL W. NELSON, D.D.S., Instructor in Oral Surgery
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- 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

ASSISTANTS

OSCAR B. BERGMAN, B.S., Teaching Fellow in Pathology
 MADELEINE GUILLEMIN, M.A., Teaching Fellow in Bacteriology
 HERMAN H. JENSEN, B.A., M.S., Teaching Fellow in Pharmacology
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 GLENN W. TUTTLE, B.S., Teaching Fellow in Pathology
 MAURICE VISSCHER, B.A., Assistant in Physiology

LECTURERS

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 and Oto-Laryngology
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 OLGA S. HANSEN, B.S., M.D., Instructor in Medicine

RODNEY M. WEST, B.A., Registrar, University of Minnesota, Secretary
 of the Faculty, College of Dentistry, University of Minnesota

GENERAL INFORMATION

For statements of entrance requirements and registration, see the bulletins of general information and of extension work.

For schedule of lectures, announcements, changes in college rules, etc., see bulletin board. The rules for the guidance of students are printed in a separate booklet.

COURSES OFFERED

FIVE-YEAR COURSE

A combined course of one year in the College of Science, Literature, and the Arts, and four years' work in the College of 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. Professional work in the College of Dentistry is regarded as the counterpart of the major sequence which is required of those who complete the course for the bachelor of arts degree in the College of Science, Literature, and the Arts. The work of the third year is to be elected from courses offered in the Arts College subject to the approval of the dean of the College of Dentistry and the dean of the College of Science, Literature, and the Arts.

COMBINED COURSE IN MEDICINE AND DENTISTRY

A combined course leading to the degrees 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 courses 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.

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.

EXTENSION WORK

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. Dentists may thus come into the regular work of the College of Dentistry and pick out such courses or such specialized parts of courses as they actually need. The fees for such special extension courses will be determined in accordance with the amount of work to be taken. The practitioner will in each instance set himself into the work then going on in the College of Dentistry. For information and guidance in the selection of work, the student will consult in advance with the dean of the College of Dentistry. 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. This requirement is made necessary by the fact that registration in this work is limited and not all of the courses are offered each year.

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.

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.

Graduates from accredited dental colleges applying for the degree of doctor of dental surgery from the University of Minnesota must fulfill all entrance and departmental requirements and spend at least one year in residence.

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.

FEES

Tuition fee (per quarter):	
Residents of Minnesota.....	\$60.00
Nonresidents	70.00
Clock hour tuition fee (unclassified 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

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.

* 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.:

<i>Minnesota Daily</i> (per quarter).....	\$0.50
Post-office box (per quarter).....	.20
<i>University Address Book</i>.....	.35

COURSE OF STUDY, 1923-24

FRESHMAN YEAR	Fall Quarter		Winter Quarter		Spring Quarter		Total	
	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
	<hr/> 15 = 352		<hr/> 15 = 352		<hr/> 14 = 341		<hr/> 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
	<hr/> 14½ = 346½		<hr/> 15½ = 379½		<hr/> 14 = 341		<hr/> 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
	<hr/> 18 = 374		<hr/> 18 = 385		<hr/> 17 = 374		<hr/> 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
	<hr/> 17 = 429		<hr/> 17 = 429		<hr/> 17 = 429		<hr/> 51 = 1287	

DEPARTMENTAL STATEMENTS

EXPLANATIONS

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

ANATOMY

Professors CLARENCE M. JACKSON,¹ THOMAS G. LEE; Associate Professor ANDREW T. RASMUSSEN; Instructors HELEN M. KEPLER, SHIRLEY P. MILLER; Teaching Fellows OLIVER J. MOREHEAD, EVERETT ROWLES.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
9f-10w	10	Systematic Anatomy	Fr.	An. Biol. 1-2
11s	5	Anatomy of Head and Neck.	Fr.	An. Biol. 1-2, Anat. 9f-10w
14w	6	Histology and Embryology.	Soph.	An. Biol. 1-2, Anat. 9f-10w-11s

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. Special emphasis laid upon human osteology. 9 hours a week. DR. JACKSON and assistants.

11s. ANATOMY OF THE HEAD AND NECK. Dissection of the human head and neck, with lectures and recitations. 9 hours a week. MR. RASMUSSEN 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. DR. JACKSON, DR. LEE and assistants.

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 MADELEINE GUILLEMIN.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
5f,w,s,su	5	General Bacteriology.	Soph.	10 cr. in chemistry, 10 cr. in biology
102s	3	Special Dental Bacteriology.	Soph.	Bact. 5f

5f,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

¹ Absent on leave, 1923-24.

air, water, milk; relations of bacteria to industries. 99 hours. 51f, special division for dental students. 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. DR. HENRICI and assistants.

CHEMISTRY

Professors PAUL H. M.-P. BRINTON, WILLIAM H. HUNTER; Assistant Professor LEE I. SMITH; Instructors LANDON A. SARVER, ARTHUR E. STOPPEL.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
28s	3	Quantitative Analysis	Fr.	Chem. 11
31f-32w	8	Elem. Organic Chemistry....	Fr.	Chem. 28

- 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. 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. MR. HUNTER, MR. SMITH.

DENTISTRY

Professors ALFRED OWRE, PETER J. BREKHUS, GEORGE M. DAMON, MAX E. ERNST, HENRY S. GODFREY, ROBERT O. GREEN, CHARLES A. GRIFFITH, WILLIAM F. LASBY, HERMAN A. MAVES, ALFRED A. PAGENKOPF, GEORGE W. REYNOLDS, JAMES M. WALLS, OSCAR A. WEISS, AMOS S. WELLS, CHARLES A. WIETHOFF; Associate Professors NORMAN J. COX, CARL O. FLAGSTAD, RAY R. KNIGHT, HARRY C. LAWTON, HAROLD J. LEONARD, JOSEPH M. LITTLE, EVERETT E. MACGIBBON, RICHARD S. MAYBURY, MARK O. PATTRIDGE, WILLIAM A. ROLL, CHARLES E. RUDOLPH, JOSEPH F. SHELLMAN, WILLIAM D. VEHE; Assistant Professors ARCHIBALD BUTTER, OSCAR COOPERMAN, RUDOLPH W. DELTON, JAY M. FREEBURG, LEE A. HARKER, RAYMOND R. HENRY, HOUGHTON HOLLIDAY, THEODORE W. MAVES, GEORGE A. MONTELIUS, WILLIAM C. NAEGELI, HERBERT C. NELSON, ALLEN T. NEWMAN, CARL F. OTTO, PAUL S. PARKER, CARL H. PETRI, CARL W. WALDRON, LEHMAN WENDELL, DANIEL E. ZISKIN; Instructors GEORGE D. ESTES, AMBERT B. HALL, HAROLD G. HECKLER, ROY M. JERNALL, ARTHUR F. JOHNSON, RAYMOND E. JOHNSON, RAYMOND H. LUNDQUIST, LESTER C. MCCARTHY, EARL A. NELSON, EARL W. NELSON, JOHN F. SPRAFKA, FRED

C. THIERS, LOUIS W. THOM, CORA L. UELAND, REUBEN A. ULVESTAD, INGVALD S. VEBLEN, ANDREW J. WEISS, F. DENTON WHITE, HARRY A. YOUNG.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
<i>Division of Oral Anatomy</i>				
11f-12w-				
13s	9	Oral Anatomy.....	Fr.	None
1f-2w-3s	6	Oral Anatomy.....	Fr. dental nurses	None
<i>Division of Crown and Bridge Work</i>				
23s	3	Crown and Bridge Work....	Soph.	Oral Anat. 11f-12w-13s
31f-32w†	4	Crown and Bridge Work....	Jr.	Cr. & Br. 23s
33s	2	Crown and Bridge Work....	Jr.	Cr. & Br. 23s
41f-42w-				
43s†	12	Crown and Bridge Work....	Sr.	Cr. & Br. 31f-32w-33s
2w	2	Dental Laboratory.....	Fr. dental nurses	None
<i>Division of Oral Diagnosis</i>				
32w	1	Oral Diagnosis.....	Jr.	None
41f-42w†	2	Oral Diagnosis.....	Sr.	Oral Diag. 32w
2w	1½	Roentgenology	Fr. dental nurses	None
<i>Division of Operative Dentistry</i>				
21f-22w-				
23s†	6	Operative Dentistry.....	Soph.	Oral Anat. 11f-12w-13s
31f-32w-				
33s†	12	Operative Dentistry.....	Jr.	Oper. Dent. 21f-22w-23s
41f-42w-				
43s†	15	Operative Dentistry.....	Sr.	Oper. Dent. 31f-32w-33s
<i>Division of Orthodontia</i>				
23s	3	Orthodontia	Soph.	None
41f-42w-				
43s†	6	Orthodontia	Sr.	Orth. 23s
<i>Division of Oral Hygiene and Pathology</i>				
31f	2	Oral Hygiene	Jr. dents. & sr. dent. nurses	Bacteriology
33s	3	Oral Pathology	Jr.	Bact. and Path.
1f	2	Oral Pathology	Sr. dental nurses	None
32w,s	1	Periodontia	Jr. dents. & sr. dent. nurses	Oper. Dent. 31f or Prophylaxis 1f-2w-3s
41f,s	1	Periodontia	Jr. dents. & sr. dent. nurses	Per. 32w,s
1f-2w-3s	9	Prophylaxis	Fr. dental nurses	None
4f-5w-6s	6	Prophylaxis	Sr. dental nurses	Prophylaxis 1f-2w-3s

Division of Prosthetic Dentistry

11f-12w-13s	9	Prosthetic Dentistry.....	Fr.	None
21f-22w	6	Prosthetic Dentistry.....	Soph.	Pros. Dent. 11f-12w-13s
31f-32w-33s†	1	Prosthetic Dentistry.....	Jr.	Pros. Dent. 21f-22w
35w-36s†	6	Prosthetic Dentistry.....	Jr.	Pros. Dent. 21f-22w
41f-42w-43s†	6	Prosthetic Dentistry.....	Sr.	Pros. Dent. 31f-32w-33s & 35w-36s

Division of Oral Surgery

32w-33s†	5	Oral Surgery.....	Jr.	Oral Path. 33s
41f-42w-43s†	3	Oral Surgery.....	Sr.	Oral Sur. 32w-33s
45w-46s†	3	Oral Surgery.....	Sr.	None
2w-3s	3½	Oral Surgery.....	Fr. dental nurses	None

Miscellaneous Group

42w-43s†	3	Theses and Seminar.....	Sr.	
9s	2	Theses and Seminar.....	Sr. dental nurses	
1f-3s	3	Dental Assisting.....	Fr. dental nurses	
6s	1	Principles of Dentistry.....	Fr. dental nurses	

NOTE.—Courses numbered from 1 to 10 are courses for dental nurses.
 Those 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 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. DR. DAMON, DR. RUDOLPH, DR. COOPERMAN, DR. HARKER, DR. PETRI, DR. HALL, DR. R. E. JOHNSON.

1f-2w-3s. ORAL ANATOMY. Abbreviation of Course 11f-12w-13s to meet special needs of dental nurses. 132 hours. DR. HARKER, DR. HALL.

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. DR. WELLS, DR. REYNOLDS, DR. HALL, DR. LUNDQUIST, DR. MCCARTHY, DR. EARL 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. DR. WELLS, DR. REYNOLDS, DR. HALL, DR. LUNDQUIST, DR. MCCARTHY, DR. EARL A. NELSON.

- 33s. CROWN AND BRIDGE WORK. A clinical course covering the simpler forms of crowns and bridges. 66 hours. DR. WELLS, DR. BREKHUS, DR. PAGENKOPF, DR. ROLL, DR. H. C. NELSON, DR. T. W. MAVES, DR. OTTO, DR. HALL.
- 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. DR. WELLS, DR. BREKHUS, DR. PAGENKOPF, DR. ROLL, DR. H. C. NELSON, DR. T. W. MAVES, DR. OTTO.
- 2w. DENTAL LABORATORY. A technic course in the manipulation of investments, waxes, metals, and porcelain as used in the dental office laboratory. 66 hours. DR. LUNDQUIST.

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.
• DR. BREKHUS, DR. KNIGHT, DR. HOLLIDAY, DR. MONTELIUS, DR. NEWMAN.
- 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 lecture hours, 33 clinical hours. DR. BREKHUS, DR. KNIGHT, DR. HOLLIDAY, DR. MONTELIUS, DR. NEWMAN, DR. ZISKIN.
- 2w. ROENTGENOLOGY. Course for dental nurses. 33 hours. DR. HOLLIDAY and assistants.

DIVISION OF OPERATIVE DENTISTRY

- 21f-22w-23s.† OPERATIVE DENTISTRY. A course of lectures, recitations, demonstrations, and laboratory work. 198 hours. DR. R. O. GREEN, DR. BUTTER, DR. SPRAFKA, DR. THIERS, DR. THOM.
- 31f-32w-33s.† OPERATIVE DENTISTRY. A course of 33 lecture and recitation hours and 297 clinical hours. DR. WALLS, DR. SHELLMAN, DR. BUTTER, DR. FREEBURG, DR. NAEGELI, DR. PARKER, DR. ESTES, DR. SPRAFKA, DR. THIERS, DR. THOM.
- 41f-42w-43s.† OPERATIVE DENTISTRY. A course of 33 lecture and recitation hours and 396 clinical hours. DR. WALLS, DR. GODFREY, DR. COX, DR. LITTLE, DR. MAYBURY, DR. PATTRIDGE, DR. SHELLMAN, DR. VEHE, DR. HENRY, DR. NAEGELI, DR. PARKER.

DIVISION OF ORTHODONTIA

- 23s. ORTHODONTIA. A course of lectures, recitations, and laboratory work in the making of regulating appliances. 99 hours. 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. DR. O. A. WEISS, DR. ERNST, DR. LASBY, DR. FLAGSTAD.

DIVISION OF ORAL HYGIENE AND PATHOLOGY

- 31f. **ORAL HYGIENE.** Lectures and recitations on general and oral hygiene. 22 hours. DR. LEONARD.
- 33s. **ORAL PATHOLOGY.** Lectures and recitations on the special pathology of the teeth and other oral tissues. 33 hours. DR. LEONARD.
- 1f. **ORAL PATHOLOGY.** A somewhat abbreviated course on the foregoing, especially adapted for dental nursing students. 22 hours. 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. DR. LEONARD, DR. WALDRON, DR. R. E. JOHNSON, DR. VELEN.
- 41f,s. **PERIODONTIA.** A continuation of Course 32. 33 hours.
- 4f-5w-6s. **PROPHYLAXIS.** A continuation of Course 1f-2w-3s, Prophylaxis, given in the schools and hospitals of the Twin Cities, for dental nursing students. 198 hours. DR. ZISKIN, MISS UELAND, DR. WHITE.
- 1f-2w-3s. **PROPHYLAXIS.** Theory and practice in the technic and application of dental prophylaxis and oral hygiene, for dental nursing students. 207 hours. MISS UELAND.

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 lecture and recitation hours, 198 laboratory hours. 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. 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. DR. O. A. WEISS.
- 35w-36s.† **PROSTHETIC DENTISTRY.** Clinical practice in denture work. 132 hours. DR. LASBY, DR. FLAGSTAD, DR. JERNALL, DR. ULVESTAD.

- 41f-42w-43s.† PROSTHETIC DENTISTRY. A course of clinical work in special prosthesis, cleft palate, and facial restorations. 198 hours. DR. LASBY, DR. O. A. WEISS, DR. FLAGSTAD, DR. JERNALL, DR. ULVESTAD, DR. A. J. WEISS, DR. YOUNG.

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. DR. H. A. MAVES, DR. GRIFFITH, DR. WIETHOFF, DR. MACGIBBON, DR. HOLLIDAY, DR. NEWMAN, DR. WALDRON, 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. DR. WALDRON.
- 45w-46s.† 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. DR. H. A. MAVES, DR. GRIFFITH, DR. WALDRON, DR. ZISKIN, and assistants.
- 2w-3s. ORAL SURGERY. Surgical assisting and nitrous oxide anesthesia. 11 lecture hours and 99 practice hours for dental nurses. Oral Surgery staff.

MISCELLANEOUS GROUP

- 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. DR. OWRE, DR. ERNST, DR. HAMILTON, DR. LITZENBERG, DR. MURRAY, DR. S. MARX WHITE, DR. FAHR, DR. BOYD S. GARDNER, DR. E. L. GARDNER, DR. LAVAKE, DR. RIZER, DR. MEISSER, DR. HANSEN.
- 9s. A thesis, seminar, and lecture course. A conference course in the theory and practice of dentistry, for dental nursing students 22 hours. DR. OWRE.
- 1f-3s. DENTAL ASSISTING. A course of lectures, demonstrations, and practice in assisting the dentist at the chair, for dental nursing students. 99 hours. Arranged by MISS UELAND.
- 6s. PRINCIPLES OF DENTISTRY. A course of lectures on the principles of dentistry, for dental nursing students. 22 hours. Arranged by DR. LEONARD.

METALLOGRAPHY

Professor OSCAR E. HARDER; Instructors RALPH L. DOWDELL, CLAYTON M. REASONER.

COURSE

No.	Credits	Title	Offered to	Prerequisite courses
1598	2	Dental Metallography.....	Jr.	Quant. chem.

1598. 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. MR. HARDER, MR. DOWDELL, MR. REASONER.

MILITARY SCIENCE AND TACTICS

Assistant Professor FREDERICK R. WUNDERLICH, Major, Dental Corps, U.S.A.

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 Advance 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. 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

Professors ELEXIUS T. BELL; Assistant Professors BENJAMIN J. CLAWSON, JAMES S. MCCARTNEY, JR.; Instructor WILLIAM A. O'BRIEN; Teaching Fellows OSCAR B. BERGMAN, GLENN W. TUTTLE.

COURSE

No.	Credits	Title	Offered to	Prerequisite courses
4f	9	General and Special Pathology	Jr.	Gross anat., histol.

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. DR. CLAWSON and assistants.

PHARMACOLOGY

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

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
4w	4	Pharmacology	Jr.	.....
6w	1	Experimental Pharmacology	Jr.	.....

4w. **PHARMACOLOGY.** The history, origin, nature, pharmaceutical preparations, and use of drugs, including the discussion of their physiologic, pharmacologic, and therapeutic actions. 44 hours. 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. DR. HIRSCHFELDER, DR. BROWN, MR. JENSEN.

PHYSIOLOGY

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

COLLEGE OF DENTISTRY

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
57f,su	4	Physiologic Chemistry.....	Soph.	Biology 1, 2 or 5, 6, 7; Chemistry 1, 2, 3, or 4, 5
58w,su- 59s,su	8	Human Physiology.....	Soph.	Biology 1, 2 or 5, 6, 7; Chemistry 1, 2, 3, or 4, 5

57f,su. **PHYSIOLOGIC CHEMISTRY.** An intermediate course. The components of the animal body; foods, digestion, the excreta, and metabolism. 66 hours. MR. 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. DR. LYON, MR. SCOTT, DR. GREISHEIMER, and assistants.

SURGERY

Professor ARTHUR C. STRACHAUER; Assistant Professor ANGUS L. CAMERON.

COURSE

No.	Credits	Title	Offered to	Prerequisite courses
52s	2	Principles of Surgery.....	Jr.	.....

52s. **PRINCIPLES OF SURGERY.** A study of the various surgical inflammations and processes; pathology and treatment. Principles underlying general surgical procedures as applied in dental practice. 22 hours. DR. CAMERON.

ALUMNI ASSOCIATION OF THE COLLEGE OF DENTISTRY

President, O. DEFOREST DAVIS
Secretary-Treasurer, LOUIS W. THOM

*The Bulletin
of the University of
Minnesota*

*The School for Dental Nurses
Announcement for the Year
1923-1924*



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1923							1924													
JULY							JANUARY							JULY						
Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa
1	2	3	4	5	6	7	..	..	1	2	3	4	5	..	..	1	2	3	4	5
8	9	10	11	12	13	14	6	7	8	9	10	11	12	6	7	8	9	10	11	12
15	16	17	18	19	20	21	13	14	15	16	17	18	19	13	14	15	16	17	18	19
22	23	24	25	26	27	28	20	21	22	23	24	25	26	20	21	22	23	24	25	26
29	30	31	..	..	..	..	27	28	29	30	31	..	..	27	28	29	30	31	..	..
..
AUGUST							FEBRUARY							AUGUST						
..	..	..	1	2	3	4	..	..	..	..	..	1	2	..	..	..	..	..	1	2
5	6	7	8	9	10	11	3	4	5	6	7	8	9	3	4	5	6	7	8	9
12	13	14	15	16	17	18	10	11	12	13	14	15	16	10	11	12	13	14	15	16
19	20	21	22	23	24	25	17	18	19	20	21	22	23	17	18	19	20	21	22	23
26	27	28	29	30	31	..	24	25	26	27	28	29	..	24	25	26	27	28	29	30
..	..	..	..	..	..	..	..	..	..	..	..	..	..	31	..	..	..	..	..	..
SEPTEMBER							MARCH							SEPTEMBER						
..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	2	3	4	5	6	
2	3	4	5	6	7	8	2	3	4	5	6	7	8	7	8	9	10	11	12	13
9	10	11	12	13	14	15	9	10	11	12	13	14	15	14	15	16	17	18	19	20
16	17	18	19	20	21	22	16	17	18	19	20	21	22	21	22	23	24	25	26	27
23	24	25	26	27	28	29	23	24	25	26	27	28	29	28	29	30	..	..	..	..
30	..	..	..	..	..	..	30	31	..	..	..	..	..	..	..	..	..	..	..	..
OCTOBER							APRIL							OCTOBER						
..	1	2	3	4	5	6	..	1	2	3	4	5	..	..	..	1	2	3	4	
7	8	9	10	11	12	13	6	7	8	9	10	11	12	5	6	7	8	9	10	11
14	15	16	17	18	19	20	13	14	15	16	17	18	19	12	13	14	15	16	17	18
21	22	23	24	25	26	27	20	21	22	23	24	25	26	19	20	21	22	23	24	25
28	29	30	31	..	..	..	27	28	29	30	..	..	..	26	27	28	29	30	31	..
..
NOVEMBER							MAY							NOVEMBER						
..	4	5	6	7	8	9	..	..	..	..	1	2	3	..	..	..	..	..	..	1
11	12	13	14	15	16	17	4	5	6	7	8	9	10	2	3	4	5	6	7	8
18	19	20	21	22	23	24	11	12	13	14	15	16	17	9	10	11	12	13	14	15
25	26	27	28	29	30	..	18	19	20	21	22	23	24	16	17	18	19	20	21	22
..	..	..	..	..	..	..	25	26	27	28	29	30	31	23	24	25	26	27	28	29
..	..	..	..	..	..	..	..	..	..	..	..	..	..	30	..	..	..	..	..	..
DECEMBER							JUNE							DECEMBER						
..	2	3	4	5	6	7	1	2	3	4	5	6	7	..	1	2	3	4	5	6
9	10	11	12	13	14	15	8	9	10	11	12	13	14	7	8	9	10	11	12	13
16	17	18	19	20	21	22	15	16	17	18	19	20	21	14	15	16	17	18	19	20
23	24	25	26	27	28	29	22	23	24	25	26	27	28	21	22	23	24	25	26	27
30	31	..	..	..	..	..	29	30	..	..	..	..	..	28	29	30	31	..	..	..
..

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 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
May	15	Thursday	Senate meeting, 4:30 p.m.

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

SCHOOL FOR DENTAL NURSES

May	15	Thursday	Cap and Gown Day Convocation
May	30	Friday	Memorial Day; a holiday
June	15	Sunday	Baccalaureate service
June	13-17		Final examination period
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

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 (\$10.00) 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 examination 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 (\$1.00) 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 (\$5.00) 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 removing 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 (\$20.00) 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 examination 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 Chair-
man of the Department of Psychology
ESTHER GREISHEIMER, Ph.D., M.D., Assistant Professor of Physiology
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
¹CLARENCE 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
ELIAS P. LYON, Ph.D., M.D., Professor of Physiology and Director of the
Department of Physiology
WYLLIE B. MCNEAL, B.S., M.A., Professor of Home Economics and Chief
of the Division of Home Economics
HERMAN A. MAVES, D.D.S., Professor of Oral Surgery and Chairman of
the Division of Oral Surgery

¹ Absent on leave, 1923-24.

* 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.

- ALLEN NEWMAN, M.Sc., D.D.S., Assistant Professor of Oral Surgery and Superintendent of the Infirmary
- J. ANNA NORRIS, M.D., Professor of Physical Education for Women and Director of Health and Physical Education for Women
- LOUISE M. POWELL, R.N., Associate Professor of Nursing and Director of the School of Nursing
- 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., Assistant Professor of Oral Hygiene and Pathology
- 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
- HERVEY H. BARBER, B.A., Instructor in Chemistry
- RUTH E. BOYNTON, B.A., M.D., Instructor in Preventive Medicine and Public Health
- FLORENCE FELTHAMMER, R.N., Instructor in Oral Surgery
- HALLY J. FISHER, R.N., Instructor in Preventive Medicine and Public Health
- BERYL S. GREEN, M.A., Instructor in Bacteriology and Immunology
- AMBERT B. HALL, D.D.S., Instructor in Oral Anatomy and Crown and Bridge Work
- RAYMOND E. JOHNSON, D.D.S., Instructor in Oral Hygiene and Pathology
- RAYMOND H. LUNDQUIST, D.D.S., Instructor in Crown and Bridge Work
- SHIRLEY P. MILLER, Ph.D., Instructor in Anatomy
- DAVID O. SPRIESTERSBACH, M.S., Instructor in Bacteriology and Immunology
- CORA L. UELAND, M.A., Instructor in Oral Hygiene and Pathology and Supervisor of School for Dental Nurses
- INGVALD VEBLEN, D.D.S., Instructor in Oral Hygiene and Pathology
- F. DENTON WHITE, D.D.S., Instructor in Oral Hygiene and Pathology
- HELEN MARSH, 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 the 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 the 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 1923-24 will begin September 26, 1923. 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 (\$10.00) 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 the University before the beginning of the spring quarter of the freshman year. High school chemistry will also be an entrance requirement beginning with the fall of 1924. 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.

FEEES

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
Examinations for credit (after first six weeks in residence).....	5.00
Special examinations	5.00
Chemistry deposit	5.00

* 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.:

<i>Minnesota Daily</i> , per quarter.....	\$0.50
Post-office box, per quarter.....	0.20
<i>University Address Book</i>	0.35

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.

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 insofar 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. The list of instruments and tools will be needed at the beginning of the freshman year. It will cost approximately thirty dollars. Some few textbooks also will be required.

ELECTIVES

Electives are any university subjects outside the prescribed course of study of the school. Students should consult the superintendent before registering for their electives. No elective should be chosen which greatly exceeds the credit value of the time and credit reserved for it.

COURSE OF STUDY, YEAR 1923-24

FRESHMAN YEAR

Number	Subject	Department	Fall Quarter		Winter Quarter		Spring Quarter		Total		Prerequisites	Teacher
			Hours*	Credits†	Hours	Credits	Hours	Credits	Hours	Credits		
3f	Elementary Anatomy	Anatomy	33	3					33	3	None	Dr. Miller
18f,w,s,su	Elementary Chemistry	Chemistry	33	2½					33	2½	None	Mr. Barber
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	33	1			66	2	99	3	None	Miss Ueland
95Nf-96Ns	Office Practice	Business	33	2			33	2	66	4	Typewriting	Miss Marsh
31f	Oral Hygiene	Dentistry	22	2					22	2	None	Dr. Leonard
1f-2w-3s	Elem. Physical Training	Physical Education	33	¾	33	¾	33	¾	99	2	None	Ar. by Dr. Morris
4f,w,s,su	Elementary Physiology	Physiology			88	5			88	5	Chem. 18 Anat. 3	Dr. Beard
2w-3s	Surgical Assisting and Anesthetics	Dentistry										
2w	Dental Laboratory	Dentistry			55	2	44	1½	99	3½	None	Miss Felthammer
2w	Dental Roentgenology	Dentistry			66	2			66	2	None	Dr. Lundquist
1f,w,s,su	Elementary Bacteriology	Bacteriology			33	1½			33	1½	None	Dr. Holliday
6s	Principles of Dentistry	Dentistry					66	4	66	4	None	Mrs. Green
							22	1	22	1	None	Ar. by Dr. Leonard
		Total	330	16½	418	16½	407	16½	1155	48½		

SENIOR YEAR

4f,w,s	Composition for Technical Students	English	33	3	33	3	33	3	99	9	None	Ar. by Mr. Thomas
5f,w,s		Dentistry	66	2	66	2	66	2	198	6	Proph. 1-2-3	Miss Ueland
6f,w,s		Dentistry			33	1	33	1	66	2	Proph. 1-2-3	Dr. Leonard
4f-5w-6s	Prophylaxis	Dentistry										
32w,s-41f,s	Periodontia Technic	Dentistry			33	1	33	1	66	2		Ar. by Mr. Chapin
1f,w,s	Introduction to Sociology	Sociology			55	5			55	5	None	Ar. by Mr. Elliott
1f-2w	General Psychology	Psychology	33	3	33	3			66	6	None	Ar. by Mr. Elliott
1f	Oral Pathology	Dentistry	22	2					22	2	None	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
25s	Food and Nutrition	Home Economics					55	3	55	3	Chem. 18	Miss Child
	Elective		22	2	11	1	11	1	44	4		
		Total	231	15	231	15	253	15	715	45		

* 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.

DEPARTMENTAL STATEMENTS

ANATOMY

Professor CLARENCE M. JACKSON,¹ Director; Instructor SHIRLEY P. MILLER.

- 3f. 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

Professor WINFORD P. LARSON, Director; Instructors BERYL S. GREEN, DAVID O. SPRIESTERSBACH.

- 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. Six hours a week for one quarter. MRS. GREEN, MR. SPRIESTERSBACH.

BUSINESS

Professor GEORGE W. DOWRIE, Dean; Teaching Fellow HELEN MARSH.

- 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 MARSH.
- 96Ns. OFFICE PRACTICE. A continuation of Course 95Nf.

CHEMISTRY

Associate Professor M. CANNON SNEED, Head; Instructor HERVEY H. BARBER.

- 18f,w,s,su. ELEMENTARY CHEMISTRY. A brief study of matter and energy; of chemical and physical changes; the fundamental laws of chemistry; chemical elements and compounds; the qualitative and quantitative composition of foods, air, and water. Three hours a week for one quarter. MR. BARBER.

DENTISTRY

ORAL ANATOMY

Professor GEORGE M. DAMON, Chairman; Assistant Professor LEE A. HARKER; Instructor AMBERT B. HALL.

- 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, DR. HALL.

¹ Absent on leave, 1923-24.

CROWN AND BRIDGE

Professor AMOS S. WELLS, Chairman; Instructor RAYMOND H. LUNDQUIST.

- 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. Six hours a week for one quarter. DR. LUNDQUIST.

ORAL DIAGNOSIS

Professor PETER J. BREKHUS, Chairman; Assistant Professor HOUGHTON HOLLIDAY.

- 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

Associate Professor HAROLD J. LEONARD, Chairman; Assistant Professors CARL W. WALDRON, DANIEL E. ZISKIN; Instructors RAYMOND E. JOHNSON, CORA L. UELAND, INGWALD VEBLEN, F. DENTON WHITE.

- 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 dental histology. Two 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.
- 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, DR. VEBLEN.
- 41f,s. PERIODONTIA. A continuation of Periodontia 32.

ORAL SURGERY

Professor HERMAN A. MAVES, Chairman; Instructor FLORENCE FELTHAMMER; Teaching Fellow WALTER V. MCGILVRA.

2w-3s. SURGICAL ASSISTING AND ANESTHETICS. Lectures and practice in administering anesthetics and assisting in oral surgical operations. One hour a week lectures for one quarter and four hours a week practice for two quarters. MISS FELTHAMMER, MR. MCGILVRA, and members of the Oral Surgery staff.

THESIS AND SEMINAR, MISCELLANEOUS LECTURES, ETC.

Professor ALFRED OWRE, Chairman.

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

Professor JOSEPH M. THOMAS, Chairman; Associate Professor FRANK M. RARIG.

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

Professor WYLLE MCNEAL, Chief; Assistant Professor ALICE M. CHILD.

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

Professor J. ANNA NORRIS, Director.

1f-2w-3s. ELEMENTARY PHYSICAL TRAINING. Lighter forms of gymnastics, apparatus work, orthopedic exercise, folk dancing, indoor and outdoor games. Individual health consultations. Arranged by DR. NORRIS and staff.

PHYSIOLOGY

Professor ELIAS P. LYON, Director; Associate Professor RICHARD O. BEARD; Assistant Professor ESTHER GREISHEIMER.

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

Assistant Professor HAROLD S. DIEHL, Director; Instructors RUTH BOYNTON, HALLY J. FISHER.

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, MISS FISHER.

PSYCHOLOGY

Associate Professor RICHARD M. ELLIOTT, Chairman.

COURSES

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

Professor F. STUART CHAPIN, Chairman.

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
1923-1924



Vol. XXVI No. 20 June 12 1923

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UNIVERSITY CALENDAR

1923-24

1923			
September	12	Wednesday	Sophomores, School of Mines, report for military drill, 8:30 a.m.
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	Tuesday	Juniors and seniors, School of Mines, report for completion of field work
September	24-25		Registration days
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
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

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

SCHOOL OF MINES

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

Program of Supplementary Examinations

Friday,	Sept. 21	9-12 a.m.	Physics
		2-5 p.m.	Chemistry, experimental engineering
Saturday,	Sept. 22	9-12 a.m.	Mathematics and mechanics
		2-5 p.m.	Drawing and descriptive geometry
Monday,	Sept. 24	9-12 a.m.	Metallurgical subjects
		2-5 p.m.	Electric power
Tuesday,	Sept. 25	9-12 a.m.	Geology and mineralogy
		2-5 p.m.	Mining and mining engineering subjects

THE SCHOOL OF MINES

FACULTY

- LOTUS DELTA COFFMAN, Ph.D., LL.D., President
WILLIAM WATTS FOLWELL, LL.D., President Emeritus
WILLIAM R. APPLEBY, M.A., Dean, and Professor of Metallurgy
FRANCIS B. BARTON, Docteur de l'Université de Paris, Assistant Professor
of Romance Languages
PAUL H. M.-P. BRINTON, Ph.D., Professor of Chemistry
ANDERS J. CARLSON, C.E., Assistant Professor of Mine Plant and Me-
chanics
PETER CHRISTIANSON, B.S., E.M., Professor of Metallurgy
ELTING H. COMSTOCK, M.S., Professor of Mine Plant and Mechanics
MYRON J. CONWAY, First Lieutenant, Infantry, U.S.A., Assistant Professor
of Military Science and Tactics
WILLIAM H. EMMONS, Ph.D., Professor of Geology and Mineralogy
HENRY A. ERIKSON, Ph.D., Professor of Physics
LEO J. FARRELL, Captain, Infantry, U.S.A., Assistant Professor of Mil-
itary Science and Tactics
JULES FRELIN, B.A., Assistant Professor of Romance Languages
JOSEPH E. GILLET, Ph.D., Assistant Professor of Romance Languages
FRANK F. GROUT, Ph.D., Professor of Geology and Mineralogy
VERNON W. HALL, Captain, Coast Artillery Corps, U.S.A., Assistant Pro-
fessor of Military Science and Tactics
OSCAR E. HARDER, Ph.D., Associate Professor of Metallography
*WILLIAM H. KIRCHNER, B.S., Professor of Drawing and Descriptive
Geometry
RAYMOND E. KIRK, M.S., Assistant Professor of Chemistry
SAMUEL KROESCH, Ph.D., Assistant Professor of German
EDWIN M. LAMBERT, M.E., Professor of Mining Engineering
IRVILLE C. Lecompte, Ph.D., Professor of Romance Languages
LOUALLEN F. MILLER, Ph.D., Assistant Professor of Physics
HOWARD D. MYERS, B.S. in C.E., Assistant Professor of Drawing and
Descriptive Geometry
EVERETT W. OLMSTED, Ph.D., Litt.D., Professor of Romance Languages
EUGENE F. PARKER, Ph.D., Assistant Professor of Romance Languages
WALTER H. PARKER, E.M., Associate Professor of Mining
LEVI B. PEASE, M.S., Professor of Metallurgy
*RUTH S. PHELPS, M.A., Associate Professor of Romance Languages
BURTON J. ROBERTSON, E.E., Assistant Professor of Mechanical Engineering
HAL M. ROSE, First Lieutenant, Cavalry, U.S.A., Assistant Professor of
Military Science and Tactics
FRANK B. ROWLEY, M.E., Professor of Mechanical Engineering

* On leave, 1923-24.

HENRY H. RUTHERFORD, B.A., M.D., Lieutenant Colonel, Medical Corps,
U.S.A., Assistant Professor of Military Science and Tactics

WILLIAM T. RYAN, E.E., Associate Professor of Electrical Engineering

JAMES C. SANDERSON, Ph.D., Assistant Professor of Mine Plant and
Mechanics

CARL SCHLENKER, B.A., Professor of German

COLBERT SEARLES, Ph.D., Professor of Romance Languages

GEORGE D. SHEPARDSON, M.A., M.E., D.Sc., Professor of Electrical Engi-
neering

CHARLES F. SHOOP, B.S., Associate Professor of Mechanical Engineering

CHARLES F. SIDENER, B.S., Professor of Chemistry

EDWARD H. SIRICH, Ph.D., Assistant Professor of Romance Languages

M. CANNON SNEED, Ph.D., Associate Professor of Chemistry

NEWTON W. SPEECE, Captain, Infantry, U.S.A., Assistant Professor of
Military Science and Tactics

CLINTON R. STAUFFER, Ph.D., Professor of Geology

GIRARD STURTEVANT, Colonel, Infantry, U.S.A., Professor of Military
Science and Tactics

ANDREW C. TYCHSEN, Captain, Infantry, U.S.A., Assistant Professor of
Military Science and Tactics

LEE R. WATROUS, JR., Major, Coast Artillery Corps, U.S.A., Assistant
Professor of Military Science and Tactics

JAMES T. WATSON, JR., Captain, Signal Corps, U.S.A., Assistant Pro-
fessor of Military Science and Tactics

FREDERICK R. WUNDERLICH, D.D.S., Major, Dental Corps, U.S.A., As-
sistant Professor of Military Science and Tactics

ANTHONY ZELENY, Ph.D., Professor of Physics

IRA S. ALLISON, B.A., Instructor in Geology and Mineralogy

CHARLES BOEHNLEIN, B.S., M.E., Instructor in Mathematics and Me-
chanics

ALFRED BRANDT, Technical Sergeant, Instructor in Military Science and
Tactics

HENRY W. BROWN, Sergeant, Instructor in Military Science and Tactics

RALPH L. DOWDELL, Met.E., M.S., Instructor in Metallography

LYNWOOD G. DOWNS, M.A., Instructor in German

AUBREY R. DUNKUM, Staff Sergeant, Instructor in Military Science and
Tactics

JOHN W. GRUNER, Ph.D., Instructor in Geology

JOSEPH HAVLICEK, Regimental Commissary Sergeant, Instructor in Military
Science and Tactics

LOUIS S. HEILIG, E.M., Instructor in Mining

ERWIN H. KERSTEN, E.M., Instructor in Metallurgy

CLARENCE G. LANGE, Sergeant, Instructor in Military Science and Tactics

THOMAS S. LOVERING, E.M. in Geol., Instructor in Geology

EDMUND T. McCANN, Sergeant, Instructor in Military Science and Tactics

JOHN McWILLIAMS, First Sergeant, Instructor in Military Science and
Tactics

ERNEST R. MYLK, Private First Class, Special Fourth Class, Instructor in
Military Science and Tactics

NORVILLE C. PERVIER, M.S., Instructor in Chemistry

ORRIN W. POTTER, E.M., Instructor in Drawing and Descriptive Geometry

CLAYTON M. REASONER, M.E., Instructor in Metallography

LONDON A. SARVER, M.A., Instructor in Chemistry

GEORGE M. SCHWARTZ, Ph.D., Instructor in Geology and Mineralogy

ELWYN L. SMITH, B.S., Instructor in Metallurgy

HARRY E. STRIDER, Technical Sergeant, Instructor in Military Science and
Tactics

GEORGE W. SWENSON, B.S. in E.E., Instructor in Electrical Engineering

GEORGE A. THIEL, M.A., Instructor in Geology and Mineralogy

ROBERT M. THURSTON, Sergeant, Instructor in Military Science and Tactics

JOE WEIR, Sergeant, Instructor in Military Science and Tactics

ELIZABETH B. HENDERSON, Librarian

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, and 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 mechanics, mathematics, 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.

SCHOOL OF MINES

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 unclassified 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 departments 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.

* 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.:

<i>Minnesota Daily</i> (per quarter).....	\$0.50
Post-office box (per quarter).....	.20
<i>University Address Book</i>.....	.35

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 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, Tuesday, September 18, 1923, each student is required to submit to the department concerned an outline embodying the principal features of the project, together with a 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 failures.

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 15 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. 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 23f, Elements of Mineralogy, 8

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 24w, Elements of Mineralogy, 4, Geol. 23f

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 25s, Elements of Mineralogy, 8, Geol. 24w

Military Science 1, Basic Course, R.O.T.C., 3

* 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.

SOPHOMORE YEAR

First Quarter

Drawing 14f, Descriptive Geometry, 3, Draw. 13s, Math. 5s
 Geology 105f, Rock Study, 4, Geol. 25s
 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, or 2c, Basic Course. R.O.T.C.

Work in military science and tactics for sophomores will open on Wednesday, Sept. 12. at 8:30 a.m., and continue for ten days. Satisfactory completion of Course 2a, 2b, or 2c, at that time is required of all sophomores. This course applies only to sophomores who are required to leave the following May 1 for field work.

Second Quarter

Chemistry 28w, Quantitative Analysis, 8, Chem. 16s
 Drawing 15w, Drafting, 4, Draw. 14f
 Geology 1w, General, 3, Geol. 105f
 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

Third Quarter

Geology 2s, General, 7, Geol. 105f
 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
 Mining Engineering 4s, Field Work beginning about May 1, 7 weeks,
 Min. Eng. 3s
 Geology 85, Field Work beginning about June 20, 2 weeks, Geol. 2s
 Underground Mining Work, beginning about July 5

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. 12f
 Geology 73f, Economic, 3, Geol. 2s, 105f
 Mechanics 9f, Mechanics, 5, Math. 8s

Mechanics 12f, Mine Plant, 6, Math. 8s
 Metallurgy 105f, Base Metals, 4, Met. 3f
 Metallurgy 12f, Ore-Dressing, 3, Phys. 43s, Geol. 25s
 Mining 30f, First Aid, 1 week
 Mining 31f, Exploration, 5, Mining 21s

Second Quarter

Experimental Engineering, M. & M. 144w, Materials-Testing Lab., 4, with
 Mech. 10w
 Mechanics 10w, Mechanics of Materials, 5, Mech. 9f
 Mechanics 13w, Mine Plant, 6, Mech. 12f
 Metallurgy 106w, Base Metals, 4, Met. 105f
 Metallurgy 13w, Ore-Dressing, 3, Met. 12f
 Mining 32w, Tunneling, 5, Mining 31f
 Mining Engineering 5w, Mine-Mapping, 6, Min. Eng. 4s

Third Quarter

Mechanics 11s, Mechanics of Materials, 5, Mech. 10w
 Mechanics 14s, Mine Plant, 6, Mech. 13w
 Metallurgy 107s, Precious Metals, 4, Met. 106w
 Metallurgy 17s, Ore-Dressing Lab., 6, Met. 13w
 Mining 33s, Mining Methods, 5, Mining 32w
 Mining Engineering 6s, Mine-Mapping, 6, Min. Eng. 5w
 Metallurgy 21s, Field Work in Metallurgy beginning about May 1, 10
 days, satisfactory completion of junior year
 Mining 34s, 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 17f, Water Power, 7, Mech. 11s
 Mechanics 18f, Engineering Construction, 8, Mech. 11s
 Metallurgy 6f, Ore-Testing, 2, Met. 107s
 Metallurgy 7f, Ore-Testing Lab., 8, Met. 107s
 Mining 41f, Mining Methods, 5, Mining 33s
 Mining 40f, Mine Rescue, 1 week
 Mining 44f, Thesis, 2, Mining 33s

Second Quarter

Experimental Engineering, M.E., 181w, Advanced Lab., 4, Exp. Eng. M.E.
 84f
 Geology 112w, Petroleum, 3, Geol. 111f
 Geology 80w, Advanced Historical, 3, Geol. 73f
 Mech. 19w, Mine Plant Design, 9, Mech. 18f

Metallurgy 8w, Special Problems, 4, Met. 107s
 Mining 42w, Mine Management, 5, Mining 41f
 Mining 45w, Thesis, 12, Mining 44f

Third Quarter

Geology 113s, Problems in Ore Deposits, 4, Geol. 112w
 Mechanics 20s, Mine Plant Design, 12, Mech. 19w
 Metallurgy 9s, Special Problems, 8, Met. 107s
 Mining 43s, Mine Administration, 5, Mining 42w
 Mining 46s, Thesis, 12, Mining 45w

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 administration, 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, Tuesday, September 18, 1923. 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 18 to 25, inclusive; mining and mine plant, September 26 to October 9, inclusive.

On October 9 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 9. 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. 25s
 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 9f, Mechanics, 5, Math. 8s
 Mining 30f, First Aid, 1 week
 Mining 31f, 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 10w, Mechanics of Materials, 5, Mech. 9f
 Mining 32w, Tunneling, 5, Min. 31f
 Mining Engineering 5w, 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 11s, Mechanics of Materials, 5, Mech. 10w
 Mining 33s, Mining Methods, 5, Min. 32w
 Geology 150s, Field Work 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 12f, Ore-Dressing, 3, Phys. 5s, Geol. 25s
 Mining 40f, Mine Rescue, 1 week
 Mining 41f, Mining Methods, 5, Min. 33s
 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, 13s
 Geology 166w, Mineralography, 6, Geol. 111f
 Metallurgy 13w, Ore-Dressing, 3, Met. 12f
 Mining 42w, Mine Management, 5, Min. 41f

Third Quarter

Geology 93s, Paleontology, 3, Geol. 2s
 Geology 113s, Problems in Ore Deposits, 4, Geol. 112w
 Geology 141s, Applied Petrography, 5, Geol. 111f, 13s
 Geology 167s, Mineralography, 6, Geol. 111f
 Metallurgy 17s, Ore-Dressing Lab., 6, Met. 13w
 Thesis, 10

FIELD WORK IN GEOLOGY

At the end of the sophomore year mining students are required to devote about three 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, Tuesday, September 18, 1923. 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 25.

COURSES LEADING TO THE DEGREE OF METALLURGICAL ENGINEER

JUNIOR YEAR

First Quarter

Geology 73f, Economic. 3. Geol. 2s. 105f
 Mechanics 9f, Mechanics, 5, Math. 8s
 Mechanics 12f, Mine Plant, 6, Math. 8s
 Metallurgy 12f, Ore-Dressing, 3. Phys. 43s. Geol. 25s
 Metallurgy 14f, Ore-Dressing Lab., 4. Phys. 43s. Geol. 25s
 Metallurgy 105f, Base Metals, 4. Met. 3f
 Metallurgy 153f, Metallography, 7. Chem. 28w. Phys. 43s
 Mining 30f, First Aid, 1 week

Second Quarter

Mechanics 10w, Mechanics of Materials, 5. Mech. 9f
 Mechanics 15w, Metallurgical Plant, 3, Mech. 12f
 Metallurgy 13w, Ore-Dressing, 3. Met. 12f, 14f
 Metallurgy 15w, Ore-Dressing Lab., 4. Met. 12f, 14f
 Metallurgy 106w, Base Metals, 4. Met. 105f
 Metallurgy 154w, Metallography, 7. Met. 153f
 Mining Engineering 5w, Mine-Mapping, 6. Min. Eng. 4s

Third Quarter

Mechanics 11s, Mechanics of Materials, 5, Mech. 10w
 Mechanics 16s, Metallurgical Plant, 3, Mech. 15w
 Metallurgy 16s, Ore-Dressing Lab., 6. Met. 13w, 15w
 Metallurgy 107s, Precious Metals, 4. Met. 106w
 Metallurgy 155s, Metallography, 7. Met. 154w
 Mining Engineering 6s, Mine-Mapping, 6, Min. Eng. 5w
 Metallurgy 21s Field Work in Metallurgy beginning about May 1,
 10 days, satisfactory completion of junior year
 Mining 34s, 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, or
 Mechanics 18f, Engineering Construction, 8, Mech. 11s
 Mechanics 17f, Water Power, 7. 11f
 Metallurgy 6f, Ore-Testing, 2. Met. 107s
 Metallurgy 7f, Ore-Testing Lab., 8, Met. 107s
 Metallurgy 108f, Electrometallurgy, 3. Met. 107s
 Metallurgy 18f, Thesis, 8
 Mining 40f, Mine Rescue, 1 week

Second Quarter

Geology 112w, Petroleum, 3, Geol. 111f, or
 Mechanics 19w, Mine Plant Design, 9, Mech. 18f
 Metallurgy 8w, Special Problems in Ore-Testing, 4, Met. 107s
 Metallurgy 10w, Advanced Metallurgy, 10, Met. 107s
 Metallurgy 19w, Thesis, 18, Met. 18f
 Metallurgy 164w, Advanced Metallography, 3, Met. 155s, or
 Geology 80w, Advanced Historical, 3, Geol. 73f, or
 Mining 42w, Mine Management, 5, Min. 41f

Third Quarter

Metallurgy 9s, Special Problems in Ore-Testing, 8, Met. 107s
 Metallurgy 11s, Advanced Metallurgy, 10, Met. 107s
 Metallurgy, 20s, Thesis, 18, Met. 19w
 Metallurgy 165s, Advanced Metallography, 3, Met. 155s, or
 Geology 113s, Problems in Ore Deposits, 4, Geol. 112w, or
 Mining 43s, Mine Administration, 5, Min. 42w

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 three 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 of 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, Tuesday, September 18, 1923. 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 18 to 25, inclusive; mining and mine plant, September 26 to October 9, inclusive.

On October 9, all seniors who expect to graduate must register for the remaining subjects. Prior to this date the student must submit a type-written 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 9. 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 types. There is a special darkroom 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

Professors PAUL H. M.-P. BRINTON, CHARLES F. SIDENER; Associate Professor M. CANNON SNEED; Assistant Professor RAYMOND E. KIRK; Instructors NORVILLE C. PERVIER, LANTON A. SARVER.

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 seph.	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. KIRK.
- 5w. GENERAL INORGANIC CHEMISTRY. A continuation of Course 4f. MR. KIRK.
- 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. KIRK, MR. PERVIER.
- 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. SIDENER, MR. SARVER.

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. SIDENER, MR. SARVER.

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, MR. SARVER.

DRAWING AND DESCRIPTIVE GEOMETRY

Professor WILLIAM H. KIRCHNER;¹ Assistant Professor HOWARD D. MYERS; Instructor ORRIN W. POTTER.

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.

¹ Absent on leave, 1923-24.

ELECTRICAL ENGINEERING

Professor GEORGE D. SHEPARDSON; Associate Professor WILLIAM T. RYAN; Instructor GEORGE W. SWENSON.

COURSES

No.	Title	Lec. or rec. hrs.	Lab. hrs.	Required of	Prereq. course
41f	Electric Power.....	2	3	Sr.E.M.	Physics 438

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

Professor FRANK B. ROWLEY; Associate Professor CHARLES F. SHOOP; Assistant Professor BURTON J. ROBERTSON; Instructor CHARLES BOEHNLEIN.

COURSES

No.	Title	Lec. or rec. hrs.	Lab. hrs.	Required of	Prereq. courses
M.E. 84f	Elementary Laboratory (General) .....	..	4	Jr. E.M.	With Mech. 12f
M.&M. 144w	Materials-Testing Labora- tory .....	..	4	Jr. E.M.	With Mech. 10w
M.E. 181w	Advanced Laboratory (Gen- eral) .....	..	4	Sr. E.M.	M.E. 84f

M.E.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.

M.&M.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.

M.E.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.

GEOLOGY AND MINERALOGY

Professors WILLIAM H. EMMONS, FRANK F. GROUT, CLINTON R. STAUFFER;
 Instructors IRA S. ALLISON, JOHN W. GRUNER, THOMAS S. LOVERING,
 GEORGE M. SCHWARTZ, GEORGE A. THIEL.

COURSES

No.	Title	Lec. or rec. hrs.	Lab. hrs.	Required of	Prereq. courses
1w	General Geology	3	..	All soph.	105f
2s	General Geology	3	4	All soph.	105f
19s	Elem. of Paleontology.....	3	..	Elective	....
23f	Elem. of Mineralogy.....	4	4	All fr.	....
24w	Elem. of Mineralogy.....	2	2	All fr.	23f
25s	Elem. of Mineralogy.....	4	4	All fr.	24w
61f	Blowpipe Analysis	2	4	Elective	25s
65f	Crystallography	2	4	Elective	25s
73f	Econ. Geology	3	..	All jr.	2s, 105f
80w	Advanced Hist. Geology.....	3	..	Sr.E.M.&Met.E.	73f
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	Principles of Stratigraphy.....	3	..	Elective	25s
105f	Rock Study .....	..	4	All soph.	25s
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
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	Construction and Interpretation of Geologic Maps.....	..	6	Jr.E.M.(Geol.)	73f
145s	Construction and 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

1W-2S. GENERAL GEOLOGY. A synoptical treatment of materials of the earth and of geologic processes. Physiographic, dynamic, structural, and historical geology. MR. THIEL.

19S. ELEMENTS OF PALEONTOLOGY. An introduction to the study of fossil organisms. Lectures supplemented by field excursions. MR. STAUFFER.

- 23f-24w-25s. **ELEMENTS OF MINERALOGY.** The crystal systems; morphological, physical, chemical characters of minerals; occurrence, genesis, and uses of minerals; classifications 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.** Projection and geometric relations of crystal planes; crystal nomenclature; the relation of special properties to morphology. A study of crystal models, crystal-drawing, identification of minerals from crystal measurements, and mathematical calculation. (Not offered in 1923-24.) 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.
- 80w. **ADVANCED HISTORICAL GEOLOGY.** The sequence of events in geologic history, of interest to the advanced student in mining. MR. THIEL.
- 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. **PRINCIPLES OF STRATIGRAPHY.** Origin and structure of sedimentary deposits; the interpretation of these in relation to paleogeography; field work in connection with Cambrian and Ordovician problems. 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, MR. THIEL.
- 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. LOVERING.
- 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.
- 124W-125S. STRUCTURAL AND METAMORPHIC GEOLOGY. The conditions, processes, and results of metamorphism; structural features resulting from deformation under varying conditions of load. 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. CONSTRUCTION AND INTERPRETATION OF GEOLOGIC MAPS. Methods of geologic examination; problems in construction and interpretation of geologic maps and sections. 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 1923, 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-CAMBRIAN GEOLOGY. The problems of pre-Cambrian correlation and structure; the pre-Cambrian stratigraphy of North America. (Given in alternate years.)

GERMAN

Professor CARL SCHLENKER; Assistant Professor SAMUEL KROESCH; In-
structure LYNWOOD DOWNS.

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, conversa-
tion; selected reading in easy prose. MR. KROESCH.

27f. NARRATIVE PROSE FOR CHEMISTS. Reading, grammar review. MR.
DOWNS.

28w-29s. CHEMICAL GERMAN. Selections from more difficult works on
chemistry. MR. DOWNS.

METALLURGY

Professors WILLIAM R. APPLEBY, PETER CHRISTIANSON, LEVI B. PEASE;
Associate Professor OSCAR E. HARDER; Instructors RALPH L. DOWDELL,
ERWIN H. KERSTEN, CLAYTON M. REASONER, ELYWN L. SMITH.

COURSES

No.	Title	Lec. hrs.	Lab. hrs.	Required of	Prerequisite courses
1w	Assaying	4	..	All fr.	Chem. 14f, Geol. 23f
2w	Assaying Lab.....	..	8	All fr.	Chem. 14f, Geol. 23f
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
6f	Ore-Testing	2	..	Sr.E.M.&Met.E.	107s
7f	Ore-Testing Lab.....	..	8	Sr.E.M.&Met.E.	107s
8w	Spec. Prob. in Ore-Test. ..	4	..	Sr.E.M.&Met.E.	107s
9s	Spec. Prob. in Ore-Test. ..	8	..	Sr.E.M.&Met.E.	107s
10w	Advanced Metallurgy... ..	4	6	Sr.Met.E.	107s
11s	Advanced Metallurgy... ..	4	6	Sr.Met.E.	107s
12f	Ore-Dressing	3	..	All jr.	Phys.43s, Geol.25s
13w	Ore-Dressing	3	..	All jr.	Met.12f
14f	Ore-Dressing Lab.....	..	4	Jr.Met.E.	Phys.43s, Geol.25s
15w	Ore-Dressing Lab.....	..	4	Jr.Met.E.	Met.12f, 14f
16s	Ore-Dressing Lab.....	..	6	Jr.Met.E.	Met.13w, 15w
17s	Ore-Dressing Lab.....	..	6	Jr.E.M.&E.M.(Geol.)	Met.13w
18f	Thesis in Metallurgy... ..	..	8	Sr.Met.E.	Satisfactory comple- tion of jr. year
19w	Thesis in Metallurgy... ..	..	18	Sr.Met.E.	18f
20s	Thesis and Specifications ..	..	18	Sr.Met.E.	19w

* All quarters must be completed before credit is given in any one quarter.

COURSES

No.	Title	Lec. or Lab.		Required of	Prereq. courses
		rec. hrs.	hrs.		
21s	Field Work in Met.	**		Jr. Met. E.	Same as 18f
22f	Met. of Base Metals.	3	..	M. E. & chem. elective	Chem. 8s or equiv.
23w	Met. of Base Metals.	3	..	E. E. & chem. elective	Chem. 8s or equiv.
105f	Met. of Base Metals.	4	..	Jr. E. M. & Met. E.	3f
106w	Met. of Base Metals.	4	..	Jr. E. M. & Met. E.	105f
107s	Met. of Precious Metals	4	..	Jr. E. M. & Met. E.	106w
108f	Electrometallurgy	3	..	Sr. Met. E.	107s
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 Metallurgy.	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. Metallurgy			To be ar.	Elective 151, 155, 157 or equiv.
164w	Adv. Metallurgy			To be ar.	Elective
165s	Adv. Metallurgy			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.
- 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.

** Ten days.

- 6f. ORE-TESTING. General principles involved in determining the best method of extraction, including amalgamation, concentration, cyanidation, roasting, etc. Lectures and recitations. MR. CHRISTIANSON.
- 7f. ORE-TESTING LABORATORY. Practical determination of extraction and distribution of values in mill and metallurgical products. Methods of calculation. MR. CHRISTIANSON and assistants.
- 8w. SPECIAL PROBLEMS IN ORE-TESTING. Continuation of Course 7f. Practical determinations for regulating metallurgical operations. MR. PEASE.
- 9s. SPECIAL PROBLEMS IN ORE-TESTING. Continuation of Course 8w. MR. PEASE.
- 10w. ADVANCED METALLURGY. Pyrometry, calorimetry, and metallurgical calculations to determine heat balance and heat distribution. Lectures and laboratory work. MR. CHRISTIANSON.
- 11s. ADVANCED METALLURGY. Design of furnaces, conferences, and laboratory work. MR. CHRISTIANSON.
- 12f. ORE-DRESSING. Crushing, sizing, classification, and concentration of ores. Lectures and recitations. MR. SMITH.
- 13w. ORE-DRESSING. Continuation of Course 12f. MR. SMITH.
- 14f. ORE-DRESSING LABORATORY. Practical examination of ores and the use of ore-dressing machinery. MR. SMITH.
- 15w. ORE-DRESSING LABORATORY. Practical problems in ore-dressing. MR. SMITH.
- 16s. ORE-DRESSING LABORATORY. Continuation of Course 15w. MR. SMITH.
- 17s. ORE-DRESSING LABORATORY. Short course in the laboratory use of ore-dressing machinery. MR. SMITH.
- 18f. THESIS IN METALLURGY. Conferences to select suitable problem together with preliminary laboratory work on problem selected. MR. CHRISTIANSON, MR. PEASE.
- 19w. THESIS IN METALLURGY. Continuation of Course 18f. MR. CHRISTIANSON, MR. PEASE.
- 20s. THESIS AND SPECIFICATIONS. Completion of thesis including specifications covering installation of a plant. MR. CHRISTIANSON, MR. PEASE.
- 21s. FIELD WORK IN METALLURGY. Study of metallurgical operations at smelters and mills. Detail reports are required covering plants visited. MR. CHRISTIANSON, MR. PEASE.

- 22f. METALLURGY OF BASE METALS. Short course for mechanical engineers. Special consideration is given to the mechanical appliances. Lectures and recitations. MR. CHRISTIANSON, MR. PEASE.
- 23w. METALLURGY OF BASE METALS. Short course for electrical engineers. Special consideration is given to electrical appliances. Lectures and recitations. MR. CHRISTIANSON, MR. PEASE.
- 105f. METALLURGY OF BASE METALS. Lead, copper, zinc, and mercury. Consideration of smelting methods and principles involved in refining. Lectures and recitations. MR. PEASE.
- 106w. METALLURGY OF BASE METALS. Continuation of Course 105f. MR. PEASE.
- 107s. 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.
- 108f. 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.
- 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. REASONER.
- 151w. ADVANCED METALLOGRAPHY FOR ELECTRICAL ENGINEERS. Continuation of 150. Study of iron and steel, alloy steels, metals and alloys used in electrical engineering practice. Special problems for outside reading and for research. Laboratory work. MR. HARDER, MR. DOWDELL, MR. REASONER.
- 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. REASONER.
- 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. REASONER.

- 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. REASONER.
- 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. REASONER.
- 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 GIRARD STURTEVANT, Colonel, Infantry; Assistant Professors HENRY H. RUTHERFORD, Lieutenant Colonel, Medical Corps, FREDERICK R. WUNDERLICH, Major, Dental Corps, LEE R. WATROUS, JR., Major, Coast Artillery Corps, EDWARD G. SHERBURNE, Captain, Infantry, VERNON W. HALL, Captain, Coast Artillery Corps, JAMES T. WATSON, Captain, Signal Corps, LEO J. FARRELL, Captain, Infantry, ANDREW C. TYCHSEN, Captain, Infantry, NEWTON W. SPEECE, Captain, Infantry, HAL M. ROSE, 1st Lieutenant, Cavalry, MYRON J. CONWAY, 1st Lieutenant, Infantry; Instructors JOSEPH HAVLICEK, Regimental Commissary Sergeant, U.S.A., Retired, JOHN MCWILLIAMS, 1st Sergeant, U.S.A., Retired, HARRY E. STRIDER, Technical Sergeant, ALFRED

BRANDT, Technical Sergeant, AUBREY R. DUNKUM, Staff Sergeant, EDMUND T. McCANN, Sergeant, CLARENCE G. LANGE, Sergeant, Infantry, HENRY W. BROWN, Sergeant, JOE WEIR, Sergeant, ROBERT M. THURSTON, Sergeant, ERNEST R. MYLK, Private 1st Class, Spec. 4th Class.

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
2c	Second-Year Basic Course R.O.T.C., Signal Corps	3	Soph.	1

MINE PLANT AND MECHANICS

Professor ELTING H. COMSTOCK; Assistant Professors ANDERS J. CARLSON, JAMES C. SANDERSON.

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
9f	Mechanics	5	..	Jr.E.M.&Met.E.	8s
10w	Mechanics of Materials.....	5	..	Jr.E.M.&Met.E.	9f
11s	Mechanics of Materials.....	5	..	Jr.E.M.&Met.E.	10w
12f	Mine Plant	6	..	Jr.E.M.&Met.E.	8s
13w	Mine Plant	6	..	Jr.E.M.	12f
14s	Mine Plant	6	..	Jr.E.M.	13w
15w	Metallurgical Plant	3	..	Jr.Met.E.	12f
16s	Metallurgical Plant	3	..	Jr.Met.E.	15w
17f	Hydraulics and Water Power....	5	2	Sr.E.M.&Met.E.	11s
18f	Engineering Construction.....	..	8	Sr.E.M.	11s
19w	Mine Plant Design.....	..	9	Sr.E.M.	18f
20s	Mine Plant Design.....	..	12	Sr.E.M.	19w

If. ALGEBRA AND SOLID GEOMETRY. Equations, involution and evolution, theory of exponents, surds, quadratic equation, theory of logarithms,

* Must be legally eligible for enrolment in Reserve Officers' Training Corps.

† Work in military science and tactics for sophomores will open on Wednesday, September 12, at 8:30 a.m., and continue for ten days. Satisfactory completion of Course 2a, 2b, or 2c at that time is required of all sophomores. This course applies only to sophomores who are required to leave the following May 1 for field work.

- 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 I. 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 line, 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.
- 9f. 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.
- 10w-11s. 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.
- 12f-13w-14s. 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.
- 15w-16s. METALLURGICAL PLANT. Power, air, and water supply for metallurgical plants. MR. COMSTOCK.

- 17f. **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 hydro-electric plants, theory of water wheels and turbines, speed control, power house equipment, transmission. MR. CARLSON.
- 18f. **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. HEILIG.
- 19w-20s. **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. HEILIG.

MINING

Associate Professor WALTER H. PARKER; Instructor LOUIS S. HEILIG.

COURSES

No.	Title	Lec. or Lab. rec. hrs. hrs.	Required of	Prerequisite courses
21s	Introductory Mining....	4 ..	All soph.	Registration for soph. field trip.
30f	First Aid .....	.. *	Jr.E.M.&E.M.(Geol.)	21s
31f	Exploration	5 ..	Jr.E.M.&E.M.(Geol.)	21s
32w	Tunneling	5 ..	Jr.E.M.&E.M.(Geol.)	31f
33s	Mining Methods.....	5 ..	Jr.E.M.&E.M.(Geol.)	32w
34s	Practical Mining.....	.. 2 wks.	Jr.E.M.&Met.E.	Satisfactory comple- tion of junior yr.
40f	Mine Rescue .....	.. *	All sr.	..
41f	Mining Methods	5 ..	Sr.E.M.&E.M.(Geol.)	33s
42w	Mine Management....	5 ..	Sr.E.M.&E.M.(Geol.)	41f
43s	Mine Administration...	5 ..	Sr.E.M.&Met.E.	42w
44f	Thesis .....	.. 2	Sr.E.M.	33s, 34s
45w	Thesis .....	.. 12	Sr.E.M.	44f
46s	Thesis .....	.. 12	Sr.E.M.	45w

- 21s. **INTRODUCTORY MINING.** Introductory mining course, preparatory to sophomore field trip. MR. HEILIG.
- 30f. **FIRST AID.** Course in first aid to the injured, given by the staff of the United States Bureau of Mines car.
- 31f. **EXPLORATION.** Occurrence of ore bodies, prospecting, exploration, boring, explosives, drilling, and blasting. MR. PARKER.
- 32w. **TUNNELING.** Tunneling, drifting, shaft-sinking, raising, and mining methods. MR. PARKER.
- 33s. **MINING METHODS.** Underground mining methods and support of underground excavations. MR. PARKER.

* 15 hours a week.

- 34s. PRACTICAL MINING. Study of mining operations. Mine plant and mining work in one or more mining camps. MR. PARKER, MR. COM-STOCK.
- 40f. MINE RESCUE. Course in mine rescue, given by the staff of the United States Bureau of Mines car.
- 41f. MINING METHODS. Coal mining, open-pit work, quarrying, placer mining, hydraulic mining, and dredging. MR. PARKER.
- 42w. MINE MANAGEMENT. Mine drainage, mine ventilation, mine transportation, mine sanitation, mine hygiene, cost accounting, and mine examination. MR. PARKER.
- 43s. MINE ADMINISTRATION. Course in mining law, mine management, and economics of mining. MR. PARKER.
- 44f. THESIS. Preparatory work on the mining thesis. MR. PARKER, MR. HEILIG.
- 45w. THESIS. Preparation of an original thesis on some mining project, covering the exploration and development of a mining property. MR. PARKER, MR. HEILIG.
- 46s. THESIS. Completion of thesis project. MR. PARKER, MR. HEILIG.

MINING ENGINEERING

Professor EDWIN M. LAMBERT.

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
5w	Mine-Mapping .....	..	6	All jr.	4s
6s	Mine-Mapping .....	..	6	Jr.E.M.&Met.E.	5w

- 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. HEILIG.
- 5w-6s. 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. HEILIG.

SCHOOL OF MINES

PHYSICS

Professors HENRY A. ERIKSON, ANTHONY ZELENY; Assistant Professor LOUALLEN F. MILLER.

COURSES

No.	Title	Lec. or rec. hrs.	Lab. hrs.	Required of	Prereq. courses
3f	Elements of Mechanics.....	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 a 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, Head; IRVILLE C. LECOMPTE, COLBERT SEARLES; Associate Professor RUTH S. PHELPS,¹ Assistant Professors FRANCIS B. BARTON, JULES T. FRELIN, JOSEPH E. GILLET, EUGENE F. PARKER, EDWARD H. SIRICH.

¹ Absent on leave, 1923-24.

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. SIRICH.

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 completed before credit is given in any one quarter.

The Bulletin *of the University of* **Minnesota**

The College of Pharmacy
Announcement for the Year
1923-1924



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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	Payments 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	17-20		Final examination period
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	18-21		Final examination period
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
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	13-17		Final examination period

* 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 9.

THE COLLEGE OF PHARMACY

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

THE COLLEGE OF PHARMACY

FACULTY

- 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
GUSTAV BACHMAN, Phm.D., Phm.M., Professor of Pharmacy
RICHARD OLDING BEARD, M.D., Associate Professor of Physiology
EDGAR D. BROWN, Phm.D., M.D., Associate Professor of Pharmacology
FREDERIC K. BUTTERS, Ph.D., Associate Professor of Botany
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
WILLIAM S. COOPER, Ph.D., Assistant Professor of Botany
LEO J. FARRELL, Captain Infantry, U.S.A., Assistant Professor of Military
Science and Tactics
ESTHER GREISHEIMER, Ph.D., Assistant Professor of Physiology
ROBERT G. GREEN, M.A., M.D., Assistant Professor of Bacteriology and
Immunology
FRANK F. GROUT, Ph.D., Professor of Geology and Mineralogy
VERNON W. HALL, Captain Coast Artillery Corps, U.S.A., Assistant Pro-
fessor of Military Science and Tactics
RODNEY B. HARVEY, Ph.B., Associate Professor of Plant Pathology and
Botany
ARTHUR T. HENRICI, M.D., Associate Professor of Bacteriology and
Immunology
NED L. HUFF, M.A., Assistant Professor of Botany
WILLIAM H. HUNTER, Ph.D., Professor of Chemistry
MAY S. KISSOCK, B.A., Assistant Professor of Physical Education for
Women
LEE I. KNIGHT, Ph.D., Professor of Botany
WINFORD P. LARSON, M.D., Professor of Bacteriology and Immunology
ORA M. LELAND, B.S., C.E., Professor of Chemistry
FRED W. LUEHRING, Ph.M., Professor of Physical Education and Athletics
for Men
ELIAS P. LYON, Ph.D., M.D., Professor of Physiology
JESSE F. MCCLENDON, Ph.D., Professor of Physiology
T. NELSON METCALF, M.A., Professor of Physical Education for Men
EDWIN L. NEWCOMB, Phm.D., Phm.M., Professor of Pharmaceutical Botany
and Pharmacognosy
J. ANNA NORRIS, M.D., Professor of Physical Education for Women

¹ Resigned, April 1, 1923.

- CHAUNCEY J. V. PETTIBONE, Ph.D., Associate Professor of Physiologic Chemistry
- LOYD H. REYERSON, Ph.D., Assistant Professor of Chemistry
- CHARLES H. ROGERS, D.Sc. in Phm., Associate Professor of Pharmaceutical Chemistry and Pharmacy
- HAL M. ROSE, First Lieutenant Cavalry, U.S.A., Assistant Professor of Military Science and Tactics
- CARL O. ROSENDAHL, Ph.D., Professor of Botany
- HENRY H. RUTHERFORD, B.A., M.D., Lieutenant Colonel Medical Corps, U.S.A., Assistant Professor of Military Science and Tactics
- FREDERICK H. SCOTT, Ph.D., M.B., D.Sc., Professor of Physiology
- LEE I. SMITH, Ph.D., Assistant Professor of Chemistry
- M. CANNON SNEED, Ph.D., Associate Professor of Chemistry
- NEWTON W. SPEECE, Captain Infantry, U.S.A., Assistant Professor of Military Science and Tactics
- GIRARD STURTEVANT, Colonel Infantry, U.S.A., Professor of Military Science and Tactics
- JOSEPHINE E. TILDEN, M.S., Professor of Botany
- ALICE J. H. TOLG, M.D., Assistant Professor of Physical Education for Women
- ANDREW C. TYCHSEN, Captain Infantry, U.S.A., Assistant Professor of Military Science and Tactics
- LEE R. WATROUS, JR., Major Coast Artillery Corps, U.S.A., Assistant Professor of Military Science and Tactics
- JAMES T. WATSON, JR., Captain Signal 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
- CHARLES N. MCCLOUD, Phm.D., M.D., Lecturer on First Aid to the Injured
- GERTRUDE M. BAKER, B.A., Instructor in Physical Education for Women
- ANNE BENTON, M.A., Instructor in Bacteriology
- ALFRED BRANDT, Technical Sergeant, Instructor in Military Science and Tactics
- EDWIN S. BROWN, M.D., Instructor in Physical Education for Men
- HENRY W. BROWN, Sergeant, Instructor in Military Science and Tactics
- HENRIETTA BROWNING, B.A., Instructor in Physical Education for Women
- HALLIE F. E. BRUCE, Phm.G., Instructor in Dispensing
- MARTIN B. CHITTICK, B.A., Phm.G., Instructor in Pharmacy
- RHEA M. COXE, Instructor in Physical Education for Women
- GRACE E. DENNY, B.S., Instructor in Physical Education for Women
- AUBREY R. DUNKUM, Staff Sergeant, Instructor in Military Science and Tactics
- EARL B. FISCHER, B.S., Instructor in Pharmacognosy
- PERCY C. GLIDDEN, Instructor in Physical Education for Men
- BERYL S. GREEN, B.A., Instructor in Bacteriology
- JOSEPH HAVLICEK, Regimental Commissary Sergeant, Instructor in Military Science and Tactics

- KATHERINE F. HERSEY, B.S., Instructor in Physical Education for Women
ARTHUR M. JOHNSON, Ph.D., Instructor in Botany
CLARENCE G. LANGE, Sergeant, Instructor in Military Science and Tactics
WALTER M. LAUER, M.S., Instructor in Chemistry
EDMUND T. MCCANN, Sergeant, Instructor in Military Science and Tactics
JOHN McWILLIAMS, First Sergeant, Instructor in Military Science and Tactics
- ERNEST R. MYLK, Private First Class, Spec. Fourth Class, Instructor in Military Science and Tactics
- CHARLES V. NETZ, Phm.C., B.S., Instructor in Pharmacy
NORVILLE C. PERVIER, Ph.D., Instructor in Chemistry
DAVID O. PRIESTERSBACH, M.S., Instructor in Bacteriology and Immunology
HARRY E. STRIDER, Technical Sergeant, Instructor in Military Science and Tactics
- ROBERT M. THURSTON, Sergeant, Instructor in Military Science and Tactics
DEL D. TURNER, Phm.C., Laboratory Instructor in Pharmacy
HERBERT N. WATSON, B.A., Instructor in Physical Education for Men
JOE WIER, Sergeant, Instructor in Military Science and Tactics
FRED WHITTEMORE, Instructor in Physical Education for Men
BLAINE MCKUSICK, B.A., LL.B., Assistant in Physical Education for Men
CHARLES E. SMYTHE, Assistant in Pharmacognosy and Departmental Librarian
- NIELS THORPE, Assistant in Physical Education for Men
VIVIAN VOGEL, Phm.C., Assistant in Dispensing

GENERAL INFORMATION

The thirty-first 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 evidences 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 \$30 for resident students and \$40 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.....	\$30.00
Non-residents	40.00
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
Examinations for credits (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 given quarter.

Those desiring to take special work may pay fees on a clock hour basis, the rate being \$1.25 an hour for resident students and \$1.75 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 unclassified 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 (conditions), 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 can not 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.

MEDICINAL PLANT LABORATORY AND GARDEN

Students receive instruction in medicinal plant culture and in the harvesting, drying, preparing, and milling of drugs in the very representative medicinal plant garden and in the plant laboratory and conservatory. The garden and plant laboratory have been added to increase the educational facilities of the college. The college has no experience or information concerning the commercial cultivation of medicinal plants.

DISPENSARY PRESCRIPTION PRACTICE

The seniors, under competent direction and supervision, dispense the prescriptions written by the physicians in the Out-Patient Department of the University Hospitals. During the past year upwards of twenty-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 \$90 in cash and a token to that student who is a citizen of the United States, who has resided in Minnesota for at least 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.

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

<i>First Quarter</i>	<i>Second Quarter</i>	<i>Third Quarter</i>
Botany	Botany	Botany
General Chemistry	General Chemistry	Qualitative Chemistry
Military training	Military training	Military training
Pharmacy	Pharmacy	Pharmacy
Pharmac. Chemistry,	Pharmac. Chemistry,	Pharmac. Chemistry,
Didactic	Didactic	Didactic
Pharmacognosy	Pharmacognosy	Pharmacognosy

JUNIOR

<i>First Quarter</i>	<i>Second Quarter</i>	<i>Third Quarter</i>
Materia Medica	Materia Medica	Materia Medica
Pharmacognosy	Pharmacognosy	Pharmacognosy
Pharmac. Chemistry,	Pharmac. Chemistry,	U. S. P. Testing
Practical	Practical	Therapeutics
Military training	U. S. P. Testing	Operative Pharmacy
Organic Chemistry	Military training	Military training
	Organic Chemistry	

SENIOR

<i>First Quarter</i>	<i>Second Quarter</i>	<i>Third Quarter</i>
Dispensing	Dispensing	Dispensing
U. S. P. Assay	U. S. P. Assay	U. S. P. Assay
Bacteriology	Drug and Food Analysis	Mineralogy and Crystallog.
Drug and Food Analysis	Physiology	Drug and Food Analysis
Dispensary Practice	Dispensary Practice	Law and Ethics
Organic Pharmacy		Dispensary Practice

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.

DESCRIPTION OF COURSES

BACTERIOLOGY AND IMMUNOLOGY

Professor WINFORD P. LARSON; Associate Professor ARTHUR T. HENRICI;
Assistant Professor ROBERT G. GREEN; Instructors ANNE BENTON,
BERYL S. GREEN, DAVID O. SPRIESTERSBACH.

COURSE

No.	Title	Credits	Offered to	Prerequisite courses				
51f,w,s,su	General Bacteriology	5	Sr.	<table style="border: none;"> <tr> <td style="font-size: 2em; vertical-align: middle;">}</td> <td>1 yr. biology</td> </tr> <tr> <td style="font-size: 2em; vertical-align: middle;">}</td> <td>1 yr. chemistry</td> </tr> </table>	}	1 yr. biology	}	1 yr. chemistry
}	1 yr. biology							
}	1 yr. chemistry							

For additional courses see the bulletin of the Medical School.

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. DR. LARSON, DR. HENRICI, DR. GREEN, MISS BENTON.

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, LEE I. KNIGHT,¹ JOSEPHINE E. TILDEN;
Associate Professor FREDERIC K. BUTTERS, RODNEY B. HARVEY;
Assistant Professors WILLIAM S. COOPER, NED L. HUFF; Instructor
ARTHUR M. JOHNSON.

COURSE

No.	Title	Credits	Offered to	Prerequisite courses
17f-18w-19s	General BotanyTotal	12	Fr.	None

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. MR. BUTTERS.

¹ Resigned, April 1, 1923.

CHEMISTRY

Professor WILLIAM H. HUNTER; Associate Professor M. CANNON SNEED;
Assistant Professors LLOYD H. REYERSON, LEE I. SMITH; Instructors
WALTER M. LAUER, NORVILLE C. PERVIER.

COURSES

No.	Title	Credits	Offered to	Prerequisite courses
4f-5w	Gen. Inorganic Chemistry...	8	Fr.	H.-s. chemistry
14f-15w	Gen. Inorganic Chemistry...	10	Fr.	None
16s	Qualitative Analysis	5	Fr.	5 or 15
31f-32w	Elem. Org. Chemistry.....	8	Soph.	5 or 15

4f-5w. GENERAL INORGANIC CHEMISTRY. A study of the general laws of chemistry and of the non-metals, the metals, and their compounds. Prerequisite: high school chemistry. MR. REYERSON.

14f-15w. GENERAL INORGANIC CHEMISTRY. A study of the general laws of chemistry and of the non-metals and their compounds. No prerequisite. MR. PERVIER.

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. Prerequisite: 5 or 15. MR. REYERSON.

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. MR. LAUER.

CLINICAL MICROSCOPY

Professor.....; Instructor.....

COURSE

No.	Title	Credits	Offered to	Prerequisite courses
1s	Clinical Chemistry and Microscopy	Total 1	Sr.	None

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.

DISPENSARY PRESCRIPTION PRACTICE

Instructor HALLIE BRUCE; Assistant VIVIAN VOGEL.

COURSE

No.	Title	Credits	Offered to	Prerequisite courses
1f,w,s	Prescription Practice ..Total	2½	Sr.	Pharm. 5

1f,w,s. DISPENSARY PRESCRIPTION PRACTICE. The prescription dispensing for the Out-Patient Department of the University Hospitals is in charge of the College of Pharmacy. The senior students do the prescription work under competent direction. MISS BRUCE, MISS VOGEL.

FIRST AID TO THE INJURED

Lecturer CHARLES N. MCCLOUD and assistant.

COURSE

No.	Title	Credits	Offered to	Prerequisite courses
1s	Emergency Cases Total	1	Fr.	None

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. DR. MCCLOUD.

MATERIA MEDICA

Professors EDWIN L. NEWCOMB, FREDERICK J. WULLING; Instructor EARL B. FISCHER and assistants.

COURSES

No.	Title	Credits	Offered to	Prerequisite courses
1f,w,s	Inorganic Materia Medica	1	Fr.	None
2f,w,s	Organic Materia Medica	6	Fr., jr.	None

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. 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. MR. NEWCOMB, MR. FISCHER, and assistants.

MILITARY SCIENCE AND TACTICS

Professor GIRARD STURTEVANT, Colonel, Infantry; Assistant Professors HENRY H. RUTHERFORD, Lieutenant Colonel, Medical Corps, FREDERICK R. WUNDERLICH, Major, Dental Corps, LEE R. WATROUS, JR., Major, Coast Artillery Corps, EDWARD G. SHERBURNE, Captain, Infantry, VERNON W. HALL, Captain, Coast Artillery Corps, JAMES T. WATSON, Captain, Signal Corps, LEO J. FARRELL, Captain, Infantry, ANDREW C. TYCHSEN, Captain, Infantry, NEWTON W. SPEECE, Captain, Infantry, HAL M. ROSE, 1st Lieutenant, Cavalry, MYRON J. CONWAY, 1st Lieutenant, Infantry; Instructors JOSEPH HAVLICEK, Regimental Commissary Sergeant, U.S.A., Retired, JOHN MCWILLIAMS, 1st Sergeant, U.S.A., Retired, HARRY E. STRIDER, Technical Sergeant, ALFRED

BRANDT, Technical Sergeant, AUBREY R. DUNKUM, Staff Sergeant, EDMUND T. McCANN, Sergeant, CLARENCE G. LANGE, Sergeant, Infantry, HENRY W. BROWN, Sergeant, JOE WEIR, Sergeant, ROBERT M. THURSTON, Sergeant, ERNEST R. MYLK, Private 1st Class, Spec. 4th Class.

COURSES

- 1-2-3. FIRST-YEAR BASIC COURSE R.O.T.C. INFANTRY. Practical and theoretical instruction in school of soldier squad and company; elementary subjects of military training; infantry weapons and equipment.
- 4-5-6. SECOND-YEAR BASIC COURSE R.O.T.C. INFANTRY. Practical instruction in school of platoon and company; military sketching and map-reading; infantry weapons including machine gun and automatic rifle; minor tactics.
- 51-52-53. FIRST-YEAR ADVANCED COURSE R.O.T.C. INFANTRY. Field engineering; infantry weapons, including trench mortars, 37 mm. gun, grenades, pistol; minor tactics and musketry.
- 54-55-56. SECOND-YEAR ADVANCED COURSE R.O.T.C. INFANTRY. Minor tactics; administration; military law; military history and policy of the United States; rules of land warfare.

PHARMACY

Professors FREDERICK J. WULLING, GUSTAV BACHMAN; Associate Professor CHARLES H. ROGERS; Instructors HALLIE BRUCE, MARTIN B. CHITTICK, CHARLES V. NETZ, DEL D. TURNER; and student assistants.

COURSES

No.	Title	Credits	Offered to	Prerequisite courses
1f	History of Pharmacy.....	3½	Fr., jr.	None
3f	Metrology	4½	Fr., jr.	None
5w	Physics of Pharmacy.....	4½	Fr., jr.	3f
7w,s	Pharmaceutical Processes....	5	Fr., jr.	5w
2w,s	Pharmacopoeial Preparations..	7½	Fr., jr.	7s
4f,w,s	Pharmacy Quiz	4½	Fr., jr.	3f,5w 7s,2s
6w,s	Identification Inorganic U. S. P. Preparation	2	Fr., jr.	2s
9f	Pharmaceutical Chemical Phi- losophy	3	Fr., jr.	None
11w	Pharmaceutical Chemistry of the Non-Metals	3	Fr., jr.	9f
8s	U. S. P. Inorganic Salts....	3	Fr., jr.	9f
13s	Classification of Pharmaceutical Organic Compounds	1½	Jr., sr.	83
15w,s	Pharmaceutical Organic Com- pounds and Their Prepara- tions	9	Jr., sr.	13f
17w	Pharmacopoeial Qual. Anal...	7½	Jr., sr.	11w
18w,s	Pharmacopoeial Quant. Anal...	3	Jr., sr.	17f
19f,w,s	Prescription Incompatibility...	2	Jr., sr.	None

21f,w,s	Prescription Dispensing	18	Jr., sr.	None
8a w,s	Manufacture Pharmaceutical Inorganic Salts	6	Jr., sr.	8s
10f	National Formulary	1½	Jr., sr.	15,8a w
12s	Pharmaceutical Assay	2	Jr., sr.	10w
14s	Synthetic Remedies	1	Jr., sr.	15w s
16w	Homeopathic Pharmacy	1	Jr., sr.	21f,w,s
25w,s	Identification U. S. P. Organic Salts	2	Jr., sr.	8s,15w
20s	Microchemistry . . . . .	..	.....	.....
27	Mathematics of Pharmacy....	1	Fr., jr.	3f
29f,w,s	Drug and Food Analysis.....	24	Sr.	.....
51f,w	Metrology, Elementary.....	1	Fr., jr.	None

- 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. MR. WULLING, MR. ROGERS.
- 3f. METROLOGY. A critical study of weights and measures and balances; specific gravity, specific volume; allegation, etc. 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. MR. ROGERS, MR. NETZ.
- 7w,s. PHARMACEUTICAL PROCESSES. A study of the various laboratory processes employed in pharmaceutical manufacture. 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. 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. 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. 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. 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. MR. WULLING.
- 8s. U. S. P. INORGANIC SALTS. Especial reference to sources, description, properties, and manufacture. MR. WULLING.

- 13s. CLASSIFICATION OF PHARMACEUTICAL ORGANIC COMPOUNDS. A preparation for Pharmacy 15. 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. MR. ROGERS.
- 17w. PHARMACOPOEIAL QUALITATIVE ANALYSIS. A critical study of the identity, purity, limit, and percentage tests of the Pharmacopoeia and their application either wholly or in part to practically every official organic and inorganic salt and compound. 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). 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. 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. 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. 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. 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. MR. BACHMAN, MR. CHITTICK, MR. TURNER.
- 14s. SYNTHETIC REMEDIES. The study of the pharmaceutical chemistry of synthetic chemicals in medical use. MR. ROGERS.
- 16w. HOMEOPATHIC PHARMACY. A brief exposition of the principles underlying the preparation of homeopathic remedies, including some laboratory work. 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. 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. MR. NEWCOMB, MR. ROGERS.

27. **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. 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. MR. ROGERS, MR. NETZ, and assistant.
- 51f,w. **METROLOGY, ELEMENTARY.** For nurses. MR. WULLING.

PHARMACEUTICAL AND BUSINESS LAW

Professor FREDERICK J. WULLING.

COURSES

No.	Title	Credits	Offered to	Prerequisite courses
1s	Ethics and Law for Pharmacists..	2	Sr.	None
2s	Minnesota Pharmacy Laws	1/3	Sr.	None

- 1s. **LAW FOR PHARMACISTS.** The lectures introduce the subjects of contracts, agency, commercial paper, insurance, etc., in their application to the practice of pharmacy, and discuss the liability of retail pharmacists. 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 lecturers experienced in the application and operation of pharmacy laws.

PHARMACEUTICAL MINERALOGY AND CRYSTALLOGRAPHY

Professor FRANK F. GROUT and assistant.

COURSES

No.	Title	Credits	Offered to	Prerequisite courses
1s	Mineralogy	1	Sr., grad.	None
2s	Crystallography	1	Sr., grad.	1s

- 1s. **MINERALOGY.** A study of the occurrence and properties of minerals of pharmaceutical importance; ores of metals used in pharmacy; non-metallic minerals and mineral waters in their mineralogic and geologic relation. 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. MR. GROUT.

PHARMACOGNOSY

Professor EDWIN L. NEWCOMB; Instructor EARL B. FISCHER; Assistant CHARLES E. SMYTHE and student assistants.

COURSES

No.	Title	Credits	Offered to	Prerequisite courses
1s	Medical Plant Study.....	1	Fr.	None
2w,s	The Thallophytes and Archegoniates	5	Fr.	1
3f	Drug Collection	3	Jr.	1s
3s-4w	Pharmaco-Histology and the Angiosperms	10	Jr.	3s,Botany17f,18w
5s	Field Work	2	Jr.	1s
6w	Physiological Drug Assay.....	3	Sr.	5w
7w,s	Advanced Pharmacognosy	3	Sr.	5w

- 1s. 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. 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. 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. MR. NEWCOMB, MR. FISCHER, and assistants.
- 3s-4w. 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. 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. 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. MR. NEWCOMB.
- 7w,s. ADVANCED PHARMACOGNOSY. Designed to give students a working knowledge of the use of the more important microscopical accessories in advanced pharmacognostic work. Four-year course only. MR. NEWCOMB.

PHYSICAL EDUCATION FOR MEN

Professors FRED W. LUEHRING, Director; T. NELSON METCALF; Associate Professor LOUIS J. COOKE, Assistant Director; Instructors EDWIN S. BROWN, PERCY C. GLIDDEN, HERBERT N. WATSON, FRED WHITTEMORE; Assistants BLAINE MCKUSICK, NIELS THORPE.

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.

COURSE

No.	Title	Credits	Offered to	Prerequisite courses
4f	Personal Hygiene	None	All	None

4f. PERSONAL HYGIENE. One hour per week; first quarter. Examination at close of course. DR. COOKE, DR. BROWN.

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; Assistant Professors MAY S. KISSOCK, ALICE H. TOLG; Instructors GERTRUDE M. BAKER, HENRIETTA BROWNING, RHEA M. COXE, GRACE E. DENNY, KATHERINE F. HERSEY.

This department aims to promote the health 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 in college; conducts yearly consultations with, and examines when necessary, all upperclass students; gives courses in hygiene; organizes physical work to meet the varying needs and physical tastes of students; 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.

COURSE

No.	Title	Credits	Offered to	Prerequisite courses
4f	Preliminary Hygiene	None	All new students	None

4f. PRELIMINARY HYGIENE. One lecture a week. The most essential aspects of the care of the body. DR. NORRIS.

PHYSIOLOGY

Professors ELIAS P. LYON, FREDERICK H. SCOTT, JESSE F. MCCLENDON;
Associate Professors RICHARD OLDING BEARD, CHAUNCEY J. V. PETTIBONE;
Assistant Professor ESTHER GREISHEIMER.

4f,w,su. HUMAN PHYSIOLOGY. Science, Literature, and the Arts, School of Nursing, Home Economics, and other students. Prerequisites: elementary biology and chemistry. Lectures and laboratory. 5 qtr. cr. DR. LYON, DR. BEARD, and others.

5f,w,su. Same as Course 4 without laboratory. Pharmacy students.

6f,su. PHYSIOLOGIC CHEMISTRY. Dental students and others. Prerequisite: organic chemistry. 3 qtr. cr. DR. PETTIBONE.

THERAPEUTICS AND TOXICOLOGY

Associate Professor EDGAR D. BROWN.

COURSE

No.	Title	Credits	Offered to	Prerequisite courses
15	Therapeutics and Toxicology....	3	Jr.	Pharmacognosy 5w, Mat. Med. 1f,w,su

15. THERAPEUTICS AND TOXICOLOGY. Drugs are studied in groups as governed by their medicinal and toxic properties. Remedial measures other than those depending upon drugs are fully considered. Poisonous action and doses of drugs also receive consideration. DR. BROWN.

The Bulletin of the University of Minnesota

*The School of Chemistry
Announcement for the Year
1923-1924*



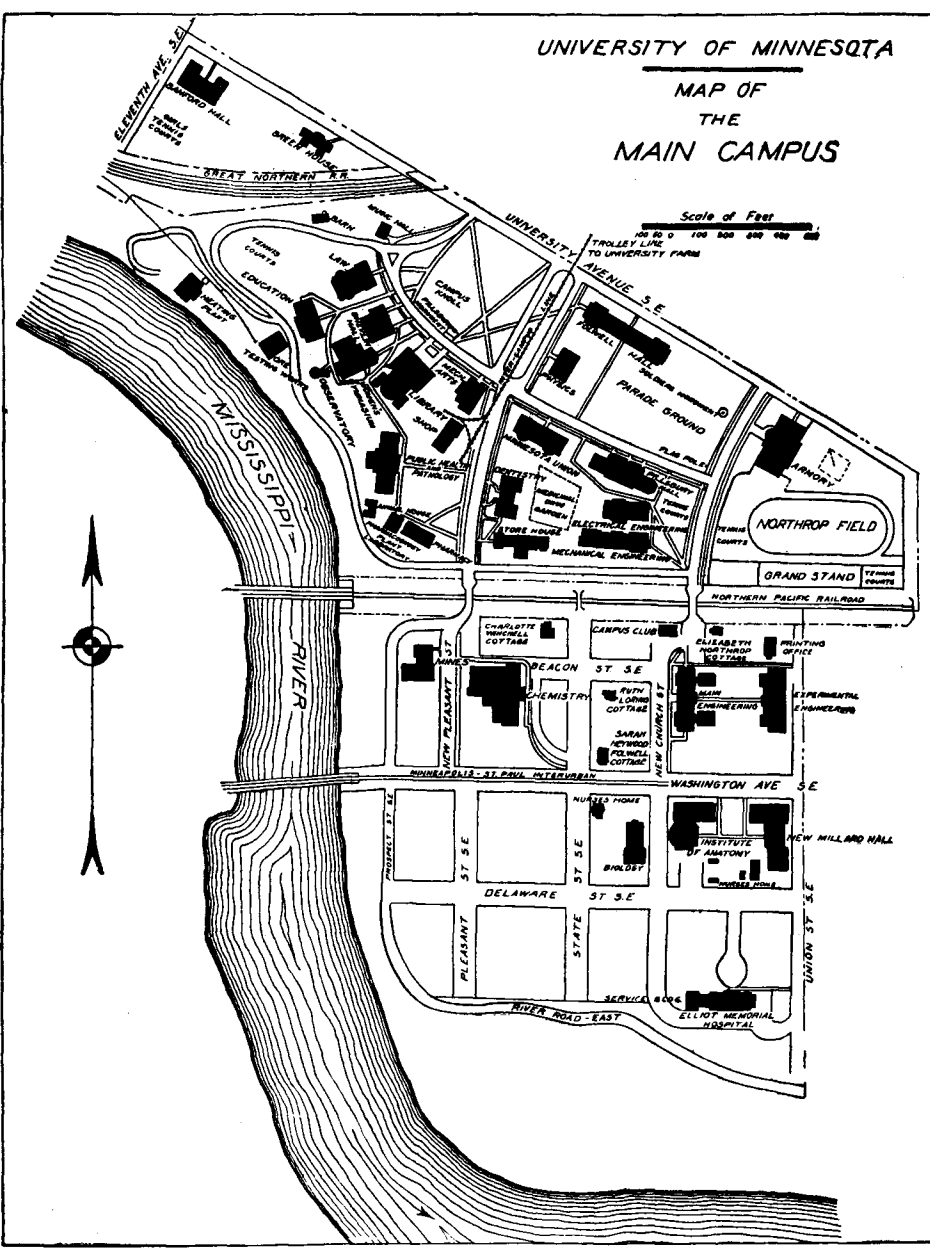
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UNIVERSITY OF MINNESOTA

MAP OF THE MAIN CAMPUS



Area of Main Campus, 108.5 acres

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	Monday	First semester evening extension classes begin
September	24-25		Registration days for School of Chemistry and other 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	20	Thursday	Thanksgiving Day; a holiday
December	6	Thursday	State Day Convocation
December	13	Thursday	Commencement Convocation Senate meeting, 4:30 p.m.
December	17-20		Final examination period
December	20	Thursday	Fall quarter ends, Christmas vacation begins, 5:20 p.m.
1924			
January	3	Thursday	Registration in School of Chemistry and College of Engineering and Architecture
January	4	Friday	Christmas vacation ends, winter quarter begins, 8:30 a.m.
January	18	Friday	First semester evening extension classes close
January	28	Monday	Second semester evening extension classes begin
February	12	Tuesday	Lincoln's Birthday; a holiday
February	14	Thursday	Charter Day Convocation Senate meeting, 4:30 p.m.
February	22	Friday	Washington's Birthday; a holiday

March	18-21		Final examination period
March	21	Friday	Winter quarter ends, spring vacation begins, 5:20 p.m.
April	1	Tuesday	Registration in School of Chemistry and College of Engineering and Architecture
April	2	Wednesday	Spring vacation ends, spring quarter begins, 8:30 a.m.
April	18	Friday	Good Friday; a holiday
May	15	Thursday	Cap and Gown Day Convocation Senate meeting, 4:30 p.m.
May	16	Friday	Second semester evening extension classes close
May	30	Friday	Memorial Day; a holiday
June	15	Sunday	Baccalaureate service
June	13-17		Final examination period
June	18	Wednesday	Fifty-second annual commencement 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

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 SCHOOL OF CHEMISTRY

FACULTY AND STAFF

- 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
CHARLES F. SIDENER, Professor Emeritus of Analytical Chemistry
WILLIAM R. APPELEY, M.A., Professor of Metallurgy and Dean of the
School of Mines
ROY G. BLAKEY, Ph.D., Professor of Economics
GREGORY BREIT, Ph.D., Assistant Professor of Physics
PAUL H. M.-P. BRINTON, Ph.D., Professor of Analytical Chemistry
WILLIAM E. BROOKE, B.C.E., M.A., Professor of Mathematics and Mechanics
PETER CHRISTIANSON, B.S., E.M., Professor of Metallurgy
LILLIAN COHEN, Ph.D., Assistant Professor of General Inorganic Chemistry
MYRON J. CONWAY, First Lieutenant, Infantry, Assistant Professor of
Military Science and Tactics
LOUIS J. COOKE, M.D., Associate Professor of Physical Education and
Assistant Director of Physical Education and Athletics for Men
JOSEPH E. CUMMINGS, M.A., Assistant Professor of Economics
HANS H. DALAKER, Ph.D., Professor of Mathematics and Mechanics
Z. CLARK DICKINSON, Ph.D., Assistant Professor of Economics
HAROLD S. DIEHL, M.A., M.D., Assistant Professor of Public Health and
Director of Health Service
GEORGE W. DOWRIE, Ph.D., Professor of Economics and Dean of the
School of Business
WILLIAM H. EMMONS, Ph.D., Professor of Geology
HENRY A. ERIKSON, Ph.D., Professor of Physics
LEO J. FARRELL, Captain, Infantry, U.S.A., Assistant Professor of Military
Science and Tactics
¹JOHN J. FLATHER, Ph.B., M.M.E., Professor of Mechanical Engineering
GEORGE B. FRANKFORTER, Ph.D., Professor of Organic and Industrial
Chemistry
ROBERT W. FRENCH, B.S.(C.E.), Assistant Professor of Drawing and Descriptive
Geometry
VICTOR GAUVREAU, Diplôme École, Assistant Professor of Machine Design
ISAAC W. GEIGER, Ph.D., Assistant Professor of Analytical Chemistry
FRANK F. GROUT, Ph.D., Professor of Geology and Mineralogy
VERNON W. HALL, Captain, Coast Artillery Corps, U.S.A., Assistant Professor
of Military Science and Tactics
OSCAR E. HARDER, Ph.D., Professor of Metallography
EVERHART P. HARDING, Ph.D., Associate Professor of Technological
Chemistry

¹ On sabbatic furlough, 1923-24.

- LAWRENCE M. HENDERSON, Ph.D., Assistant Professor of Physical Chemistry
- 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
- WILLIAM H. HUNTER, Ph.D., Professor of Organic Chemistry
- JACOB O. JONES, B.S., M.C.E., Associate Professor of Hydraulics
- ¹WILLIAM H. KIRCHNER, B.S., Professor of Drawing and Descriptive Geometry
- RAYMOND E. KIRK, M.S., Assistant Professor of General Inorganic Chemistry
- MAY S. KISSOCK, B.A., Assistant Professor of Physical Education for Women
- SAMUEL KROESCH, Ph.D., Associate Professor of German
- FRED W. LUEHRING, Ph.M., Professor of Physical Education and Director of Physical Education and Athletics for Men
- FRANK H. MACDOUGALL, Ph.D., Associate Professor of Physical Chemistry
- JESSE F. MCCLENDON, Ph.D., Professor of Physiologic Chemistry
- WILLIAM M. MCCLINTOCK, M.A., Assistant Professor of Mathematics and Mechanics
- CHARLES A. MANN, Ph.D., Professor of Chemical Engineering
- JOHN V. MARTENIS, M.E., Associate Professor of Machine Design
- EDWIN R. MARTIN, B.S. (E.E.), Assistant Professor of Electric Power Engineering
- LOUALLEN F. MILLER, Ph.D., Associate Professor of Physics
- GEORGE H. MONTILLON, M.S., Assistant Professor of Chemical Engineering
- HOWARD D. MYERS, B.S. (C.E.), Assistant Professor of Drawing and Descriptive Geometry
- J. ANNA NORRIS, M.D., Professor of Physical Education and Director of Physical Education for Women
- LEVI B. PEASE, M.S., Professor of Metallurgy
- NORVILLE C. PERVIER, M.S., Ph.D., Assistant Professor of General Inorganic Chemistry
- CHAUNCEY J. V. PETTIBONE, Ph.D., Associate Professor of Physiologic Chemistry
- H. BRUCE PRICE, Ph.D., Assistant Professor of Economics
- GEORGE C. PRIESTER, B.E., M.S., Assistant Professor of Mathematics and Mechanics
- LLOYD H. REYERSON, Ph.D., Assistant Professor of General Inorganic Chemistry
- JOHN J. REIGHARD, M.A., Assistant Professor of Accounting
- BURTON J. ROBERTSON, E.E., Assistant Professor of Mechanical Engineering and Assistant Director of the Experimental Engineering Laboratories

¹ On sabbatic furlough, 1923-24.

- HAL M. ROSE, Captain, U.S.A., Assistant Professor of Military Science and Tactics
- FRANK B. ROWLEY, B.S., M.E., Professor of Mechanical Engineering and Director of the Experimental Engineering Laboratories
- HENRY H. RUTHERFORD, Lieutenant Colonel, Medical Corps, Assistant Professor of Military Science and Tactics
- CARL SCHLENKER, B.A., Professor of German
- GEORGE D. SHEPARDSON, M.A., M.E., D.Sc., Professor of Electrical Engineering
- 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
- RODERICK W. SILER, B.S., Assistant Professor of Mathematics and Mechanics
- LEE I. SMITH, Ph.D., Assistant Professor of Organic Chemistry
- M. CANNON SNEED, Ph.D., Associate Professor of General Inorganic Chemistry
- NEWTON W. SPEECE, Captain, Infantry, U.S.A., Assistant Professor of Military Science and Tactics
- J. WARREN STEHMAN, M.A., Assistant Professor of Accounting
- GIRARD STURTEVANT, Colonel, U.S.A., Professor of Military Science and Tactics
- JOHN T. TATE, Ph.D., Professor of Physics
- JOSEPH M. THOMAS, Ph.D., Professor of English
- ALICE H. TOLG, M.D., Assistant Professor of Physical Education for Women
- ANDREW C. TYCHSEN, Captain, Infantry, U.S.A., Assistant Professor of Military Science and Tactics
- JOSEPH VALASEK, M.A., Assistant Professor in Physics
- JOHN H. VAN VLECK, Ph.D., Assistant Professor of Physics
- LEE R. WATROUS, JR., Major, U.S.A., Assistant Professor of Military Science and Tactics
- JAMES T. WATSON, Captain, Signal Corps, U.S.A., Assistant Professor of Military Science and Tactics
- H. A. WHITTAKER, B.A., Assistant Professor of Preventive Medicine and Public Health
- HUGH B. WILCOX, M.S., Assistant Professor of Mathematics and Mechanics
- 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
- JAY L. O'HARA, B.A., Lecturer in Economics
- BEN W. PALMER, M.A., LL.B., Lecturer in Economics
- LEON ARCHIBALD, B.Sc., Instructor in Drawing and Descriptive Geometry
- R. WILSON ARCHIBALD, B.A., V.M.D., Instructor in Preventive Medicine and Public Health

- GERTRUDE BAKER, Instructor in Physical Education for Women
HERVEY H. BARBER, Curator, School of Chemistry
CHARLES BOEHNLEIN, B.S., M.E., Instructor in Mathematics and Mechanics
ALFRED BRANDT, Technical Sergeant, D.E.M.L., Instructor in Military Science and Tactics
RALPH E. BREWER, M.S., Instructor in Technological Chemistry
HARRY W. BROWN, Sergeant, D.E.M.L., Instructor in Military Science and Tactics
WILLIAM HORATIO BROWN, E.M., Instructor in Geology and Mineralogy
JOHN O. CEDERBERG, JR., Instructor in Drawing and Descriptive Geometry
J. A. CHILDS, C.E., Instructor in Preventive Medicine and Public Health
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
HARRY A. DOERINGSFELD, B.S.(C.E.), Instructor in Mathematics and Mechanics
RALPH L. DOWDELL, Met.E., Instructor in Metallography
LYNWOOD G. DOWNS, M.A., Instructor in German
AUBREY R. DUNKUM, Staff Sergeant, D.E.M.L., Instructor in Military Science and Tactics
RALPH FARMER, B.A., Instructor in Economics
JOHN FLODIN, B.S., M.E., Instructor in Machine Design
HENRY E. HARTIG, B.S., E.E., Instructor in Mathematics and Mechanics
JOSEPH HAVLICEK, Regimental Commissary Sergeant, D.E.M.L., Instructor in Military Science and Tactics
HELEN HAZELTON, B.A., Instructor in Physical Education for Women
GLADSTONE B. HEISIG, M.A., Instructor in General Inorganic Chemistry
THOMAS P. HUGHES, Instructor in Forging
ELMER W. JOHNSON, E.E., Instructor in Mathematics and Mechanics
CLARENCE G. LANGE, Sergeant, D.E.M.L., Instructor in Military Science and Tactics
WALTER M. LAUER, M.S., Instructor in Organic Chemistry
OSCAR C. LEE, B.S.(E.E.), Instructor in Mathematics and Mechanics
ALEX S. LEVENS, B.S.(C.E.), Instructor in Drawing
FRANCIS LUDLOW, B.A., Instructor in English
EDMUND T. McCANN, Sergeant, D.E.M.L., Instructor in Military Science and Tactics
JOHN McWILLIAMS, First Sergeant, D.E.M.L., Instructor in Military Science and Tactics
J. LEWIS MAYNARD, B.A., Instructor in General Inorganic Chemistry
JOHN H. MOFFETT, Met.E., Instructor in Foundry Practice
ERNEST R. MYLK, Private First Class, D.E.M.L., Instructor in Military Science and Tactics
DAYTON A. ROGERS, Instructor in Machine Shop Practice
HARRY J. OSTLUND, B.A., Instructor in Accounting
ARCHIE D. POWER, Ph.D., Instructor in Physics
CLAYTON M. REASONER, B.S., M.E., Instructor in Metallography

¹ On leave of absence, 1923-24.

SCHOOL OF CHEMISTRY

- PHILIP J. RILEY, B.S.(Chem.), Instructor in Technological Chemistry
 LANDON A. SARVER, M.A., Instructor in Analytical Chemistry
 ROBERT F. SCHUCK, B.S.(E.E.), Instructor in Drawing and Descriptive
Geometry
 WILLIAM P. SHEPARD, B.S., M.D., Instructor in Preventive Medicine and
 Public Health
 CATHERINE SIAS, B.S., Instructor in Physical Education for Women
 ELWYN L. SMITH, B.S., Instructor in Metallurgy
 LAWRENCE SMITH, M.A., Instructor in Economics
 HENRY N. STEPHENS, M.S., Ph.D., Instructor in General Inorganic Chem-
 istry
 ARTHUR E. STOPPEL, B.S., Ch.E., Instructor in Analytical Chemistry
 HARRY E. STRIDER, Technical Sergeant, D.E.M.L., Instructor in Military
 Science and Tactics
 WILLIAM W. SWANSON, B.A., B.S., Instructor in Physiologic Chemistry
 ROBERT M. THURSTON, Sergeant, D.E.M.L., Instructor in Military Science
 and Tactics
 GEORGE L. TUVE, B.S., M.E., Instructor in Mechanical Engineering
 WALTER R. WARNE, Ph.B., B.Pd., Instructor in Mathematics
 E. AUSTIN WARREN, M.A., Instructor in English
 JOE WIER, Sergeant, D.E.M.L., Instructor in Military Science and Tactics
 WILLIAM S. WILLIAMS, B.S.(E.E.), Instructor in Drawing and Descriptive
 Geometry

ASSISTANTS IN CHEMISTRY

- | | |
|---------------------------------|-------------------------------|
| ESTHER E. BAUER, B.A. | HERTHA R. FRECHE, B.A. |
| RALPH E. BEARD, B.S. | REYNOLD C. FUSON, M.S. |
| THEODORE T. BUDROW, B.S.(Chem.) | F. ANTON GRAY, B.S. |
| WILLIAM A. BUEDINGER, M.S. | LEO C. HUMPHREY, B.S. |
| ALBERT L. CHANEY, B.A. | ARTHUR H. KOHLHASE, M.S. |
| H. MARJORIE CRAWFORD, M.S. | BARBARA LEE LUND, M.A. |
| STEPHEN F. DARLING, B.S.(Chem.) | MARY L. MORSE, M.S.(Chem.) |
| FRANK J. DOBROVOLNY, B.A. | BEN E. SORENSON, B.S.(Ch.E.) |
| LESTER J. ECK, B.S.(Ch.E.) | LESLIE F. STONE, B.S.(Chem.) |
| REUBEN B. ELLESTAD, B.S.(Chem.) | JUDITH C. WALLEN, B.S.(Chem.) |
| RUTH E. ELMQUIST, B.A. | ROBERT H. WHITE, B.S.(Ch.E.) |
| ROBERT C. ERNST, M.S.(Ch.E.) | J. RUSSELL WINSLOW, B.S. |

FELLOWS

- ARTHUR C. BECKEL, B.S., DuPont Fellow
 LEONARD HARTKEMEIER, B.S.(Chem.), Shevlin Fellow
 PAUL M. PAULSON, M.S.(Ch.E.), Research Fellow in Engineering Ex-
 periment Station

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, $\frac{1}{2}$ unit each; economics, sociology, economic history of England, and economic history of the United States, $\frac{1}{2}$ unit each; American government, commercial geography, and history of commerce, $\frac{1}{2}$ 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, $\frac{1}{2}$ 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 and drawing. 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, $\frac{1}{2}$ or 1 unit each; physiology, astronomy, geology, and physiography, $\frac{1}{2}$ 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 Monday and Tuesday, September 24 and 25, 1923, on Thursday, January 3, and Tuesday, April 1, 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

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

* 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.:

<i>Minnesota Daily</i> , a quarter.....	\$0.50
Post-office box, a quarter.....	.20
<i>University Address Book</i>.....	.35

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.

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.

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

The course 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.

The course 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 $17\frac{1}{2}$ credits per quarter for 12 quarters.

FELLOWSHIPS

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 towards 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 four weeks those 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.
Chemistry 9	General Inorganic Chemistry.....	5	1	3	5
M. and M. 11	College Algebra	5	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

Chemistry 10	General Inorganic Chemistry.....	5	1	3	5
M. and M. 12	Trigonometry	5	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
P.H. 2	Hygiene and First Aid.....	..	..	1	..
Mil. Sci. 2	First Year Basic Course.....	..	..	..	3

Third Quarter

Chemistry 12	Qualitative Analysis	5	2	1	6
M. and M. 13	Analytic Geometry	5	5	..	..
English 6	Rhetoric and Composition.....	3	3	..	..
Drawing 6	Drawing and Descriptive Geometry.....	2	..	..	6
M.E. 12, 13, or 17	Shop	2	..	..	6
Mil. Sci. 3	First Year Basic Course.....	..	..	..	3

REGULAR SOPHOMORE YEAR

First Quarter

Course No.	Title	Credits	Rec.	Lect.	Lab.
Chemistry 13	Qualitative Analysis	5	2	..	9
M. and M. 24	Differential Calculus	5	5	..	..
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

Chemistry 20	Quantitative Analysis	5	1	1	10
M. and M. 25	Integral Calculus	5	5	..	..
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

Chemistry 21	Quantitative Analysis	5	1	1	10
M. and M. 84	Technical Mechanics	5	5	..	..
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 18 and 19)

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 22. A total of 15 elective credits must be taken in Chemistry for graduation.

SCHOOL OF CHEMISTRY

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 Quarter¹

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	..	..
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				

SENIOR YEAR

First Quarter

Course No.	Title	Credits	Rec.	Lect.	Lab.
Chemistry 161	Food Analysis	3	..	1	6
Chemistry 96	Thesis	5	..	..	10
	Electives to complete program ³				

Second Quarter

Chemistry 162	Food Analysis	3	..	1	6
Chemistry 97	Thesis	5	..	..	10
	Electives to complete program ³				

Third Quarter

Chemistry 163	Food Analysis	3	..	1	6
Chemistry 98	Thesis	5	..	..	10
	Electives to complete program ³				

THE COURSE IN CHEMICAL ENGINEERING

(For freshman and sophomore years see pages 18 and 19)

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
German 27	Narrative Prose ²	3	3	..	..
M. and M. 85	Strength of Materials (with lab.).....	4	3	..	3
M.E. 38	Machine Design	3	..	1	6

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 22. A total of 15 elective credits must be taken in Chemistry for graduation.

Second Quarter

Chemistry 36	Organic Chemistry	5	1	3	6
Chemistry 168	Methods of Technical Analysis.....	3	..	1	6
German 28	Advanced Chemical German ¹	3	3	..	..
M. and M. 86	Hydraulics (with lab.).....	3	..	2	3
M.E. 147	Heat Engines	4	..	3	6

Third Quarter

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	..	..
Chemistry 37	Organic Chemistry	5	1	3	6
Chemistry 171	Chemical Machinery	4	1	4	..
German 29	Advanced Chemical German ¹	3	3	..	..
M.E. 148	Heat Engines	3	..	3	4
E.E. 43	Electric Power	3	..	2	3

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 172	Industrial Inorganic Chemistry.....	4	1	4	..
Chemistry 140	Physical Chemistry	5	1	3	6
E.E. 44	Electric Power	3	..	2	3
	Electives to complete program ²				

Second Quarter

Chemistry 173	Industrial Organic Chemistry.....	4	1	4	..
Chemistry 141	Physical Chemistry	5	1	3	6
E.E. 45	Electric Power	3	..	2	3
	Electives to complete program ²				

Chemistry 187	Inspection Trip, spring vacation.....	2
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Third Quarter

Chemistry 178	Chemical Engineering Calculations.....	3	3
Chemistry 142	Physical Chemistry	5	1	3	6
	Electives to complete program ²				

ENGINEERING ADMINISTRATION

The following group of electives has been arranged particularly for advanced students in the various branches of engineering. These courses are strongly recommended to students in Chemical Engineering who are desirous of preparing for positions which require administrative training and ability.

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 22 for list.

SCHOOL OF CHEMISTRY

JUNIOR YEAR

Course No.	Title	Credits
Economics 8f	General Economics	3
Economics 9w	General Economics	3
Economics 29s	Principles of Accounting.....	4

SENIOR YEAR

Economics 28f	Business Law	3
Economics 91f	Principles of Organization and Management	3
Economics 92w	Business Finance	3
Economics 167w	Industrial Relations	3
Economics 93s	Cost Accounting	3
Economics 154s	Public Utilities	3

SUGGESTED ELECTIVES

Drawing 9s, 10w, 41f, 42w, 43s
 Economics 8f, 9w
 Metallurgy 3f, 4w, 5s, 22f, 23w, 105f, 106w, 107s
 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		WINTER		SPRING	
	Credits		Credits		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		WINTER		SPRING	
	Credits		Credits		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		WINTER		SPRING	
	Credits		Credits		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		WINTER		SPRING	
	Credits		Credits		Credits
English A.....	5	English B.....	5	English C.....	5
Chemistry	5	Chemistry 7.....	5	Chemistry 8.....	5
Mathematics 6.....	5	Mathematics 7.....	5	Mathematics 30.....	5

SCHOOL OF CHEMISTRY

Sophomore Year

FALL		WINTER		SPRING	
	Credits		Credits		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		WINTER		SPRING	
	Credits		Credits		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

DESCRIPTIONS OF COURSES

CHEMISTRY

GENERAL INORGANIC CHEMISTRY

Associate Professor M. CANNON SNEED; Assistant Professors LILLIAN COHEN, RAYMOND E. KIRK, NORVILLE C. PERVIER, LLOYD H. REYERSON; Instructors HERVEY H. BARBER, GLADSTONE B. HEISIG, J. LEWIS MAYNARD, HENRY N. STEPHENS; Assistants ESTHER E. BAUER, THEODORE T. BUDROW, WILLIAM A. BUEDINGER, ALBERT L. CHANEY, H. MARJORIE CRAWFORD, FRANK J. DOBROVOLNY, LESTER J. ECK, RUTH E. ELMQUIST, HERTHA R. FRECHE, F. ANTON GRAY, MARY L. MORSE, JUDITH C. WALLEN, ROBERT H. WHITE, J. RUSSELL WINSLOW.

COURSES

- 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. MR. PERVIER.
- 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. MR. KIRK, MR. REYERSON, MR. HEISIG.
- 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. MISS COHEN.
- 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. MR. SNEED, MR. KIRK, MR. REYERSON.
- 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. MISS COHEN.
- 12f,s, 13f,w. QUALITATIVE CHEMICAL ANALYSIS. Laboratory work in systematic qualitative analysis with lectures on solution ionization, chemical and physical equilibrium, oxidation and reduction, etc. Five credits per quarter. Prerequisite: 8 or 10. MR. SNEED, MR. KIRK.
- 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. MR. PERVIER, MR. REYERSON.
- 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. MR. KIRK, MR. PERVIER, MR. REYERSON, MR. HEISIG.
- 18f,w,s,ss. 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. MR. BARBER.
- 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. MR. GEIGER.
- 51s. JUNIOR REVIEW EXAMINATION IN GENERAL INORGANIC CHEMISTRY. Required of all juniors in the School of Chemistry. Second week of the spring quarter. MR. SNEED.
- 52s. JUNIOR REVIEW EXAMINATION IN QUALITATIVE ANALYSIS. Required of all juniors in the School of Chemistry. Second week of the spring quarter. MR. SNEED.
- 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. MISS COHEN.
- 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. MR. SNEED.
- 103f-104w-105s. ADVANCED INORGANIC CHEMISTRY. A discussion of the periodic system and the chemistry of the elements and their compounds and of special subjects of inorganic chemistry such as valency, oxidation and reduction, complex ions etc. Three credits per quarter. Prerequisites: 21, 36. MR. SNEED.
- 301f-302w-303s. RESEARCH IN INORGANIC CHEMISTRY. Credits to be arranged. MR. SNEED, MR. REYERSON, MR. PERVIER.

		PROGRAM			
No.	Title	Hour	Day	Bldg.	Instructor
1f-2w-3s	General Inorganic Chemistry				
	Sec. 1 (Pre-med., pre-dent., jr. architects.)				
	Lect.	VI	MWF	225C	
	Lab.	VI-VII or VIII-IX	TTh	110C	
	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	
		IV	S	325C	
	Lab.	VIII-IX	MF	210C	
4f-5w	General Inorganic Chemistry				
	Sec. 1 (Engrs.)				
	Lect.	I	MWF	100C	Mr. Kirk
	Lab.	I-III	S	110C	Mr. Kirk
	Sec. 2 (Engrs.)				
	Lect.	II	TThS	100C	Mr. Heisig
	Lab.	I-III	Th	110C	Mr. Kirk
	Sec. 3 (Engrs.)				
	Lect.	IV	TS	100C	Mr. Kirk
		VI	Th	100C	Mr. Kirk
	Lab.	I-III	F	110C	Mr. Kirk
	Sec. 4 (Engrs.)				
	Lab.	VI-VIII	F	110C	Mr. Kirk Mr. Heisig
	Sec. 5 (Miners)				
	Lect.	II	TThS	100C	Mr. Heisig
	Lab.	VI-VIII	Th	110C	Mr. Heisig
	Sec. 6 (Pharm., phys. ed.)				
	Lect.	I	MWF	325C	Mr. Reyerson
	Lab.	VII-VIII	TTh	110C	Mr. Reyerson
	Sec. 7 (Pre-dent., pre-med.)				
	Lect.	VI	MWF	100C	
	Lab.	VI-VII or VIII-IX	TTh	210C	
6f-7w-8s	General Inorganic Chemistry				
	Lect.	II	MWF	225C	Miss Cohen
	Lab.				
	Sec. 1	I-III	ThS	210C	Miss Cohen
	Sec. 2*	VII-IX	MW	290C	Miss Cohen

* Limited to 30 students.

No.	Title	Hour	Day	Bldg.	Instructor
9f-10w	General Inorganic Chemistry				
	Sec. 1 (Agr.)				
	Lect.	VII	MWF	225C	Mr. Reyerson
	Lab.	VIII-IX	MWF	110C	Mr. Reyerson
	Sec. 2 (Chem.)				
	Lect.	II	MWF	100C	Mr. Sneed
	Lab.	I-III	Th	290C	Mr. Sneed
		II-IV	S	290C	Mr. Sneed
	Sec. 3 (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	Mr. Kirk
	Lab.	VIII-IX	MWF	290C	Mr. Kirk
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	Miss Cohen
	Lab.	VI-VII	TTh	210C	Miss Cohen
		or			
		VIII-IX			
12f	Qualitative Chemical Analysis				
	Lect.	I	TThS	115C	
	Lab.	VI-VIII	MW	290C	
12s	Qualitative Chemical Analysis				
	Lect.	II	MWF	100C	Mr. Sneed
	Lab. (S.L.A.)	I-III	ThS	290C	Mr. Sneed
	Lab. (Chem.)	I-III	Th	290C	Mr. Sneed
		II-IV	S		
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	
	Lab.	VI-VIII	MWF	290C	
14f-15w	General Inorganic Chemistry				
	Sec. 1 (Engrs., miners)				
	Lect.	II	TThS	225C	Mr. Pervier
	Lab. (Engrs.)	VIII-IX	MW	110C	Mr. Pervier
	Lab. (Miners)	VIII-IX	T	110C	Mr. Pervier
		VI-IX	Th	110C	Mr. Pervier
	Sec. 2 (Pharm., phys. ed.)				
	Lect.	I	MWF	115C	Ar
	Lab.	VI-VIII	TTh	110C	Ar

No.	Title	Hour	Day	Bldg.	Instructor
16s	Qualitative Chemical Analysis				
	Sec. 1 (Engrs.)				
	Lect.	I	MWF	100C	Mr. Heisig
	Lab.	I-III	TF	110C	Mr. Heisig
	Sec. 2 (Engrs.)				
	Lect.	IV	TS	100C	Mr. Kirk
		VI	Th	100C	Mr. Kirk
	Lab.	II-IV	M	110C	Mr. Kirk
		I-III	S	110C	Mr. Kirk
	Sec. 3 (Engrs.)				
	Lect.	II	TThS	225C	Mr. Pervier
	Lab.	VI-VIII	W	110C	Mr. Kirk
		I-III	Th	110C	Mr. Kirk
	Sec. 4 (Engrs.)				
	Lab.	VII-IX	MF	110C	Mr. Pervier
	Sec. 5 (Pharm.)				
	Lect.	I	MWF	325C	Mr. Reyerson
	Lab.	VI-VIII	TTh	110C	Mr. Reyerson
18f.w,s, su	Elementary Chemistry for Nurses				
	Lect.	Ar	Ar	225C	Mr. Barber
	Lab.	Ar	Ar	110C	Mr. Barber
19s	Teachers' Course.....	IV	MWF	315C	Mr. Geiger
51s	Junior Review Examination (General Inorganic)	Ar	Ar	Ar	Mr. Sneed
52s	Junior Review Examination (Qualitative Analysis)	Ar	Ar	Ar	Mr. Sneed
101s	History of Chemistry.....	IV	T	115C	
			S	215C	Miss Cohen
102w	Advanced Qualitative Analysis	Ar	Ar	290C	Mr. Sneed
103f-104w- 105s	Advanced Inorganic Chemistry	IV	MWF	111C	Mr. Sneed

ANALYTICAL CHEMISTRY

Professor PAUL H. M.-P. BRINTON; Assistant Professor ISAAC W. GEIGER; Instructors LANDON A. SARVER, ARTHUR E. STOPPEL; Assistant REUBEN B. ELLESTAD.

COURSES

- 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. MR. GEIGER.
- 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. MR. GEIGER, MR. SARVER.

- 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. MR. GEIGER, MR. SARVER, MR. STOPPEL.
- 53s. JUNIOR REVIEW EXAMINATION IN QUANTITATIVE ANALYSIS. Required of all juniors in the School of Chemistry. Second week of the spring quarter. MR. BRINTON.
- 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. MR. GEIGER.
- 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: 20, 27, or 27. MR. BRINTON.
- 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. MR. BRINTON.
- 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. MR. BRINTON.
- 321f-322W-323s. RESEARCH IN QUANTITATIVE ANALYSIS. Credits to be arranged. MR. BRINTON, MR. GEIGER.

PROGRAM					
No.	Title	Hour	Day	Bldg.	Instructor
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	

No.	Title	Hour	Day	Bldg.	Instructor
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	325C	
	Lab.	VI-IX	M	310C	
		VII-IX	WF	310C	
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	Ar	Mr. Brinton
123f-124w-					
125s	Advanced Analytical Chem- istry				
	Lect.	VI	T	315C	Mr. Brinton
	Lab.	VII-IX	T	310C	
		VI-IX	Th	310C	
127f-128w-					
129s	Chemistry of the Rare Ele- ments				
	Lect.	Ar	Ar	ArC	Mr. Brinton
	Lab.	Ar	Ar	ArC	
227f-228w-					
229s	Selected Topics	Ar	Ar	ArC	Mr. Brinton

ORGANIC CHEMISTRY

Professors WILLIAM H. HUNTER, GEORGE B. FRANKFORTER; Assistant Professor LEE I. SMITH; Instructor WALTER M. LAUER; Assistants STEPHEN F. DARLING, REYNOLD C. FUSON, LEO C. HUMPHREY, ARTHUR H. KOHLHASE.

COURSES

- 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. MR. LAUER.
- 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. MR. SMITH.
- 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. MR. HUNTER, MR. LAUER.
- 131s. ORGANIC ANALYSIS. Practice in the identification of organic compounds, and the modern methods of quantitative organic analysis. Three credits. Prerequisite: 37. MR. LAUER.
- 132w. THE RISE AND DEVELOPMENT OF ORGANIC CHEMISTRY. Includes biographical and other phases necessary to a complete discussion of the subject. Two credits. Prerequisite: Course 37. MR. FRANKFORTER.
- 133f. REAGENTS IN ORGANIC CHEMISTRY. A discussion of typical reagents used in organic reactions: their limit 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. MR. SMITH.
- 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: Course 37. MR. FRANKFORTER.
- 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. MR. HUNTER, MR. LAUER.

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. MR. HUNTER.

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. MR. HUNTER.

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: 131 or 133. MR. HUNTER.

231f-232w-233s. ORGANIC CHEMISTRY SEMINAR. One hour a week. One credit. Open only to students taking research in organic chemistry. MR. HUNTER.

331f-332w-333s. RESEARCH IN ORGANIC CHEMISTRY. Credits to be arranged. MR. HUNTER, MR. FRANKFORTER, MR. SMITH.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
31f-32w	Elementary Organic Chemistry				
	Lect.	VI	MWF	490C	Mr. Lauer
	Rec. Sec. 1	VII	M	111C	Mr. Lauer
	Sec. 2	VII	W	111C	
	Sec. 3	VII	M	115C	
	Sec. 4	VII	F	111C	
	Sec. 5	VII	W	115C	
	Sec. 6	VII	F	115C	
	Lab. (Secs. to be arranged)	VII-IX	MW	390C	Mr. Lauer
			MF	390C	
			WF	390C	
31w-32s	Elementary Organic Chemistry				
	Lect.	IV	MWF	100C	Mr. Smith
	Rec. Sec. 1	VI	T	115C	
	Sec. 2	VI	Th	115C	
	Sec. 3	VI	W	215C	
	Sec. 4	VI	F	215C	
	Sec. 5	III	W	315C	
	Lab. Sec. 1, 2	VI-VIII	TTh	390C	Mr. Smith
	Sec. 3, 4	VI-VIII	WF	390C	
	Sec. 5, 6	I-III	WF	390C	

No.	Title	Hour	Day	Bldg.	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) (Chem. 4 yr. s)	I-III	TTh	390C	
		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	Ar	Mr. Frankforter
133f	Reagents in Organic Chem- istry				
	Lect.	II	MWF	325C	Mr. Smith
134f	The Terpenes.....				
	Lect.	Ar	Ar	ArC	Mr. Frankforter
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 Chem- istry Laboratory Work..	Ar	Ar	390C	Mr. Hunter
191f-192w- 193s	Advanced Organic Chem- istry	III	TThS	315C	Mr. Hunter

PHYSICAL CHEMISTRY

Associate Professor FRANK H. MACDOUGALL; Assistant Professors LAWRENCE M. HENDERSON, LLOYD H. REYERSON; Assistants RALPH E. BEARD, BARBARA LEE LUND.

COURSES

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. MR. MACDOUGALL, MRS. LUND.

143f,w. PHYSICAL CHEMISTRY. (Designed chiefly for medical and biological students.) Four credits per quarter. (Heretofore No. 40f,w.) Prerequisite: 32. MR. HENDERSON.

- 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. MR. HENDERSON.
- 149s. **PRINCIPLES OF COLLOIDAL CHEMISTRY.** Two credits. Prerequisite: 141. (Not offered in 1923-24.) MR. REYERSON.
- 150s. **APPLICATION OF COLLOIDAL CHEMISTRY.** Two credits. Prerequisite: 141. MR. REYERSON.
- 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. (Not offered in 1923-24.) MR. HENDERSON.
- 152f,w,s. **LABORATORY COURSE IN RADIOCHEMISTRY.** To accompany or follow Course 151. Credits arranged. MR. HENDERSON.
- 156w. **APPLICATION OF PHYSICAL CHEMISTRY TO ORGANIC CHEMISTRY.** Illustrations of the use of physicochemical methods in organic research. Three credits. Prerequisites: 130, 142. MR. HENDERSON.
- 157f-158w-159s. **COLLOID CHEMISTRY LABORATORY.** Credits and hours to be arranged. Must be preceded or accompanied by Physical Chemistry 149 or 150. MR. REYERSON.
- 243f-244w-245s. **THERMODYNAMICS AND CHEMISTRY.** A detailed study of the principles of thermodynamics and their application to physical and chemical phenomena. Three credits per quarter. Prerequisites: 142 and calculus. MR. MACDOUGALL.
- 246f-247w-248s. **KINETIC THEORY AND ATOMISTICS.** Kinetic theory of gases and liquids, crystal structure, structure of atom, quantum theory. Three credits per quarter. Prerequisites: 142 and calculus. (Not offered in 1923-24.) MR. MACDOUGALL.
- 250f-251w-252s. **PHYSICAL CHEMISTRY SEMINAR.** One hour a week. For students taking advanced courses in physical chemistry. One credit per quarter. MR. MACDOUGALL, MR. HENDERSON, MR. REYERSON.
- 253f-254w-255s. **ADVANCED PHYSICAL CHEMISTRY LABORATORY.** To accompany or follow any of the advanced courses in physical chemistry. Credits arranged. Prerequisite: 142. MR. MACDOUGALL.
- 341f-342w-343s. **RESEARCH IN PHYSICAL CHEMISTRY, INCLUDING WORK IN ELECTROCHEMISTRY, RADIOCHEMISTRY, AND COLLOIDS.** Credits to be arranged. MR. MACDOUGALL, MR. HENDERSON, MR. REYERSON.

PROGRAM					
No.	Title	Hour	Day	Bldg.	Instructor
140f-141w-					
142s	Physical Chemistry.....				
	Lect.	IV	MWF	325C	Mr. MacDougall
	Rec.				
	Sec. 1 (Chem.)	IV	S	111C	Mrs. Lund
	Sec. 2 (Others)	IV	S	115C	Mr. MacDougall
	Lab.				
	Sec. 1 (Chem.)	VI-VIII	MW	15C	Mr. MacDougall
				117C	Mrs. Lund
	Sec. 2 (Others)	VI-VIII	F	15C	Mr. MacDougall
				117C	Mrs. Lund
143f,w	Physical Chemistry.....				
	Lect.	VI	TTh	225C	Mr. Henderson
	Lect.	IX	F	225C	Mr. Henderson
	Lab. Sec. 1	I-III	MW	15C	Mr. Henderson
	Lab. Sec. 2	VII-IX	TTh	117C	Mr. Henderson
146f-147w-					
148s	Advanced Physical Chem-				
	istry	Ar	Ar		Mr. Henderson
150s	Application of Colloidal				
	Chemistry	Ar	Ar		Mr. Reyerson
152f,w,s	Radiochemistry Laboratory.	Ar	Ar		Mr. Henderson
156w	Applications of Phys. Chem.				
	to Organic Chem.....	Ar	Ar		Mr. Henderson
157f-158w-					
159s	Colloid Chemistry Labora-				
	tory	Ar	Ar		Mr. Reyerson
243f-244w-					
245s	Thermodynamics and Chem-				
	istry	II	TThS	315C	Mr. MacDougall
250f,251w,					
252s	Seminar	Ar	Ar		Mr. MacDougall, Mr. Henderson, Mr. Reyerson
253f,254w,					
255s	Advanced Phys. Chem. Lab.	Ar	Ar		Mr. MacDougall
341f-342w-					
343s	Research in Physical Chem-				
	istry	Ar	Ar		Mr. MacDougall, Mr. Henderson, Mr. Reyerson

TECHNOLOGICAL CHEMISTRY

Associate Professor EVERHART P. HARDING; Instructors RALPH E. BREWER,¹ PHILIP J. RILEY; Assistants BEN E. SORENSON, LESLIE F. STONE.

COURSES

60s. 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: 28. MR. HARDING, MR. RILEY.

¹ On leave of absence, 1923-24.

- 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. MR. HARDING, MR. RILEY.
- 164w. **EXACT GAS ANALYSIS.** One or two credits. Prerequisite: 21. MR. HARDING.
- 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. MR. HARDING.
- 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: 21. MR. HARDING, MR. RILEY.
- 168w. **PETROLEUM AND PETROLEUM PRODUCTS.** Examination and testing of petroleum products, principally gasoline, illuminating and lubricating oils. Three credits. Prerequisite: 21. MR. HARDING, MR. RILEY.
- 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. MR. HARDING, MR. RILEY.
- 361f-362w-363s. **RESEARCH WORK IN TECHNOLOGICAL CHEMISTRY.** Credits to be arranged. MR. HARDING.

PROGRAM						
No.	Title	Hour	Day	Bldg.	Instructor	
60s	Power Plant Chemistry....					
	Lect.	VI	T	215C	Mr. Harding	
	Rec.	VI	Th	215C	Mr. Harding	
	Lab.	VII-IX	TTh	10C	Mr. Harding	
161f-162w- 163s	Food Analysis.....					
	Lect.	IV	T	215C	Mr. Harding	
	Lab.	VI-IX	F	217C	Mr. Harding, Mr. Riley	
		II-III	F	217C	Mr. Harding, Mr. Riley	
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. Riley	
	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. Riley	

No.	Title	Hour	Day	Bldg.	Instructor
	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. Riley

CHEMICAL ENGINEERING

Professors CHARLES A. MANN, GEORGE B. FRANKFORTER; Assistant Professor GEORGE H. MONTILLON; Assistant ROBERT C. ERNST.

COURSES

- 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. MR. MANN.
- 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. MR. MANN.
- 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. MR. MANN.
- 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. Three credits. Prerequisite: 171. MR. MANN, MR. MONTILLON.
- 175w,su. CHEMICAL MANUFACTURE. (Organic.) Similar to above but covering the organic field. Laboratory. Three credits. Prerequisite: 171. MR. MANN, MR. MONTILLON.
- 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. MR. MANN, MR. MONTILLON.
- 178s. CHEMICAL ENGINEERING CALCULATIONS. Problems in combustion, drying, evaporation, filtration, and general chemical processes. Three credits. Prerequisite: 173. MR. MONTILLON.

- 179s. ADVANCED APPLIED ELECTROCHEMISTRY. The more recent developments in the manufacture of inorganic and organic products. Credits arranged. Prerequisites: 142, 176, 177. MR. MANN, MR. MONTILLON.
- 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. MR. MANN, MR. MONTILLON.
- 183f. CHEMISTRY OF EXPLOSIVES. The history and development of modern explosives, their manufacture and uses. Lectures, required reading, and reports. Four credits. Prerequisite: 173. (Not offered in 1923-24.) MR. FRANKFORTER.
- 184s. ORGANIC DYE STUFFS. The technical chemistry of commercial dyes and their intermediates. Class and laboratory. Five credits. Prerequisite: 173. MR. FRANKFORTER.
- 185s. ADVANCED CHEMICAL MANUFACTURE. Problems in the manufacture of special chemicals on a large scale, using the industrial chemistry laboratory. Three credits. Prerequisites: 174, 175. MR. MANN, MR. MONTILLON.
- 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. Three credits. MR. MONTILLON.
- 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. MR. MANN, MR. MONTILLON.
- 271f-272w-273s. SEMINAR. Presentation and discussion of papers concerning the newer developments in chemical industries. One credit per quarter. MR. MANN, MR. MONTILLON.
- 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. MR. MANN, MR. FRANKFORTER.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
171s	Chemical Machinery	I	MTWThF	111C	Mr. Mann
172f	Industrial Inorganic Chem.	I	MTWThF	111C	Mr. Mann
173w	Industrial Organic Chem..	I	MTWThF	111C	Mr. Mann
174f.su-					
175w.su	Chemical Manufacture....	I-VIII	MTWThFS	90C	Mr. Mann, Mr. Montillon

SCHOOL OF CHEMISTRY

No.	Title	Hour	Day	Bldg.	Instructor
176f- 177w	Applied Electrochem..... Lect.	III	MWF	111C	Mr. Mann, Mr. Montillon
	Lab.	VI-VIII	W or Th	25C	Mr. Mann, Mr. Montillon
178s	Chem. Eng. Calculations..	II	MWF	111C	Mr. Montillon
179s	Advanced Applied Electro- Chemistry	Ar	Ar	ArC	Mr. Mann, Mr. Montillon
180f-181w- 182s	Design of Chemical Equip- ment and Plants.....	VI-VIII	MF	ArC	Mr. Montillon
184s	Organic Dyestuffs.....	Ar	Ar	ArC	Mr. Frankforter
186s	Gas Manufacture and Dis- tribution	Ar	Ar	ArC	Mr. Montillon
187s	Inspection Trip.....	I-VIII (Spring vacation)			Mr. Mann, Mr. Montillon
271-272- 273	Seminar	Ar	Ar	ArC	
371-372- 373	Seminar	Ar	Ar	ArC	

DRAWING AND DESCRIPTIVE GEOMETRY

Professor WILLIAM H. KIRCHNER;¹ Assistant Professors ROBERT W. FRENCH, HOWARD D. MEYERS; Instructors LEON ARCHIBALD, JOHN O. CEDERBERG, ALEX S. LEVENS, ROBERT F. SCHUCK, WILLIAM S. WILIAMS.

COURSES

- 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. MR. SCHUCK.
- 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. MR. SCHUCK.
- 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. MR. SCHUCK.

¹ On sabbatic furlough, 1923-24.

- 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. MR. ARCHIBALD, MR. SCHUCK, MR. WILLIAMS.
- 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. MR. LEVENS, MR. SCHUCK.
- 41f-42w-43s. 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. MR. MYERS, MR. CEDERBERG.
- 44f,w,s. LETTERING. A practical course in plain lettering and the making of graphs and charts. One credit per quarter. Prerequisite: none. MR. FRENCH, MR. LEVENS, MR. SCHUCK.
- 45f,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. MR. SCHUCK.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
4f-5w	Engineering Drawing and Descriptive Geometry....	VI-VII VII-VIII	TTh F	443C 443C	
6s	Engineering Drawing and Descriptive Geometry....	III-IV VI-VII	T WTh	443C 443C	
7w	Engineering Drawing and Descriptive Geometry....	VI-VIII VII-VIII	TTh F	443C 443C	
8s	Engineering Drawing and Descriptive Geometry....	III-IV VI-VIII	T WTh	443C 443C	
9f,w,s	Drafting	Ar	Ar		
10f	Solid Geometry.....				
	Sec. 1 (Chem.)	IV	MWF	201E,Exp	
	Sec. 2	VI	MWF	106E	
	Sec. 3	II	MWTh	229E	
	Sec. 4	III	TThS	21E	
10w	Solid Geometry.....	III	MWF	107E	
38f-39w-40s	Graphs and Charts.....	I	WF	104E	
41f,w-42f,w-43f,w	Technical Drawing.....				
	Sec. 1	I-II	MWF	455C	
	Sec. 2	III-IV	MWF	455C	
	Sec. 3	VIII-IX	MWF	455C	

No.	Title	Hour	Day	Bldg.	Instructor
415-425-					
435	Technical Drawing.....				
	Sec. 1	I-II	MWF	455C	
	Sec. 2	III-IV	MWF	455C	
	Sec. 3	VIII-IX	MTF	455C	
44f,w,s	Lettering				
	Sec. 1	IV	T	203C	
	Sec. 2	II	Th	206E	
45f,w,s-					
46f,w,s	Alphabets	II	TTh	217E	

ECONOMICS

Professors GEORGE W. DOWRIE, ROY G. BLAKEY, JEREMIAH S. YOUNG; Assistant Professors JOSEPH E. CUMMINGS, Z. CLARK DICKINSON, H. BRUCE PRICE, JOHN J. REIGHARD, J. WARREN STEHMAN; Lecturers JAY L. O'HARA, BEN W. PALMER; Instructors RALPH FARMER, HARRY J. OSTLUND, LAWRENCE SMITH.

COURSES

- 8f-gw. 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. MR. BLAKEY and others.
- 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. MR. PALMER.
- 29s. 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. MR. OSTLUND.
- 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. MR. YOUNG.
- 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. MR. CUMMINGS.

- 74s. **TRANSPORTATION PROBLEMS.** An intensive study of certain important problems such as valuation, public ownership, operation, and regulation. Three credits. Prerequisite: 57. MR. CUMMINGS.
- 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. MR. PRICE.
- 91f. **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. MR. O'HARA.
- 92w. **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. MR. STEHMAN.
- 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. MR. OSTLUND.
- 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. MR. OSTLUND.
- 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. MR. REIGHARD.
- 167w. **PERSONNEL ADMINISTRATION.** Managerial policy for various types of organization on labor. Special attention to job analysis, employment, incentives, and regularization of employment. MR. DICKINSON.
- 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. MR. DICKINSON.

* All quarters must be completed before credit is given for any quarter.

SCHOOL OF CHEMISTRY

		PROGRAM				
No.	Title	Hour	Day	Bldg.	Instructor	
8f-9w	General Economics.....					
	Sec. 1	I	MWF	135ME	Mr. Blakey	
	2	I	MWF	225C		
	3	III	MWF	225C		
	4	IV	MWF	107ME		
	5	IV	MWF	135ME(f) 136ME(w)		
28f,w,s	Business Law.....	IV	MWF	102MechE(f)	Mr. Palmer	
	(Section limited to 50 students)			106ME(w)		
29s	Principles of Accounting..					
	Lect. Sec. 1	I	MWF	107ME	Mr. Ostlund	
	2	I	MWF	135ME		
	3	I	TThS	104ME		
	4	III	MWF	206ME		
	5	IV	MWF	205ME		
	Lab. Sec. 1	VI-VII	Th	201ME		
	2	VIII-IX	Th	201ME		
	3	VI-VII	M	201ME		
	4	VI-VII	F	201ME		
	5	VI-VII	W	201ME		
51f-52w-						
53s	Business Law.....					
	Lect.	II	WF	301F	Mr. Young	
				LitTh(s)		
	Sec. 1	I	M	102F		
	2, 3, 4	II	M	3F,2F,321F		
	5	VII	M	205F		
	6, 7	Ar	Ar	Ar		
73w	Railway Traffic and Rates	VI	MWF	102B	Mr. Cummings	
74s	Transportation Problems...	VI	MWF	102B	Mr. Cummings	
85f	Principles of Marketing...					
	Lect.	I	F	209B	Mr. Price	
	Sec. 1	I	TTh	202B		
	2	I	MW	209B		
	3	IV	WF	Ar		
	4	IV	TTh	102B		
85s	Principles of Marketing...	I	TThS	102MA	Mr. Price	
91f	Principles of Organization and Management	I	MWF	107ME	Mr. O'Hara	
92w	Business Finance.....	I	MWF	107ME	Mr. Stehman	
93s	Cost Accounting.....	IV	MWF	107ME	Mr. Ostlund	
131f 132w-						
133s	Cost Accounting.....					
	Sec. 1	II	TThS	109B 303(s)	Mr. Ostlund	
	2	III	TThS	109B 303(s)		
154s	Public Utilities.....	I	MWF	102B	Mr. Reighard	
167w	Personnel Administration..	II	TThS	209B	Mr. Dickinson	
168s	Advance Personnel Admin- istration	II	TThS	209B	Mr. Dickinson	

ELECTRICAL ENGINEERING

Professor GEORGE D. SHEPARDSON; Assistant Professor EDWIN R. MARTIN.

COURSES

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. MR. MARTIN.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
43S	Electric Power.....				
	Lect.	II	TTh	111C	Mr. Martin
		III	S	111C	Mr. Martin
44f-45W	Lab.	I-II	S	100EE	Mr. Martin
	Electric Power.....				
	Lect.	II	TTh	111C	Mr. Martin
		III	S	111C	Mr. Martin
	Lab.	I-II	S	100EE	Mr. Martin

ENGLISH

Professor JOSEPH M. THOMAS; Instructors FRANCIS LUDLOW, EDWARD A. WARREN.

COURSES

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. MR. LUDLOW, MR. WARREN.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
4f-5W-6S	Rhetoric and Composition..	III	MWF	225C	Mr. Ludlow, Mr. Warren

GEOLOGY AND MINERALOGY

Professors WILLIAM H. EMMONS, FRANK F. GROUT; Instructor W. HORATIO BROWN.

COURSES¹

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. MR. BROWN.

¹ For other courses in the Department of Geology and Mineralogy, see bulletin for the College of Science, Literature, and the Arts.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
67f	Mineralogy of Chemical Materials				
	Lect.	III	MWThF	104P	Mr. Brown
		III-IV	T	100P	Mr. Brown

GERMAN

Professor CARL SCHLENKER; Associate Professor SAMUEL KROESCH; Instructor LYNWOOD G. DOWNS.

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.

COURSES

- 24f-25w-26s. BEGINNING GERMAN. Pronunciation, conversation, grammar, and composition; readings and easy prose. Four credits per quarter. No prerequisite. MR. KROESCH.
- 27f. NARRATIVE PROSE. Reading, grammar review. Three credits. Prerequisite: 26 or two years preparatory German. MR. DOWNS.
- 28w-29s. ADVANCED CHEMICAL GERMAN. Selections from more difficult works on chemistry. Three credits per quarter. Prerequisite, 27. MR. DOWNS.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
24f-25w- 26s	Beginning German.....	IV	MTWF	209½F	Mr. Kroesch
27f	Narrative Prose.....	II	MWF	209F½	Mr. Downs
28w-29s	Advanced Chemical German	II	MWF	209½F	Mr. Downs

MATHEMATICS AND MECHANICS

Professors WILLIAM E. BROOKE, WILLIAM F. HOLMAN, HANS H. DALAKER; Associate Professor JACOB O. JONES; Assistant Professors CARL A. HERRICK, RAYMOND R. HERRMANN, WILLIAM M. McCLINTOCK, GEORGE C. PRIESTER, RODERICK W. SILER, HUGH B. WILCOX; Instructors CHARLES BOEHNLEIN, HARRY A. DOERINGSFELD, HENRY E. HARTIG, ELMER W. JOHNSON, OSCAR C. LEE, WALTER R. WARNE.

COURSES

Mathematics

9f,w. HIGHER ALGEBRA. (High school.) Fundamental rules, fractions, linear simultaneous equations, graphs, theory of exponents, surds, complex quantities, quadratic equations, numerical exercises, slide rule. Without credit. MR. BROOKE, MR. DALAKER, MR. HOLMAN, MR. McCLINTOCK, MR. SILER, MR. DOERINGSFELD, MR. HARTIG, MR. WARNE.

- 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. Prerequisites: higher algebra. MR. BROOKE, MR. DALAKER, MR. HOLMAN, MR. MCCLINTOCK, MR. DOERINGSFELD, MR. HARTIG, MR. JOHNSON, MR. LEE.
- 12w,s. 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. MR. MCCLINTOCK, MR. DOERINGSFELD, MR. HARTIG, MR. JOHNSON, MR. LEE.
- 13f,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. MR. MCCLINTOCK, MR. HARTIG, MR. JOHNSON, MR. LEE.
- 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, asymptotes, singular points, applications to geometry of space. Five credits. Prerequisite: 13. MR. DALAKER, MR. MCCLINTOCK, MR. SILER, MR. WILCOX, MR. BOEHNLEIN, MR. HARTIG, MR. JOHNSON.
- 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. MR. DALAKER, MR. MCCLINTOCK, MR. SILER, MR. WILCOX, MR. BOEHNLEIN, MR. HARTIG, MR. JOHNSON.

Mechanics

- 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. MR. HERICK.

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. MR. HERRICK.

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. MR. JONES, MR. HERRICK.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
9f & 11f	Higher Algebra	I	MTWFS	215C 315C	
	Sec. 21-22				
10f,w	See Course 10f,w under Department of Drawing and Descriptive Geometry.				
11w	College Algebra	I	MTWFS	315C	
	Sec. 2				
11s	College Algebra	III	MWThF	22C	
		V	S		
12w	Trigonometry	I	MTWFS	215C	
	Sec. 10				
12s	Trigonometry	I	MTWFS	315C	
13f	Analytic Geometry.....				
	Sec. 1	II	MTWFS	209Ex	
	Sec. 2	V	MTWFS	205E	
	Sec. 3	VI	MWThF		
		IV	S	22E	
13s	Analytic Geometry.....	I	MTWFS	215C	
24f	Differential Calculus				
	Sec. 10 (Chemists)	III	MTWFS	115C	
	Sec. 3	II	MTWThFS	215E	
	Sec. 8	IV	MTWF	215E	
		III	Th	215E	
24w	Differential Calculus	III	MTWThS	215C	
25w	Integral Calculus.....	III	MTWFS	115C	
25s	Integral Calculus.....	III	MTWThS	203E	
26f	Technical Mechanics (Statics)				
	Sec. 1	I	MTWF	21E	
		I	S	104E	
	Sec. 2	V	MTWFS	136E	
	Sec. 3	V	MTWFS	217E	
26s,su	Technical Mechanics (Statics). See Engineering bulletin. (Chemists are allowed to take Course 26 only by special permission of the Students' Work Committee.)				

No.	Title	Hour	Day	Bldg.	Instructor
84s	Technical Mechanics	III	MTWFS	115C	
85f	Strength of Materials with Laboratory	IV	MF	115C	
		II	S	115C	
		VI-VIII	W	Exp	
86w	Hydraulics with Laboratory	VI	M	217E	
		II	S	217E	
		VI-VIII	W	Exp	

MECHANICAL ENGINEERING

Professors JOHN J. FLATHER,¹ FRANK B. ROWLEY, S. CARL SHIPLEY; Associate Professors JOHN V. MARTENIS, CHARLES F. SHOOP; Assistant Professors VICTOR GAUVREAU, BURTON J. ROBERTSON; Instructors JOHN FLODIN, THOMAS P. HUGHES, JOHN H. MOFFETT, DAYTON A. ROGERS, GEORGE L. TUVE.

COURSES

- 12f,w,s. ELEMENTARY SHOP PRACTICE IN FOUNDRY. Two credits. No prerequisite. MR. SHIPLEY, MR. MOFFETT.
- 13f,w,s. ELEMENTARY SHOP PRACTICE IN FORGING. Two credits. No prerequisite. MR. SHIPLEY, MR. HUGHES.
- 17f,w,s. ELEMENTARY SHOP PRACTICE IN MACHINE SHOP. Arranged for students in chemistry. Two credits. No prerequisite. MR. SHIPLEY, MR. ROGERS.
- 38f. MACHINE DESIGN. Calculation and design of such machine parts as fastenings, rotating pieces, pulleys and belting; spur gears and bevel gears; lectures and drawing room practice. Two credits. Prerequisite: M. & M. 84. MR. MARTENIS, MR. FLODIN.
- 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. MR. SHOOP, MR. TUVE.
- 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. MR. SHOOP, MR. TUVE.

¹ Absent on leave, 1923-24.

SCHOOL OF CHEMISTRY

PROGRAM

No.	Title	Hour	Day	Bldg.	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. Rogers
38f	Machine Design				
	Lect.	IV		W 205ME	
	Lab.	VI-IX		MF 205ME	Mr. Martenis
147w-148s	Heat Engines.....				
	Lect.	IV	MWF	Exp	Mr. Shoop
	Lab.	VI-IX		F Exp	Mr. Shoop Mr. Tuve

METALLOGRAPHY

Professor OSCAR E. HARDER; Instructors RALPH L. DOWDELL, CLAYTON M. REASONER.

COURSES

- 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. MR. HARDER, MR. DOWDELL, MR. REASONER.
- 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. MR. HARDER, MR. DOWDELL, MR. REASONER.
- 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. MR. HARDER, MR. DOWDELL, MR. REASONER.
- 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.

PROGRAM						
No.	Title	Hour	Day	Bldg.	Instructor	
160f-161w-						
162s	Metallography					
	Lect.	II				
		VI-VIII	MW	306M		Mr. Harder
			Th	306M		Mr. Harder, Mr. Dowdell, Mr. Reasoner
163f-164w-						
165s	Advanced Metallography..	Ar		M		Mr. Harder
201-202-						
203	Advanced Metallography for Graduate Students..	Ar		M		Mr. Harder

METALLURGY

Professors WILLIAM R. APPLEBY, PETER CHRISTIANSON, LEVI B. PEASE;
Instructor ELWYN L. SMITH.

COURSES

- 3f. GENERAL METALLURGY. Combustion, fuels, refractory materials, furnaces, and fluxes. Lectures and recitations. Three credits. Prerequisite: Chemistry 8 or equivalent. MR. CHRISTIANSON.
- 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. MR. CHRISTIANSON.
- 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. MR. CHRISTIANSON.
- 22f. METALLURGY OF BASE METALS. (Chemists, mechanical engineers.) Special consideration is given to mechanical appliances. Lectures and recitations. Three credits. Prerequisite: Chemistry 8 or equivalent. MR. CHRISTIANSON, MR. PEASE.
- 23w. METALLURGY OF BASE METALS. (Chemists, electrical engineers.) Not a continuation of 22f. Special consideration is given to electrical appliances. Lectures and recitations. Three credits. Prerequisite: Chemistry 8 or equivalent. MR. CHRISTIANSON, MR. PEASE.
- 105f. 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 3f. MR. PEASE.
- 106w. METALLURGY OF BASE METALS. Continuation of Course 105f. Four credits. Prerequisite: Metallurgy 105. MR. PEASE.

107s. 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 106. MR. PEASE.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
3f	General Metallurgy.....	I	TThS	108M	Mr. Christianson
4w	Metallurgy of Pig Iron....	I	TThS	108M	Mr. Christianson
5s	Met. Wrought Iron and Steel	I	TThS	108M	Mr. Christianson
22f-23w	Met. of Base Metals.....	IV	MWF	108M	Mr. Christianson, Mr. Pease
105f-					
106w	Met. of Base Metals.....	I	F	108M	Mr. Pease
		III	TThS	108M	Mr. Pease
107s	Met. of Precious Metals...	I	F	108M	Mr. Pease
		III	TThS	108M	Mr. Pease

MILITARY SCIENCE AND TACTICS

Professor GIRARD STURTEVANT, Infantry; Assistant Professors HENRY H. RUTHERFORD, Lieutenant Colonel, Medical Corps; FREDERICK R. WUNDERLICH, Major, Dental Corps; LEE R. WATROUS, JR., Major, Coast Artillery Corps; VERNON W. HALL, Captain, Coast Artillery Corps; JAMES T. WATSON, JR., Captain, Signal Corps; LEO J. FARRELL, Captain, Infantry; ANDREW C. TYCHSEN, Captain, Infantry; NEWTON W. SPEECE, Captain, Infantry; HAL. M. ROSE, 1st Lieutenant, Cavalry; MYRON J. CONWAY, 1st Lieutenant, Infantry; Instructors JOSEPH HAVLICEK, Regimental Commissary Sergeant, U.S.A., Retired; JOHN MCWILLIAMS, 1st Sergeant, U.S.A., Retired; ALFRED BRANDT, Technical Sergeant, D.E.M.L.; HARRY E. STRIDER, Technical Sergeant, D.E.M.L.; HARRY E. STRIDER, Technical Sergeant, D.E.M.L.; AUBREY R. DUNKUM, Staff Sergeant, D.E.M.L.; EDMUND T. McCANN, Sergeant, D.E.M.L.; CLARENCE G. LANGE, Sergeant, Co. "I" 3rd Infantry; HENRY W. BROWN, Sergeant, D.E.M.L.; JOE WIER, Sergeant, D.E.M.L.; ROBERT M. THURSTON, Sergeant, D.E.M.L.; ERNEST R. MYLK, Private 1st Class, D.E.M.L.

REQUIRED WORK

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

ELECTIVE WORK

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

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

In addition to the above allowance, government uniform commutation is allowed for the purchase of a special blue whipcord uniform required for all members of the Advanced Course.

Students who successfully pass the Advanced Course are, upon the recommendation of the president of the University and the professor of military science and tactics, eligible for appointment as reserve officers of the army.

The Advanced Course embraces three departments; Infantry, Coast (Heavy) Artillery, and Signal Corps, in any of which the student may be enrolled.

COURSES

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.

SIGNAL CORPS. Infantry drill and physical training; military hygiene and first aid; military courtesy; guard duty; army organization and organization of signal troops; military telegraph apparatus; military telephone apparatus; radio telegraphy.

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.

SCHOOL OF CHEMISTRY

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.

SIGNAL CORPS. Infantry drill and physical training; military sketching and map-reading; army organization; organization of signal troops; military telegraph and telephone apparatus; radio telegraphy.

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).

SIGNAL CORPS. Minor tactics; field engineering; organization and tactics of all arms; staff organizations and duties; message centers; codes and ciphers; telephone construction; communication engineering (Electrical Communication, E. E. 61-63).

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.

SIGNAL CORPS. Minor tactics; field engineering; organization and tactics of signal troops; military history and policy of United States; administration; military laws; signal corps duties; message centers; codes and ciphers; semi-permanent and temporary telephone construction; communication engineering (Electrical communication, given by Electrical Engineering Department).

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w	First-Year Basic Course				
	R.O.T.C.	VI	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.	I	MWF	A	Ar
6s	Second-Year Basic Course				
	R.O.T.C.	VII-IX	T	A	Ar

No.	Title	Hour	Day	Bldg.	Instructor
51f-52w-53s	First-Year Advanced Course R.O.T.C.	VII-IX IV	W MF	A A	Ar Ar
54f-55w-56s	Second-Year Advanced Course R.O.T.C.....	VII-IX I	F MW	A A	Ar Ar

PHYSICAL EDUCATION
FOR MEN

Professors FRED W. LUEHRING, Director; T. NELSON METCALF; Associate Professor LOUIS J. COOKE, Assistant Director; Instructors PERCY GLIDDEN, EMIL IVERSON, HAROLD T. TAYLOR, HERBERT N. WATSON.

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. Students taking the required work in physical education are examined at the close of the year.

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 T. N. Metcalf before registering.

COURSES

- 1f-2w-3s.* HYGIENE AND PHYSICAL EDUCATION. Personal and public hygiene, mass activities, corrective exercises, apparatus work, swimming, athletics, games, and efficiency tests. One credit per quarter. Prerequisite: none. DR. COOKE, MR. WATSON, and assistants.
- 7f-8w-9s. ADVANCED LEADERS. One hour of instruction, two hours leading squads in Physical Education 1-2-3 under supervision. One credit per quarter. Prerequisite: 1-2-3. MR. WATSON.
- 10f-11w-12s. MINOR SPORTS. Study of nature and function of play: rules, theory, and technique of activities. Fall: soccer, golf, handball, boxing. Winter: skating, hockey, wrestling, tumbling. Spring: swimming, indoor baseball, volley ball, tennis. Lecture one hour, practice three hours. Two credits per quarter. Prerequisite: 1-2-3. MR. METCALF and others.

No.	Title	PROGRAM Hour	Day	Room	Instructor
1f†	Hygiene and physical Edu- cation				
	Lect.	II	T		Dr. Cooke
		4I	S		
		III	W		
		III	S		
		IV	T		
		IV	S		
		V	T		

* Courses 1f-2w-3s carry no credit when taken in place of military science and tactics by foreign students and others, in the School of Chemistry.

† Students who have completed Preventive Medicine 12 will not be held for the lecture part of this course.

No.	Title	Hour	Day	Room	Instructor
	Lab. sec. for grade A and B Men	II III VI VII VIII		TTh A TTh A TTh A TTh A TTh A	Mr. Watson & assistants
	Lab. sec. for grade C Men	II III VII		MWF A MWF A MWF A	
2w-3s	Hygiene and Physical Edu- cation				
	Lect. one hour	Ar		Ar	Mr. Watson & assistants
	Lab. sec. for grade A and B Men	II III VI VII VIII		TTh A TTh A TTh A TTh A TTh A	
	Lab. sec. for grade C Men	II III VII		MWF A MWF A MWF A	
7f-8w- 9s‡	Advanced Leaders.....				
	Lect.	IV		T A	Mr. Watson
	Lab. two hours	Ar		Ar A	
10f-11w- 12s	Minor Sports				
	Lect.	V		T A	Mr. Metcalf & others
	Lab.	IV		MWF A	

PHYSICAL EDUCATION

FOR WOMEN

Professor J. ANNA NORRIS, Head; Assistant Professors MAY S. KISSOCK, ALICE H. TOLG; Instructors GERTRUDE M. BAKER, IRENE CLAYTON, RHEA M. COXE, GRACE DENNY, HELEN HAZELTON, CATHERINE SIAS.

This department aims primarily to promote the health of the women students. It gives physical examination and advice to all on entrance; plans systematically to keep in close touch with them during their first two years in college; conducts yearly consultations with, and examines when necessary, all upper-class students; gives courses in hygiene; organizes physical work to meet the varying needs and physical tastes of students; 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); 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

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

Course 22-23 during their sophomore year); and of all students permitted, for reasons connected with their physical condition, to carry less than the minimum number of credit hours. Physical examinations or consultations required annually of all students.

Elective classes arranged in gymnastics, dancing, swimming, field-hockey, basket-ball, baseball, and other organized games.

For a special four-year professional course designed to prepare graduates for the responsible direction of physical education activities see bulletin for the College of Education.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w-3s	Elem. Phys. Training.....	IV	MWF	3,151,153	WGym Ar
		VI	MWF	3,151,153	WGym Ar
		VII	MWF	3,151,153	WGym Ar
		VIII	MWF	3,151,153	WGym Ar
		III	TThS	3,151,153	WGym Ar
4f	Preliminary Hygiene.....	I	M	201	WGym Dr. Norris
		II	T		
		III	W		
		IV	T		
		V	Th		
		VI	Th		

Six credits is the maximum number that can be gained by taking courses in exercise (Courses 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.

PHYSICS

Professors HENRY A. ERIKSON, Chairman, JOHN T. TATE, ANTHONY ZELENY; Associate Professor LOUALLEN F. MILLER; Assistant Professors GREGORY BREIT, JOSEPH VALASEK, JOHN H. VAN VLECK; Instructor ARCHIE D. POWER.

COURSES

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. MR. ERIKSON.

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. MR. ERIKSON.

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. MR. MILLER.

- 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. MR. MILLER.
- 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. MR. VALASEK.
- 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. MR. VALASEK.
- 33w. 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. MR. VALASEK.
- 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. MR. ZELENY.
- 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. MR. ZELENY.
- 101f-103w-105s; 107-109-111. 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. Four lectures a week. Four credits per quarter. Prerequisites: 12 credits in physics, calculus. MR. TATE.
- 102f-104w-106s; 108-110-112. EXPERIMENTAL PHYSICS. Comprehensive course extending through the year, designed to familiarize students with fundamental and standard methods of precise measurements as exemplified by representative experiments in mechanics, sound, heat, light, and electricity. May be begun any quarter. Three credits per quarter. Prerequisites: 12 credits in physics, calculus. MR. MILLER, MR. POWER, MR. TATE, MR. VALASEK.
- 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. MR. VAN VLECK.
- 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. MR. ERIKSON, MR. TATE, MR. ZELENY, MR. MILLER.

- 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. MR. MILLER.
- 132W. APPLIED OPTICS. Special experimental work in spectrometry, optical instruments, photometry, absorption, polarized light. Two three-hour laboratory periods a week. Prerequisites: 31, 32. MR. VALASEK.
- 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. MR. ZELENY.
- 146W. ELECTRICAL MEASUREMENTS OF PRECISION. Precision measurements of electromotive force, current, resistance, capacity, inductance, and magnetic flux. Use of apparatus of highest precision. Special problems. Three two-hour laboratory periods a week. Three credits. Prerequisite: 144. MR. ZELENY.
- 145W-147S. RADIOACTIVITY. An analytical study of the theories and methods of investigation supplemented by laboratory technique. Three credits per quarter. Prerequisite: 106. MR. ERIKSON.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
3f	Elements of Mechanics and Sound				
	Lect.	II	MWF	30Ph	Mr. Erikson
	Quiz	IX	F	100C	
4f	Elements of Mechanics Laboratory	VI-VII	Th	16Ph	Mr. Erikson
23w	Heat				
	Lect.	II	MWF	30Ph	Mr. Miller
	Quiz	II	Th	100C	
24w	Heat Laboratory.....	VI-VII	Th	100C	Mr. Miller
33w	Optics				
	(2 creds., prereq.: 1)				
	Lect.	I	TTh	30Ph	Mr. Valasek
43s	Magnetism and Electricity				
	Lect.	II	MWF	30Ph	Mr. Zeleny
	Quiz	II	Th	100C	
44s	Electric Laboratory.....	VI-VII	Th	31Ph	Mr. Zeleny

PHYSIOLOGIC CHEMISTRY

Professor JESSE F. McCLENDON; Associate Professor CHAUNCEY J. V. PETTIBONE; Instructor WILLIAM W. SWANSON.

COURSES

100f-101w. PHYSIOLOGIC CHEMISTRY. The components of the animal body; foods, digestion, the excreta, and metabolism. Third-year medical students and others. Six credits per quarter. Prerequisites: physics, and Chemistry 130. MR. McCLENDON, MR. PETTIBONE, and assistants.

SCHOOL OF CHEMISTRY

		PROGRAM			
No.	Title	Hour	Day	Bldg.	Instructor
100f.	101w Physiologic Chemistry.....				
	Lect.	IV	MWF	310MH	Mr. McClendon, Mr. Pettibone
	Lab.				
	Sec. a	I-III	TTh	310MH	
	Sec. b	I-III	FS	310MH	

PREVENTIVE MEDICINE AND PUBLIC HEALTH

Associate Professor LOUIS J. COOKE, M.D., (Physical Education for men); Assistant Professors HAROLD S. DIEHL (Director), H. A. WHITTAKER; Instructors R. W. ARCHIBALD, J. A. CHILDS, WILLIAM P. SHEPARD.

COURSES

25. 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. DR. COOKE, DR. SHEPARD.

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. MR. WHITTAKER, DR. ARCHIBALD, MR. CHILDS.

		PROGRAM			
No.	Title	Hour	Day	Bldg.	Instructor
25	Hygiene and First Aid to the Sick and Injured....				
	Sec. 1	VI	T	305ME	Dr. Shepard
	Sec. 2	VIII	F	305ME	Dr. Shepard
102f,w,s, su	Sanitation	Ar	Ar	SBH	Mr. Whittaker, Mr. Childs, Dr. Archibald

The Bulletin
of the University of
Minnesota

The College of Education
Announcement for the Year
1923-1924



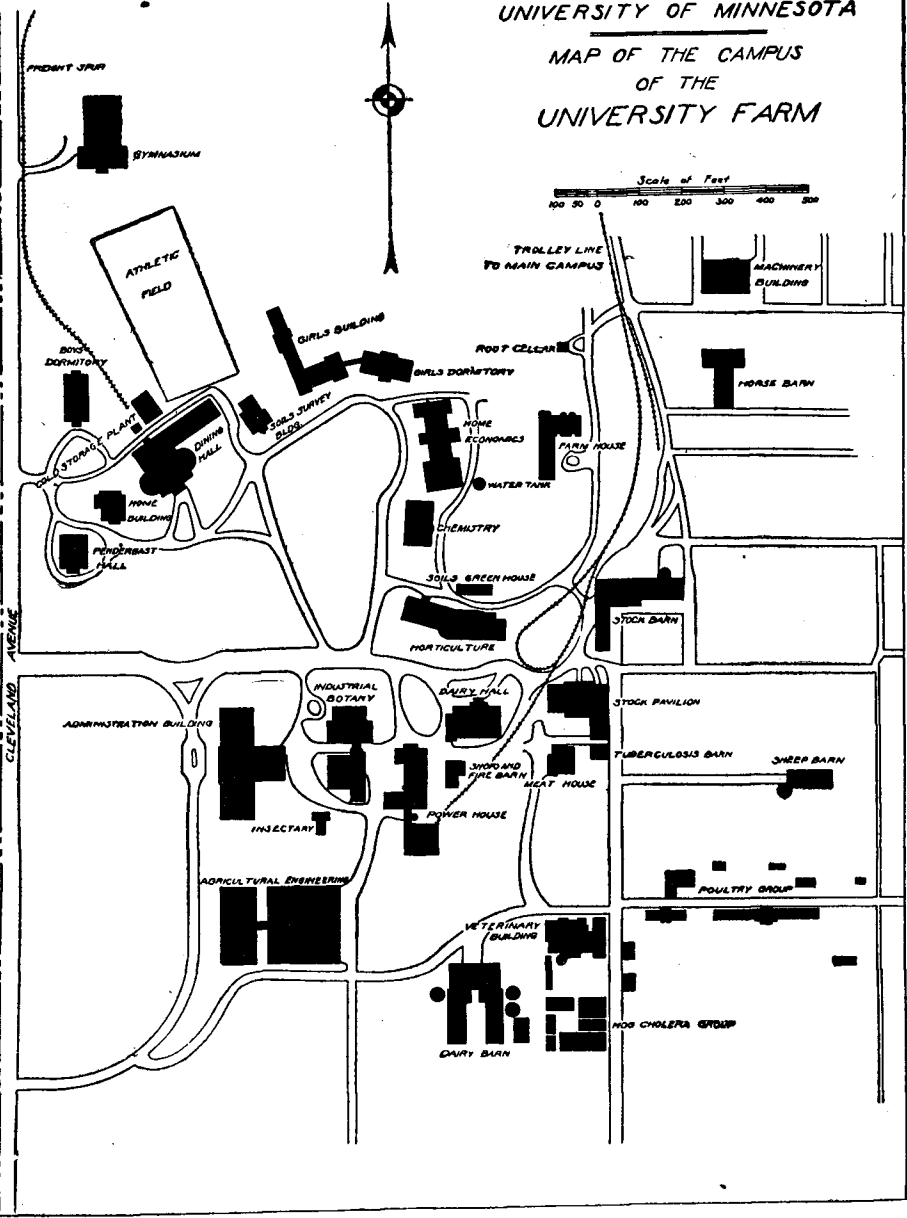
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UNIVERSITY OF MINNESOTA

MAP OF THE CAMPUS OF THE UNIVERSITY FARM



Area of University Farm, 422.56 acres

1923							1924													
JULY							JULY													
Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa
1	2	3	4	5	6	7	6	7	1	2	3	4	5	6	7	1	2	3	4	5
8	9	10	11	12	13	14	13	14	15	16	17	18	19	13	14	15	16	17	18	19
15	16	17	18	19	20	21	20	21	22	23	24	25	26	20	21	22	23	24	25	26
22	23	24	25	26	27	28	27	28	29	30	31	..	..	27	28	29	30	31	..	..
29	30	31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
AUGUST							AUGUST													
..	..	..	1	2	3	4	..	..	..	..	1	2	..	..	..	..	1	2		
5	6	7	8	9	10	11	3	4	5	6	7	8	9	3	4	5	6	7	8	9
12	13	14	15	16	17	18	10	11	12	13	14	15	16	10	11	12	13	14	15	16
19	20	21	22	23	24	25	17	18	19	20	21	22	23	17	18	19	20	21	22	23
26	27	28	29	30	31	..	24	25	26	27	28	29	..	24	25	26	27	28	29	30
..	..	..	..	..	..	..	..	..	..	..	..	..	..	31	..	..	..	..	..	..
SEPTEMBER							SEPTEMBER													
..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	2	3	4	5	6	
2	3	4	5	6	7	8	2	3	4	5	6	7	8	7	8	9	10	11	12	13
9	10	11	12	13	14	15	9	10	11	12	13	14	15	14	15	16	17	18	19	20
16	17	18	19	20	21	22	16	17	18	19	20	21	22	21	22	23	24	25	26	27
23	24	25	26	27	28	29	23	24	25	26	27	28	29	28	29	30	..	..	..	..
30	..	..	..	..	..	..	30	31	..	..	..	..	..	..	..	..	..	..	..	..
OCTOBER							OCTOBER													
..	1	2	3	4	5	6	6	7	8	9	10	11	12	..	..	..	1	2	3	4
7	8	9	10	11	12	13	13	14	15	16	17	18	19	5	6	7	8	9	10	11
14	15	16	17	18	19	20	20	21	22	23	24	25	26	12	13	14	15	16	17	18
21	22	23	24	25	26	27	27	28	29	30	..	..	..	19	20	21	22	23	24	25
28	29	30	31	..	..	..	..	..	..	..	..	..	..	26	27	28	29	30	31	..
..
NOVEMBER							NOVEMBER													
..	..	..	..	1	2	3	..	..	..	..	1	2	3	..	..	..	..	1	2	3
4	5	6	7	8	9	10	4	5	6	7	8	9	10	2	3	4	5	6	7	8
11	12	13	14	15	16	17	11	12	13	14	15	16	17	9	10	11	12	13	14	15
18	19	20	21	22	23	24	18	19	20	21	22	23	24	16	17	18	19	20	21	22
25	26	27	28	29	30	..	25	26	27	28	29	30	31	23	24	25	26	27	28	29
..	..	..	..	..	..	..	..	..	..	..	..	..	..	30	..	..	..	..	..	..
DECEMBER							DECEMBER													
..	..	..	..	..	..	1	1	2	3	4	5	6	7	..	1	2	3	4	5	6
2	3	4	5	6	7	8	8	9	10	11	12	13	14	7	8	9	10	11	12	13
9	10	11	12	13	14	15	15	16	17	18	19	20	21	14	15	16	17	18	19	20
16	17	18	19	20	21	22	22	23	24	25	26	27	28	21	22	23	24	25	26	27
23	24	25	26	27	28	29	29	30	..	..	..	..	..	28	29	30	31	..	..	..
30	31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

UNIVERSITY CALENDAR

1923-24

1923			
September	15	Saturday	Payment of fees closes, except for new students
September	17-25		Examination for removal of conditions and entrance examinations Physical examinations for all new students
September	18-22		Registration period† for new students. Registration period† for students who were registered during the spring quarter of 1923.
September	24	Monday	First semester evening extension classes begin
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 Senate meeting, 4:30 p.m.
December	17-20		Final examination period
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.
January	18	Friday	First semester evening extension classes close
January	28	Monday	Second semester evening extension classes begin
February	12	Tuesday	Lincoln's Birthday; a holiday
February	14	Thursday	Charter Day Convocation

* 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 32.

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.

February	14	Thursday	Senate meeting, 4:30 p.m.
February	22	Friday	Washington's Birthday; a holiday
March	18-21		Final examination period
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
May	15	Thursday	Cap and Gown Day Convocation
			Senate meeting, 4:30 p.m.
May	16	Friday	Second semester evening extension classes close
May	30	Friday	Memorial Day; a holiday
June	15	Sunday	Baccalaureate service
June	13-17		Final examination period
June	18	Wednesday	Fifty-second annual commencement
			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

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

COLLEGE OF EDUCATION

FACULTY

- LOTUS DELTA COFFMAN, Ph.D., LL.D., President
WILLIAM WATTS FOLWELL, LL.D., President Emeritus
MELVIN E. HAGGERTY, Ph.D., Dean of the College of Education, Professor
of Educational Psychology, and Director of the Psycho-Educational
Clinic
ANNE DUDLEY BLITZ, M.A., Dean of Women
EDWARD E. NICHOLSON, M.A., Dean of Student Affairs
ALMA BINZEL, M.A., Assistant Professor of Home Economics Education
GISLE C. BOTHNE, M.A., Professor of Scandinavian Languages and Litera-
tures
RAYMOND W. BRINK, Ph.D., Associate Professor of Mathematics
CLARA M. BROWN, B.A. in Educ., Assistant Professor of Home Economics
Education
LEO J. BRUECKNER, Ph.D., Associate Professor of Education
LOUIS J. COOKE, M.D., Assistant Director of Physical Education and
Athletics for Men
GEORGE W. DOWRIE, Ph.D., Professor of Economics
WILLIAM P. DYER, M.A., Assistant Professor of Agricultural Education
RICHARD M. ELLIOTT, Ph.D., Professor of Psychology
HENRY A. ERIKSON, Ph.D., Professor of Physics
ALBERT M. FIELD, M.S., Assistant Professor of Agricultural Education
ROSS L. FINNEY, Ph.D., LL.D., Assistant Professor of Educational Soci-
ology
ISAAC W. GEIGER, Ph.D., Assistant Professor of Chemistry
HARRIET I. GOLDSTEIN, Associate Professor of Home Economics Education
EARL HUDELSON, Ph.D., Professor of Education
¹ALBERT ERNEST JENKS, Ph.D., Professor of Anthropology
WILLIS E. JOHNSON, Ph.D., Professorial Lecturer in Education, Principal
of the University High School
MAY S. KISSOCK, B.A., Assistant Professor of Physical Education for
Women
FREDERICK KLAEBER, Ph.D., Professor of Comparative and English Philology
LEONARD V. KOOS, Ph.D., Professor of Secondary Education
AUGUST CHARLES KREY, Ph.D., Associate Professor of History
WINFORD P. LARSON, M.D., Professor of Bacteriology and Immunology
FRANK W. LATHROP, M.S.A., Assistant Professor of Agricultural Education
GEORGINA LOMMEN, M.A., M.L., Assistant Professor of Education
FRED W. LUEHRING, Ph.M., Professor of Physical Education for Men
ELIAS P. LYON, Ph.D., M.D., Professor of Physiology
WYLLE B. MCNEAL, M.A., Professor of Home Economics Education
DEXTER D. MAYNE, Professor of Agricultural Pedagogics
T. NELSON METCALF, M.A., Professor of Physical Education for Men

¹ Absent on leave, 1923-24.

- WILFORD S. MILLER, Ph.D., Professor of Educational Psychology
 J. ANNA NORRIS, M.D., Professor of Physical Education for Women
 EVERETT W. OLMSTED, Ph.D., Litt.D., Professor of Romance Languages
 DONALD G. PATERSON, M.A., Professor of Psychology
¹JOSEPH B. PIKE, M.A., Professor of Latin
 CHARLES A. PROSSER, Ph.D., LL.D., Professor of Trade and Industrial Education.
 RUTH RAYMOND, B.S., Assistant Professor of Art Education
 JOHN G. ROCKWELL, B.A., Assistant Professor of Educational Psychology
 C. OTTO ROSENDAHL, Ph.D., Professor of Botany
 CHARLES A. SAVAGE, Ph.D., Professor of Greek
 RICHARD E. SCAMMON, Ph.D., Professor of Anatomy
 CARL SCHLENKER, B.A., Professor of German
 CARLYLE M. SCOTT, Professor of Music
 CHARLES P. SIGERFOOS, Ph.D., Professor of Zoology
 ANDREW A. STOMBERG, M.S., Professor of Scandinavian Languages and Literatures
 ASHLEY V. STORM, Ph.D., Professor of Agricultural Education
 DAVID F. SWENSON, B.S., Professor of Philosophy
 FLETCHER H. SWIFT, Ph.D., Professor of History of Education
 JOSEPH M. THOMAS, Ph.D., Professor of English
 MARVIN J. VAN WAGENEN, Ph.D., Assistant Professor of Educational Psychology
 NORMAN WILDE, Ph.D., Professor of Philosophy
 M. REED BASS, Lecturer in Trade and Industrial Education
 J. C. BROWN, M.A., Lecturer in Theory and Practice of Teaching
 JEAN H. ALEXANDER, M.A., Instructor in Education
 CHARLES R. ALLEN, M.A., Instructor in Trade and Industrial Education
 EDNA A. AMIDON, B.S., Instructor in Home Economics Education
 GERTRUDE M. BAKER, B.A., Instructor in Physical Education for Women
 WILLIAM O. BEAL, M.A., M.S., Assistant Astronomer
 EDWIN S. BROWN, M.D., Instructor in Physical Education for Men
 RALPH T. CRAIG, B.S., Instructor in Trade and Industrial Education
 RUETTA DAY, B.S., Instructor in Home Economics Education
 MARIE B. DENNEEN, M.A., Instructor in Teachers' Course in Latin
 GRACE E. DENNY, B.S., Instructor in Physical Education for Women
 SHERMAN DICKINSON, M.A., Instructor in Agricultural Education
 AGNES T. DOUGLASS, Instructor in Art Education
 FLORENCE FALLGATTER, B.S., Instructor in Home Economics Education
 THADDEUS P. GIDDINGS, Instructor in Public School Music
 WILMA A. GILMAN, Instructor in Music
 SOPHIA HUBMAN, M.A., Instructor in Teachers' Course in German
 REWEY BELLE INGLIS, M.A., Instructor in Education
 ARTHUR M. JOHNSON, Ph.D., Instructor in Botany
 AURA KEEVER, B.S., Instructor in Home Economics Education
 MILDRED NEMECK, B.S., Instructor in Home Economics Education
 VICTOR E. NYLIN, B.S., Instructor in Agricultural Education

¹ Absent on leave, 1923-24.

FACULTY

9

HAZEL S. MARTIN, Instructor in Art Education
ABE PEPINSKY, Instructor in Music
J. ORRIN POWERS, M.A., Instructor in Education
¹WILLIAM D. REEVE, B.S., Instructor in Education
GERTRUDE D. ROSS, Instructor in Art Education
HOMER J. SMITH, M.A., Instructor in Trade and Industrial Education
LYNN E. STOCKWELL, M.A., Instructor in Trade and Industrial Education
LOUIS A. TOHILL, M.A., Instructor in Education

UNIVERSITY HIGH SCHOOL

CASPAR G. AABERG, B.A., Instructor
SUZANNE BOURGOIN, B.A., Instructor in French
RUBY M. COON, M.S., Instructor in Home Economics
MARIE B. DENNEEN, M.A., Instructor in Latin
SOPHIA HUBMAN, M.A., Instructor in German
REWEY BELLE INGLIS, M.A., Instructor in English
WILLIS E. JOHNSON, Ph.D., D.Sc., LL.D., Principal of the University High School
MARGARET MCGUIRE, B.S., Instructor in Mathematics
FRANCES MOREHOUSE, M.A., Instructor in History
PERCIVAL H. NYGAARD, M.A., Instructor in Mathematics
ALMA PENROSE, B.A., B.L.S., Librarian
¹WILLIAM D. REEVE, B.S., Principal and Instructor in Mathematics
K. EGBERT ROLLEFSON, M.A., Instructor in Physics and Science
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

THEODORE A. ERICKSON, B.A., Associate Professor of Agricultural Education
GEORGE F. HOWARD, Professor of Agriculture
FRANK W. PECK, M.S., Associate Professor of Farm Management

ASSISTANTS

JOHN BOHAN, B.S., Assistant in Educational Psychology
PERCIVAL W. HUTSON, M.A., Assistant in Educational Administration and Supervision
MARION JONES, B.S., Assistant in the University High School
GRATIA KELLEY, B.S., Assistant in Research
LILLIAN LIEN, B.S., Assistant in University High School
WILLARD C. OLSON, B.S., Assistant in Educational Psychology
WALTER J. SAUPE, M.A., Assistant in Educational Administration and Supervision

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 CLYDE H. FREDERICKSON, B.S., Assistant
 LOUIS A. FRIED, B.A., Assistant
 BJARNE HOUKOM, Assistant
 EDWIN J. KEPLER, B.S., Assistant
 JOSEPH T. KING, Assistant
 GORDON C. MACRAE, B.S., Assistant
 LEVRS E. NOLAN, Assistant
 GEORGE M. ROBERTSON, B.S., Assistant
 ETHEL SLIDER, B.A., Technician
 CAROL YOUNG, Assistant

ANTHROPOLOGY

EVAN BORST, B.S., Assistant
 MARION DAY, B.A., Scholar

COLLEGE OF EDUCATION

BACTERIOLOGY AND IMMUNOLOGY

MADELEINE GUILLEMIN, Teaching Fellow

BOTANY

ELSA HORN, B.A., Assistant
 RAYMOND LANDON, M.S., Assistant
 ETHEL M. MYGRANT, M.S., Assistant
 NELLIE A. THOMPSON, B.A., Assistant and Technician
 JERRY A. VACHA, Assistant

ENGLISH

MARIAN HAIGH, B.A., Assistant
 DOROTHY R. HUDSON, M.A., Assistant
 EDITH H. JONES, B.A., Scholar
 WILMA L. KENNEDY, B.A., Assistant
 KATHLEEN F. M. O'BRIEN, B.A., Scholar
 MILDRED PEDERSON, B.A., Assistant
 WENDELL O. ROGERS, B.A., Assistant
 GREGOR ZIEMER, B.A., Teaching Fellow

GEOLOGY

EARL R. CARLSON, B.A., Scholar
 TINGOO CHU, M.A., Scholar

GERMAN

ESTHER HENDRICKSON, M.A., Assistant
 ALVIN PROTZENGEIER, B.A., Teaching Fellow
 VICTOR REIM, B.A., Teaching Fellow

GREEK

DOROTHY B. STRONG, B.A., Assistant

HISTORY

FANNY MARTIN DOWNS, B.A., Assistant
 CLARA J. EMERSON, B.A., Teaching Fellow
 ARTHUR S. HADDAWAY, B.A., Teaching Fellow
 HENRIETTA M. LARSEN, M.A., Teaching Fellow
 LOU ELLA MILES, B.A., Teaching Fellow
 FLOYD B. MOE, B.A., Assistant
 LEAH MOREHOUSE, B.A., Teaching Fellow
 LOUISE A. NIXON, B.A., Teaching Fellow
 JOHN P. PRITCHETT, M.A., Teaching Fellow
 JOSEPH UTSCHEN, B.A., Scholar

HUMAN PHYSIOLOGY

HENRY A. ROUST, B.S., Teaching Fellow
 EMMETT ROWLES, M.A., Teaching Fellow
 MAURICE VISSCHER, B.A., Assistant

FACULTY

21

JOURNALISM

GENEVIEVE BOUGHNER, B.A., Assistant

LATIN

EMILY A. BABCOCK, M.A., Assistant

MATHEMATICS

ELIZABETH CARLSON, M.A., Assistant

WILLIAM H. McEWEN, M.S., Assistant

PERCIVAL H. NYGAARD, B.A., Assistant

CECIL PHIPPS, B.A., Assistant

MUSIC

HELEN STAPLES, B.A., Assistant

PHYSICAL EDUCATION FOR MEN

BLAINE MCKUSICK, Assistant

NIELS THORPE, Coach

WILLIAM H. SPAULDING

PHYSICS

SIDNEY E. BORGESON, B.A., Assistant

NIELS P. CHRISTIANSEN, Assistant

IRWIN M. ELLESTAD, B.S., Teaching Fellow

IWAO FUKUSHIMA, B.A., Assistant

HERBERT R. GRUMMANN, M.A., Teaching Fellow

BENJAMIN M. KNUTSON, B.A., Teaching Fellow

ERNEST O. LAWRENCE, B.A., Assistant

WALTER M. NIELSEN, B.S., Teaching Fellow

KARL W. SELANDER, B.A., Teaching Fellow

MERLE TUVE, B.S., Assistant

• POLITICAL SCIENCE

JOHN P. DALZELL, B.A., Assistant

INGOLF DILLAN, B.A., Assistant

RUSSELL H. EWING, Assistant

LANDRETH HARRISON, B.A., Scholar

ROBERT A. KINGSLEY, Scholar

JAMES D MCGILL, M.A., Assistant

PSYCHOLOGY

RUTH GULLETTE, B.A., Scholar

CARNEY LANDIS, B.A., Teaching Fellow

ELIZABETH SEEBURG MUENZINGER, Ph.D., Teaching Fellow

ELLA B. OSBOURN, B.A., Teaching Fellow

COLLEGE OF EDUCATION

ROMANCE LANGUAGES

ELEANOR CEDERSTROM, M.A., Assistant
EMMA DUBETZ, B.A., Teaching Fellow
CHARLES R. HIELD, B.A., Assistant
DOROTHY MCGHEE, M.A., Teaching Fellow
JENNIE MAY McMULLEN, B.A., Teaching Fellow
ELLA MAI WILSON, B.A., Assistant

SCANDINAVIAN

ALMA GJERTSEN, B.A., Scholar

SOCIOLOGY

ELIZABETH C. HAYES, B.A., Scholar
ERNEST G. MEILI, Scholar

GENERAL INFORMATION

The College of Education was authorized by special enactment of the Legislature of Minnesota in 1905 and was established by the regents of the University of Minnesota in the following year. It has the following purposes:

1. To offer opportunity for the study of education as an important enterprise of society and as of peculiar interest to all persons whether they are preparing for teaching or not.
2. To offer inexperienced university students who intend to become teachers the technical training for their vocation.
3. To offer to university students, or those actively engaged in service, opportunity for advanced professional study under direction.
4. To offer to university students, and to all teachers of suitable attainment, appropriate training designed to prepare them for successful careers as public administrators, normal school teachers or college teachers of education.
5. To offer opportunity for original investigation, research, and experiments in education and for the preparation for constructive contributions to educational theory and practice.

In fulfilling these purposes the College of Education offers the professional courses for the training of superintendents, principals, supervisors of special subjects, rural school supervisors, supervisors of playgrounds and recreation activities, teachers of high school subjects, manual training teachers, school librarians, teachers of high school teacher-training departments, teachers of agriculture, home economics, and trades and industries.

ADMISSION

Regular Students

To be admitted to regular standing in the College of Education, students must be able to satisfy either of the following requirements, (a) or (b).

(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. No formal application is necessary for transfer from the Junior College to the College of Education if such transfer is made at the beginning of the junior year, nor is any loss of credits involved.

(b) The College of Education grants to graduates of the advanced graduate course of Minnesota state teachers' colleges 90 credits.

In special subjects like 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. (See bulletin of general information, pages 33-34.)

Unclassed Students

a. The College of Education grants to graduates of the advanced Latin and the advanced English courses of the Minnesota state teachers' colleges 63 credits. These students will be admitted as unclassified until they have satisfied the requirements for junior standing.

b. Teachers preparing for examination for the first grade professional certificate, but who are unable to meet the regular requirements for admission are admitted to the College of Education as unclassified students. Each case must, however, be dealt with individually as the result of formal application to the dean.

ADVANCED STANDING

By Examination

The College of Education distinctly discourages any effort to secure advanced standing in professional subjects by examination. With the establishment of correspondence courses in the General Extension Division, there are no longer the reasons which formerly existed for granting such examinations.

*By Graduation from the Three-Year Course of
Minnesota State Teachers' Colleges*

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

Students admitted to the College of Education from state teachers' colleges will not be permitted to elect the following courses for credit: Education 1; Psychology 1-2. Such students will be required to carry the advanced course in History of Education.

For a statement of records to be submitted, see bulletin of general information, pages 33-34.

By Credentials from Other Colleges

Advanced standing in the College of Education by the presentation of credentials from other colleges of the University of Minnesota or colleges of similar grade elsewhere may be secured only upon petition to the faculty of the College of Education. Students may shorten the two years of residence only by meeting such additional requirements in quality and quantity of professional work as in the opinion of the faculty will make the training of such students equal to that of students regularly registered for two full years in the College of Education,

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 27.

GRADUATION WITH DISTINCTION

The degree of bachelor of science with distinction is granted to graduates of this college who fulfill the following conditions:

1. Special excellence in major subject.

2. Application for the degree with distinction should be made at the time of entering the college, but may, however, be postponed until the opening of the senior year.

3. At the time of application the student shall, after conference with the dean of the College of Education, or some other member of the faculty appointed for that purpose, select a subject for his thesis, which must be formally approved and recorded.

4. The presentation of a satisfactory thesis upon some subject within the major field of study not later than May 1, senior year.

5. At the time of application the student must have an average of $1\frac{1}{2}$ honor points per credit hour in all previous work.

6. At the time of graduation the student must have met all conditions applying to the bachelor's degree in education; must show a record of $1\frac{1}{2}$ honor points per credit hour in *four fifths of all work pursued throughout his entire course*, and

7. Must be recommended to the faculty for the degree with distinction, which recommendation must be approved by the vote of the faculty of the college.

In the case of honor students wishing to qualify for the teacher's certificate, it is understood that they shall be required to elect not more than 22 credits in education, such 22 credits to include all of the prerequisite work in psychology. The required courses will include Practice Teaching, Technique of Teaching, and one teachers' course.

GENERAL REQUIREMENTS

1. *Residence*

a. *Senior College*.—The minimum term of residence in the Senior College of the College of Education is two years beginning as soon as Junior College requirements have been fulfilled, except for those students who meet the scholarship requirements indicated in 2a below.

b. *Junior College*.—Students registered as freshmen and sophomores 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.

2. *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) $1\frac{1}{2}$ 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 $1\frac{1}{2}$ 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 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.

All students without teaching experience, desiring a University teacher's certificate will be required to comply with the requirements listed below. Such students will also be required to complete a two years' course leading to the degree of bachelor of science.

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

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*

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

Technique of Teaching 15

Special Methods

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 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.

The foregoing schedule of requirements does not apply to students who are registered in any of the special curricula in the College of Education, as for example:

Home Economics, Agriculture, Teacher-Training in High Schools, Teachers of Subnormal Children, Consolidated School Principals, Special Supervisorships, Art Education, Physical Education.

ADMISSION TO PRACTICE TEACHING

All arrangements for practice teaching are made by the principal of the University High School. *Before registering for practice teaching*, Education 16, students should get an application card in the principal's office, Room 110, Education Building. The applicant should secure from the registrar's office a statement on his application card of the courses he has taken and the marks received in the subject in which he wishes to do practice teaching. The application must be signed by the adviser for the department concerned. On this application card must be listed in addition the following professional courses with the marks received:

Elementary Educational Psychology 55

Technique of Teaching 15

Teachers' Course

When signed by the principal the application card should be presented to the critic teacher who will assign the applicant to a high school class. The application should then be filed in the principal's office.

Practice teachers are expected to attend every meeting of the high school class to which they are assigned for the quarter, also all conferences designated by the critic teacher. Practice teachers in laboratory sciences should arrange their programs so that they will be able to attend all double periods for laboratory.

All applications for practice teaching must be approved and on file in the principal's office before the close of the quarter immediately preceding the quarter in which the practice teaching is to be done.

Students in the College of Agriculture, Forestry, and Home Economics desiring to qualify as teachers will be required to comply with the usual requirements for practice teaching. Arrangements for this work will be made by Professor Storm.

By arrangement between the Board of Regents of the University and the Directors of the Dunwoody Industrial Institute, the facilities of the latter institution have been made available to students in the College of Education to do practice teaching and other types of work for which the institution is especially fitted. The resources of this institute are therefore used to supplement the facilities already available on the University campus for teachers in manual training, and trade and industrial subjects.

Opportunities for practice teaching of special classes of children are available in the public schools of St. Paul and Minneapolis. By special agreement between the State Board of Control and the Board of Regents of the University the facilities of the State School for Feeble Minded and Epileptic Colony at Faribault are also available to University students for practice teaching and other forms of study.

Exceptions

(1) Students already holding a first grade professional certificate may be excused from complying with the requirements for the University teacher's certificate but in every case students will be required to carry the minimum number of professional courses required for qualifying for a certificate.

(2) Students preparing to pursue school work in fields other than those listed on page 27 may qualify for the degree of bachelor of science without meeting the professional requirements for any particular certificate. In every case, however, students must petition for this privilege and will be required to earn 36 or more credits in a major field and to meet a minor requirement in at least one minor field.

CERTIFICATES

Required in Minnesota

Every teacher in the Minnesota public schools must have a valid certificate before he can be lawfully employed. Two classes of certificates are of interest to University students:

I. A first grade professional certificate renders its holder eligible for the following positions: (1) superintendent of schools (if candidate has had previously two years' experience in the public schools, either as teacher, supervisor, or administrator; (2) principal of a graded or high school; (3) instructor in any high school subject, except those subjects which demand special certificates.

THE UNIVERSITY TEACHER'S CERTIFICATE

I. Two-year certificate. The University teacher's certificate is legally valid for two years as a first grade professional certificate. Holders are eligible for all positions open to holders of the first grade professional certificate named above. The courses leading to this certificate are described on page 28.

After two years of successful teaching experience, the University teacher's certificate may become a life certificate, upon endorsement by the State Department of Education and the president of the University. This two years' experience must be gained within Minnesota. Graduates who teach in another state may, upon returning to Minnesota, apply to the State Department of Education for an extension of their University teacher's certificate for two years at the completion of which application may be made for a permanent life certificate. The fee for this extension is \$1. Holders of the University teacher's certificate who wish to have their certificate made a permanent life certificate should apply directly to the State Department of Education, St. Paul, for a permanent endorsement of the certificate. The fee for this endorsement is \$5.

PROFESSIONAL LECTURERS

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*.

STUDENT ADVISERS

The following persons, members of the faculty of the College of Education, are designated as advisers to students for the year 1923-24.

SUBJECT	NAME OF INSTRUCTOR	ROOM
Educational Administration .....	.....	114Ed
History of Education	F. H. Swift.....	214Ed
Educational Psychology	M. E. Haggerty.....	103Ed
Trade and Industrial Education	C. A. Prosser.....	207Ed
Agricultural Education	A. V. Storm.....	209Ad
Art Education	Ruth Raymond	413F
Botany	A. M. Johnson.....	16AB
Chemistry	I. W. Geiger	339C
Economics	G. W. Dowrie.....	168MA
English, Rhetoric, Public Speaking.....	Marjorie Nicolson	222F
General Science		
Geography		

German	C. Schlenker	211F
History	A. C. Krey.....	230Lib
High School Normal Training.....	Georgiana Lommen	U. Farm
Home Economics Education.....	Wylle B. McNeal.....	202HE
Latin	R. V. Cram.....	118F
Mathematics	Raymond Brink	100F
Music.....	T. P. Giddings	103Ed
Physical Education for Men.....	T. N. Metcalf.....	The Army
Physical Education for Women.....	J. Anna Norris.....	WGm
Physics	H. A. Erikson.....	20PH
Romance Languages	E. W. Olmsted..	200F
Theory and Practice of Teaching.....	Leo J. Brueckner.....	114Ed
Sociology	R. L. Finney	208Ed
Social Studies	A. C. Krey.....	214Ed

PRIZES

Two prizes will be offered next year to students.

I. The Pi Lambda Theta Prize of \$50 offered annually by Epsilon Chapter of Pi Lambda Theta, the women's honorary professional fraternity. The prize is awarded to a student in the College of Education under the following conditions:

(1) It shall be open to any student registered in the College of Education.

(2) The basis for decision shall be scholarship and a written paper, each of which shall be of equal value. The paper may be presented by the student himself or by some member of the faculty, and may be a written term paper, a magazine contribution, or an essay written expressly for this purpose. It shall be judged on the ability shown by the student in the consideration of the topic, on its originality, its style, and on the value of the contribution from a professional standpoint.

(3) The paper shall be judged by a committee consisting of the dean of the College of Education, two members of the faculty and two members from the sorority, one representing the active membership and one the alumnae.

Papers must be filed not later than April 10.

II. The Phi Delta Kappa prize of \$50 is offered annually by Eta (Minnesota) Chapter of the Phi Delta Kappa national educational fraternity. It is awarded to any undergraduate student in the College of Education under the following conditions:

1. The basis of selection shall be a paper upon some educational problem. This paper shall be the result of original study and research.

2. The study shall be judged on the ability shown by the student in the consideration of the topic, on the style of its presentation, and on its value to the profession.

3. A committee consisting of the dean of the College of Education, a member of the education faculty and an active member of Eta Chapter having a Bachelor's degree or its equivalent shall select the winning paper.

4. The prize will be withheld if, in the opinion of the committee, no paper of sufficient merit is presented.

5. Papers must be filed with the dean of the College of Education not later than April 20.

FEES

Tuition fee (per quarter)	
Residents of Minnesota	\$20.00
Nonresidents	30.00
Credit hour tuition fee (unclassified students, auditors, and others carrying less than full work)	
Residents of Minnesota.....	1.75
Nonresidents	2.50
Deposit* (first quarter only).....	5.00
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
Music fees (in addition to tuition for those electing music)	
Class fees (per quarter)	
Class lessons (three students in each class) two hours per week	45.00
One in a class (one individual lesson) one-half hour per week	55.00
Two individual lessons per week (one-half hour).....	65.00
Special or upper class students (one lesson per week).....	35.00
Practice fees	
Organ (per hour)	0.20 to 0.40
Piano† (per quarter)	5.00
(\$0.50 per quarter for each additional hour per week)	

Penalty fees

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

*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.:

<i>Minnesota Daily</i>	\$0.50 a quarter
Post-office box	0.20 a quarter
<i>University Address Book</i>	0.35

† Six hours per week.

PHYSICAL EDUCATION FOR WOMEN

This department aims primarily to promote the health of the women students. It gives physical examination and advice to all on entrance; plans systematically to keep in close touch with them during their first two years in college; conducts yearly consultations with, and examines when necessary, all upper-class students; gives courses in hygiene; organizes physical work to meet the varying needs and physical tastes of students; 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), 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), and of all students permitted, for reasons connected with their physical condition, to carry less than the minimum number of credit hours. Physical examinations or consultations are required annually of all students.

Elective classes are arranged in gymnastics, dancing, swimming, field-hockey, basket-ball, baseball, and other organized games.

For a special four-year professional course designed to prepare graduates for the responsible direction of physical education activities see pages 43-47. Students desiring to enter the course should consult with the head of this department. They should be without organic disease or serious functional disorder, should have a keen sense of rhythm, and should possess qualities of personality which will win the co-operation of others.

Statement of fees.—Elementary physical training \$2.50 a quarter. All other exercise courses, including swimming, \$2 a quarter. Maximum fee paid by a student in physical education, \$3.50 a quarter.

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.

For a special four-year professional course in physical education and athletic coaching, see pages 51-55.

GRADUATE WORK IN EDUCATION

Graduate study.—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. Graduates holding a Bachelor's degree who have less than 12 credits in undergraduate courses in education will be obliged to increase the number of credits required for a major or a minor in education by the difference between 12 and the number of undergraduate credits in education which they present. Such students will not, however, be barred from counting all the time spent at the University toward satisfying the residence requirements of graduate work, provided the work which they pursue is approved by the dean of the Graduate School.

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—Educational Statistics, 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.

Students regularly enrolled for graduate work with education as a major will, upon the completion of the requirements for an advanced degree, be recommended for a University teacher's certificate.

Graduate Students

All courses bearing numbers of 100 and above are open 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 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.

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.

SPECIAL OPPORTUNITIES FOR TEACHERS IN SERVICE

Afternoon and Saturday morning classes, correspondence lessons, extension classes, and the Summer Session are the chief channels through which the College of Education seeks to discharge its obligations to teachers in service.

Teacher-Training through Extension Courses

The General Extension Division offers excellent opportunities for teachers and others to pursue courses carrying credit for the bachelor of science degree or for the professional state teacher's certificate, either by correspondence lessons or by joining an extension class. For further information address the General Extension Division, University of Minnesota.

Summer Session

The Summer Session conducted by the University offers unusual opportunities for professional training to undergraduates, graduates, superintendents and principals, teachers in service, and candidates for first grade and second grade state professional certificates. The Summer Session of 1924 will begin Tuesday, June 24.

Agreements between State Teachers' Colleges and the College of Education

1. That less than one year of residence at a state teacher's college for the purpose of preparing for kindergarten or elementary school work would not be adequate.

2. That teachers' colleges would be willing to confer their regular diploma upon University students coming to them from the College of Education, who have had three years of college work, upon the satisfactory completion of one year in the normal schools.

3. That these provisions be limited to students previously registered in the College of Education.

4. That they should not apply to students who had entered the College of Education upon the basis of teachers' college credits.

RECOMMENDATION FOR APPOINTMENT

Graduates of the College of Education qualifying for the University teacher's certificate will be recommended for teaching and other educational positions for which they are qualified. Students should register for such recommendation during the first quarter of the senior year. No fee is charged for such registration or for any service in connection with recommendation. Complete instructions and registration blanks may be secured at the office of the dean of the College of Education.

EMPLOYMENT BUREAU

State Teachers' Employment Bureau.—The State Teachers' Employment Bureau, located in the State Historical Building, St. Paul, offers its services to all teachers and prospective teachers. The fee for registration is \$3.

Neither the University of Minnesota nor the State Teachers' Employment Bureau exacts any commission.

COLLEGE OF EDUCATION

DEPARTMENTAL ANNOUNCEMENTS

Students graduating from the College of Education will be held for the departmental requirements as listed in this bulletin and will be recommended for degrees and certificates upon the basis of the announcements in this bulletin.

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.

SPECIALIZED CURRICULA

Specialized curricula are offered in the following subjects and detailed announcements will be found in this bulletin on the pages indicated below:

	Pages
Administration and Supervision	
School Superintendents and Elementary School Principals.....	38
Elementary School General Supervisors.....	39
High School Principals.....	40
Agricultural Education	41
Americanization	43
Art Education	44
Commercial Training (See Department of Economics).....	103
High School Normal Training.....	44
Home Economics Education.....	46
Natural Science	48
Physical Education for Men	51
Physical Education for Women	53
Public School Music.....	56
School Psychologist	55
Social Studies	57
Teachers of Subnormal Children.....	59
Trade and Industrial Education.....	60

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, 160-161-162*, 124-125-126, †134-135-136. 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 page 38.

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.

COURSES OF STUDY

SUGGESTED CURRICULUM FOR CANDIDATES FOR CERTIFICATES IN ADMINISTRATION AND SUPERVISION

FIRST YEAR—JUNIOR COLLEGE

<i>First Quarter</i>	<i>Second Quarter</i>	<i>Third Quarter</i>
Credits	Credits	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.

I. CURRICULUM FOR SCHOOL SUPERINTENDENTS AND ELEMENTARY SCHOOL PRINCIPALS

JUNIOR YEAR

<i>First Quarter</i>	<i>Second Quarter</i>	<i>Third Quarter</i>
Credits	Credits	Credits
Ed. 55, Educational Psychology 3	Ed. 3, Educational Sociology 3	Ed. 111, Educational Diagnosis 3
Ed. 116, Educational Statistics 2	Ed. 117, Educational Statistics 2	Ed. 167, The Junior High School 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
Ec. 191, Public Finance 3	Ec. 192, Public Finance 3	
15	15	16

* Twenty credits must be secured in either French or German.

COURSES OF STUDY

39

SENIOR YEAR

<i>First Quarter</i>	Credits	<i>Second Quarter</i>	Credits	<i>Third Quarter</i>	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

2. CURRICULUM FOR ELEMENTARY SCHOOL GENERAL SUPERVISORS

JUNIOR YEAR

<i>First Quarter</i>	Credits	<i>Second Quarter</i>	Credits	<i>Third Quarter</i>	Credits
Ed. 55, Educational Psychology	3	Ed. 3, Educational Sociology	3	Ed. 111, Educational Diagnosis	3
Ed. 134f, Mental Tests and Mental Diagnosis	2	Ed. 44, Teaching of Arithmetic	2	Ed. 119s, Elem. School Curriculum	3
Ed. 118f, Problems of Junior High School English	2	Ed. 135w, Mental Tests and Mental Diagnosis	2	Ed. 136s, Mental Tests and Mental Diagnosis	2
Ed. 45f, Social Science for Junior High School	2	Ed. 4w, Children's Literature	2	Ed. 103s, History of Modern Elementary Education	3
Elective	6	Ed. 12, Participation in Teaching with Special Methods	3	Ed. 13, Practice Teaching with Special Methods	3
		Elective	3	(For 3 hrs. credit)	
				Elective	2
	15		15		16

SENIOR YEAR

<i>First Quarter</i>	Credits	<i>Second Quarter</i>	Credits	<i>Third Quarter</i>	Credits
Ed. 160, El. School Supervision	2	Ed. 161, El. School Supervision	2	Ed. 162, El. School Supervision	2
Ed. 124f, Educational Administration	3	Ed. 125w, City School Administration	3	Ed. 126s, City School Administration	3
Ed. 178f, School Surveys	3	Ed. 179w, School Surveys	3	Ed. 168w, The Junior High School	2
Ed. 116, Educational Statistics	2	Ed. 167w, The Junior High School	2	Ed. 115s, Practice Supervision	3
Elective	5	Ed. 117, Educational Statistics	2	Elective in Teaching of El. Sch. Subjects.	3
		Elective	3	Elective	2
	15		15		15

COLLEGE OF EDUCATION

3. CURRICULUM FOR HIGH SCHOOL PRINCIPALS

JUNIOR YEAR

<i>Fall Quarter</i>	Credits	<i>Winter Quarter</i>	Credits	<i>Spring Quarter</i>	Credits
Ed. 55, Educational Psychology	3	Ed. 3, Educational Sociology	3	Ed. 111, Educational Diagnosis	3
Ed. 116, Educational Statistics	2	Ed. 117, Educational Statistics	2	Ed. 167, Junior High School	3
Pol. Sci. 11, Municipal Government	5	Pol. Sci. 7, State Government	5	Ed. 15, Technique....	3
Courses in teaching major or minors or elective	5	Courses in teaching major or minors or elective	5	Courses in teaching major or minors or elective	6
	15		15		15

SENIOR YEAR

	Credits		Credits		Credits
Ed. 124, Educational Administration	3	Ed. 164, Problems of H.S. Administration. 3	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 Educ... 2	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 STUDENTS WORKING 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. 55, 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

GENERAL STATEMENT

Students desiring to procure the University teacher's certificate will begin their specialization with the junior year. It would be desirable to consult the chief of the Department of Agricultural Education earlier so as to avoid any difficulties that may arise in the program of specialization.

REQUIRED COURSES

The required subject courses during the freshman and sophomore years are the same for all agriculture students in the College of Agriculture. Every student must complete these subject courses, if possible, before the end of the sophomore year. Any subjects which cannot be taken in the freshman and sophomore year must take precedence the following year. Registration for from 15 to 18 credit hours of work each quarter will be allowed without special permission. Care should be taken in registration to give precedence to courses offered only one quarter. (See bulletin, College of Agriculture, Forestry, and Home Economics.)

(Required for University Teacher's Certificate)

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.

Such students become registrants in both colleges during the junior and senior years. Every student who expects to teach agriculture and who expects to obtain the University endorsement for a certificate must complete the subjects listed in this course.

JUNIOR YEAR

SENIOR YEAR

Fall Quarter

Agr. Biochem. 15f,s, Principles of Animal Nutrition, 3 (Agr. Biochem. 7-8)
 Agr. Educ. 21f, Vocational Education, 3
 Agron. 121f, Cereal Crops, 3 (Agron. 1)
 Agron. 131f, Principles of Genetics, 3 (Bot. 9 cred., An. Biol. 9 cred.)
 An. Husb. 11f, Types and Breeds of Livestock, 3 (An. Husb. 10)
 *Electives, 3

Agr. Educ. 41f,w,s, Apprentice Teaching, 2 (See tabular statement)
 Agron. 102f,w, Farm Management II: Organization, 3 (Agron. 1, Econ. 6, Soils, 4)
 Dy. Husb. 6f, Judging Dairy Cattle, 1 (An. Husb. 1)
 Dy. Husb. 101f, Milk Production, 5 (Dy. Husb. 1)
 Pl. Path. 1f,w, Plant Pathology, 5 (Bot. 9 cred.)
 Electives, 1

Winter Quarter

Agr. Educ. 11f,w,s, Principles of Vocational Education, 3
 Agron. 122w, Corn and Potato Crops, 3 (Agron. 1)
 An. Husb. 12w, Types and Breeds of Livestock, 3 (An. Husb. 11)
 Ent. 3f,w, Economic Entomology, 3 (An. Biol. 16)
 Electives, 5

Agr. Educ. 42f,w, Teaching, 3 (See program)
 Agr. Educ. 75w,s, Visual Presentation, 3 (Agr. Educ. 11)
 Agron. 103w,s, Farm Management II: Operation, 3 (Agron. 102)
 Econ. 86w,¹ Prices of Farm Products, 3 (sr. class or 13 cred. in econ. and 5 cred. in soc. sciences)
 Ag. Ed. 154f, Rural Education and Community Life, 3 (Jr., Sr. Ag. Ed. II)
 Electives, 2

Spring Quarter

Agr. Educ. 131f,w,s, Methods in Teaching High School Agriculture, 5 (See tabular statement)
 Agron. 11s, Farm Machinery, 3
 Agron. 123s Forage and Fiber Crops, 3 (Agron. 1)
 An. Husb. 6s, Livestock Feeding, 3 (Agr. Biochem. 15)
 Econ. 85f,s, Principles of Marketing, 3 (Econ. 6)
 *Electives, 3

Agr. Educ. 151w,s, Organization and Management, 5 (Agr. Educ. 11, 21)
 Farm Eng. 40f,s, Mechanical Training, 3
 Vet. 8s, Veterinary Studies, 5
 Electives, 3

¹ If program conflicts prevent taking this course Econ. 114f, Economics of Agricultural Production, 2, may be substituted.

* Hort. 6f, and Hort. 32s must be taken unless completed as a part of the general requirements.

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.....	3	Slavic Culture
Race Leaders and Programs (If not previously elected).....	3, 3	Slavic Oral Language 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

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

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 10f and 11w in Trade and Industrial Education (see page 81) 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.

Courses 42, 43 listed in the curriculum outlined below will be found described under the Department of Theory and Practice of Teaching in this bulletin, pages 79-80. 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	A.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. Psychol....	3	2	Gen. Psychol. ...	3	1	Introduction to Sociology	5
41	Pub. Speak.	3	42	Pub. Speak.	3	43	Pub. Speak.	3
or			or			or		
11	Exposition	12	12	Description	or			
1	Hist. of Modern World	5	2	Hist. of Modern World	5	13	Narration 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 Play- ground	1	66, 67	Interpret. Danc...	2	111	Ed. Diag.	3
	Elective	5		Elective	6	44	Play and Play- ground	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. Instruct. ..	2	162	Superv. of Elem. Sch. Instruct. ..	2
43	Field Prob. in H. S. Training Departments ..	3	3	Educational Sociology	3	14	Rural Sociology..	3
59	Music Apprecia- tion	1	60	Music Apprecia- tion	1	61	Music Apprecia- tion	1
38f	Art Ed. Pottery..	2	60, 61	Art Ed.—Comm. and Indus. De- sign	2	5	General Econ. ...	3
60	Minor Sports Technique	1	61	Minor Sports Technique	1	525	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

TEACHERS' COURSE IN HOME ECONOMICS

(Required for University Teacher's Certificate)

For the junior and senior years the following course 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.

Such students become registrants in both colleges during the junior and senior years but register for their freshmen and sophomore years 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 complete the subjects listed in this course.

Junior Year

1. *General courses.*—The following courses may be registered for any quarter that they are offered except that the proper sequence of continuation courses and prerequisites must be observed.

Econ. 7w,s, Principles of Economics, 5.

H. E. 37f,s, Health Care of the Family (chem. 5 cred., Bact. 6).

H. E. Educ. 40f, Child-Training, 3 (Psychol. 1-2).

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).

Educ. 5s, The American School, 3 (Psychol. 1-2).

Educ. 55f,w,s, Elementary Educational Psychology, 3 (Psychol. 1-2) or Agr. Educ. 11f,w,s, Principles of Vocational Education, 3.

H. E. 23f,w, Nutrition I, 5 (H. E. 22, Bact. 6, Agr. Biochem. 3).

H. E. Educ. 42f,w,s, Special Methods of Teaching Home Economics, 5 (H. E. 13, 22, Psychol. 1-2, Agr. Educ. 11 or Educ. 55).

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, Laboratory, 6 (H. E. 22).

H. E. 35f,w,s, Home Management: Operation and Maintenance, Laboratory, 6 (H. E. 22, Home Practice in Foods and Cookery, must parallel H. E. 34) H. E. 37 and H. E. 40 prereq. or parallel.

H. E. 45w,s, Home Economics Survey, 2.

H. E. Educ. 49f,w, Observation and Teaching, 8 (H. E. 42, Ed. 55 or Agr. Ed. 11).

H. E. 103f,w,s, Dietetics, (H. E. 108).

H. E. 123w,s, Clothing Economics, 2 (H. E. 13, Econ. 5).

H. E. 131f,w,s, Home Management: House-Planning and Equipment, 5 (H. E. 52, 53).

Econ. 90, Economics of Consumption (Econ. 5).

TEACHERS' COURSE IN FOODS AND HOME MANAGEMENT

Students specializing in this course may omit the following subjects from the Teachers' Course in Home Economics:

Senior Year

- H. E. Econ. 49f,w, Observation and Teaching 8 (42, Ed. 55 or Agr. Ed. 11).
 H. E. 123w,s, Clothing Economics, 3 (H. E. 13, Econ. 5).

They shall add the following subjects to the Teachers' Course 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).

TEACHERS' COURSE IN TEXTILES AND CLOTHING

Students specializing in this course may omit the following subjects from the Teachers' Course in Home Economics:

Junior Year

- H. E. 23f,w, Nutrition I, 5 (H. E. 22, Bact. 6, Agr. Biochem. 3).
 H. E. 108f,w,s, Nutrition II, 5 (H. E. 23).

Senior Year

- H. E. Educ. 49f,w, Observation and Teaching, 8 (H. E. 42, Ed. 55 or Agr. Ed. 11).

They shall add the following subjects to the Teachers' Course in Home Economics.

Junior Year

- H. E. 55f,s, Decorative Needlework and Crafts, 3 (H. E. 3, 11, 51, 53 parallel).

Senior Year

- H. E. 18w,s, Commercial Clothing Manufacture, 4 (H. E. 17).
 H. E. Educ. 48f,w, Observation and Teaching (H. E. 42, Ed. 55 or Agr. Ed. 11).
 H. E. 122w,s, Advanced Textiles, 3 (H. E. 3, 51).

TEACHERS' COURSE IN RELATED ART

Students specializing in this course may omit the following subjects from the Teachers' Course in Textiles and Clothing:

Junior Year

- H. E. 123w,s, Clothing Economics, 3 (H. E. 13, Econ. 5).

Senior Year

- H. E. Educ. 48f,w,s, Observation and Teaching of Textiles and Clothing.
 H. E. 18w,s, Commercial Clothing Manufacture.
 H. E. 122w,s, Advanced Textiles.
 Econ. 90, Economics of Consumption (Econ. 5).

They shall add the following courses:

Junior Year

Art subjects:

- 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. 55).

Senior Year

Art Educ. 29, 30, 31; Sketch 3; 7, 8, 9.

H. E. 57w, Weaving and Other Crafts, 3 (H. E. 3, 54, 53).

H. E. 54, Interior Design, 3 (H. E. 52, 53, 131).

H. E. Educ. 49s,w,f, Observation and Teaching of Related Art, 8 (H. E. Educ. 42-53).

H. E. Educ. 43, Organization and Methods for Related Art Teaching, 3 (H. E. 42, 52, 53, 131).

NATURAL SCIENCE

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		WINTER QUARTER		SPRING QUARTER	
	Credits		Credits		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

COURSES OF STUDY

49

FALL QUARTER		WINTER QUARTER		SPRING QUARTER	
	Credits		Credits		Credits
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

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

		Credits
Major:		
113-114	Advanced Taxonomy	6
118	Cytology	3
131	Field Ecology	5
141	Physical Phases of Plant Physiology.....	5
	Thesis	—
		15
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	5 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 Optic.	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		

PHYSICAL EDUCATION
CURRICULUM FOR MEN STUDENTS MAJORING IN
PHYSICAL EDUCATION

Freshman Year

No.	Title	Credits			Prerequisite courses
		F	W	S	
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			Prerequisite courses
		F	W	S	
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 elective .....	..	..	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			Prerequisite courses
		F	W	S	
Physiol. 57-58	Human Physiology	4	4	..	Biol. 2, Chem. 1-2-3 or 4-5
Bact. 1	General Bacteriology .....	..	..	5	Biol. 1-2, Chem. 1-2-3 or 4-5
Anat. 135	Physical Development of Childhood	2	..	..	None
Ed. 55	Educational Psychology	3	..	..	Psych. 1-2
Ed. 3	Educational Sociology	3	..	..	Psych. 1-2
Ed. 1	History of Education.....	..	5	..	Psych. 1-2
Ed. 65	The High School.....	..	..	3	Psych. 1-2

COLLEGE OF EDUCATION

Junior Year—Continued

No.	Title	Credits			Prerequisite courses
		F	W	S	
Phys. Ed. 22-23-24	Gymnastics	3	3	3	Phys. Ed. 1-2-3, Anat. 3
Phys. Ed. 27	Scouting .....	..	..	2	None
	Elective .....	..	3	2	
		15	15	15	

Senior Year

No.	Title	Credits			Prerequisite courses
		F	W	S	
Prev. Med. 53	Elements of Prev. Med....	3	..	..	An. Biol. 1-2, Psych. 1-2
Prev. Med. 80	Educational Hygiene .....	..	3	..	An. Biol. 1-2, Psych. 1-2
Phys. Ed. 29	*Physical Exam. and Normal Diagnosis .....	..	3	..	Physiol. 57-58
Phys. Ed. 30	Athletic Training .....	..	..	2	None
Phys. Ed. 31	*History of Phys. Ed.....	2	..	..	Ed. 1
Phys. Ed. 32	*Principles of Phys. Ed.....	..	3	..	Phys. Ed. 31, 10-11-12, 22-23-24
Phys. Ed. 33	*Organization and Administration of Phys. Ed.....	..	..	3	Phys. Ed. 32
Phys. Ed. 37	Football	3	..	..	None
Phys. Ed. 38	Basket-Ball .....	..	2	..	None
Phys. Ed. 39	Track Athletics .....	..	..	2	None
Phys. Ed. 42	Baseball .....	..	..	2	None
Phys. Ed. 43-44-45	*Practice Teaching	2	2	2	Ed. 55, Phys. Ed. 10-11-12, 22-23-24
	Elective	5	2	4	
		15	15	15	

Suggested electives: Elementary Pathology, Elementary Symptomatology, courses in education and in the social sciences, Preventive Medicine 50, 54, 59, 60, 61.

COURSES FOR MEN STUDENTS MINORING IN ATHLETIC COACHING

No.	Title	Credits			Prerequisite courses
		F	W	S	
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.

* Not offered until 1924-25.

CURRICULUM FOR WOMEN STUDENTS MAJORING IN PHYSICAL EDUCATION

Freshman Year

No.	Title	Credits			Prerequisite courses
		F	W	S	
English A-B-C	Freshman English*	5	5	5	None
Chem. 14-15	Gen. Inorg. Chemistry‡	5	5	..	None
Farm Eng.	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. 37-38-39l	Freshman Major Sports....	..	..	..	None
Phys. Ed. 49f-50w	Freshman Major Gymnastics	..	..	..	None
		15	15	15	

Sophomore Year

No.	Title	Credits			Prerequisite courses
		F	W	S	
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	..	..	1	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	
	Elective	3	..	..
		16½	15	14½	

NOTE.—It is suggested that the elective course be in English.

* 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			Prerequisite courses
		F	W	S	
Agr. Biochem. 3f,w,s,su	Types of Carbon Com- pounds	6	..	..	Chem. 10 cr.
Physiol. 58w,59s	Human Physiology ....	..	4	4	Ag. Bioch. 3, Farm Eng. 23, Anat. 3
Ed.	Required Courses*	3	5	..	
Phys. Ed. 54f-55w	Gym. for Junior Majors.	½*	½	..	Phys. Ed. 51-52
Phys. Ed. 58w-59s	Adv. Folk Dancing with Technique .....	..	1	1	Ph.Ed. 6 qtrs.
Phys. Ed. 60f-61s	Minor Sports with Tech.	1	..	1	Ph.Ed. 6 qtrs.
Phys. Ed. 66-67-68	Elem. Interp. Dancing...	1	1	1	Ph.Ed. 6 qtrs.
Phys. Ed. 80f-81w	Kinesiology	4	4	..	Anat. 3, Farm Eng. 23
Phys. Ed. 82s	Tech. of Gym. Teach....	..	..	3	Ph.Ed. 54-55, 80-81
Phys. Ed. 83s	Physical Examination ...	..	..	2	
	Elective	..	..	3	
		15½	15½	15	

Senior Year

No.	Title	Credits			Prerequisite courses
		F	W	S	
Ed.		3	..	..
Prev. Med. 54	Public Health Methods and	Practice (Not offered in 1923-24)			
Phys. Ed. 69-70-71	Advanced Int. Dancing with Technique	1	1	1	Ph. Ed. 66-67-68
Phys. Ed. 75f	History of Phys. Ed....	..	1	0	Educ. 1
Phys. Ed. 84f	Principles of Gym.	3	..	..	Ph. Ed. 55, 82
Phys. Ed. 85w	Principles of Phys. Ed...	..	2	..	Ph. Ed. 45, 59, 61, 65, 69, 84
Phys. Ed. 86s	Personal and School Hygiene .....	..	..	3	Physiol. 57-58
Phys. Ed. 88-89-90	Orthopedic and Remedial Gymnastics	1	1	1	Ph. Ed. 83
Phys. Ed. 91f	Principles of Dancing...	2	..	..	Ph. Ed. 59, 68
Phys. Ed. 92f-93w- 94s	Practice Teaching in Playground, Gymnas- tics, Major Sports...	1	2	1	Ph. Ed. 45, 61, 65, 84
Phys. Ed. 95s	Prac. Teaching in Danc- ing and Swimming...	..	..	1	Ph. Ed. 57, 70, 91
Phys. Ed. 97w	Organization and Admin- istration .....	..	2	..	Ph. Ed. 75
	Electives	4	5	6	
		15	14	13	

* The required courses in the College of Education are Educational Sociology 3, Educational Psychology 55, History of Education 1, The High School 65.

Suggested electives: English Survey, courses in foreign language (continuing high school courses), art education, political science, sociology, nutrition, preventive medicine and public health, further courses in education.

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. 20-21	0	Soph. Basket-Ball and Baseball	Soph., jr.	Phys. Ed. 33-34
Phys. Ed. 22-23	0	Elem. Swimming	Soph.	None
Phys. Ed. 33-34	0	Basket-Ball and Baseball	Fr., jr., sr.	Permission of director
Phys. Ed. 43-44-45	3	Play and Playground.	Soph., jr., sr.	Phys. Ed. 1-2-3
Phys. Ed. 51-52	1	Gym. for Sophomore Majors	Soph., jr.	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. 20-21
Phys. Ed. 80	4	Kinesiology	Jr., sr.	An. Biol. 1-2, Anat. 2 or 3
Phys. Ed. 82	3	Technique of Gymnastic Teaching	Sr.	Phys. Ed. 80, 54-55
Medicine 3 or 2	4 or 3	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

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	Educ. Psychol.	3	144w	Psychology,		145s	Psychology	3
	Electives	12		Abnormal	3	111	Educ. Diagnosis.	3
			50w	Electives	9	113s	H. S. Curriculum 3	
				Prev. Medicine.	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. Educ. Psy.	3	107w	Adv. Educ. Psy.	3	108s	Adv. Educ. Psy.	3
124f	Educ. Admin.	3		Electives	8	64s	Vocational Psy.	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	Educ. (Seminar).. . . .	2	202w	Educ. (Seminar).. . . .	2	203s	Educ. (Seminar).. . . .	2
	Electives	3		Electives	3		Electives	3
	Thesis	0		Thesis	0		Thesis	0

MUSIC

MAJOR IN PUBLIC SCHOOL MUSIC

First Year

No.	Title	Credits			Prerequisite courses
		F	W	S	
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
Ed. 59-60	Appreciation	1	1	..	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
Mu. 3-4-5	Counterpoint	2	2	2	Mu. 1-2-3
Ed. 29-30-31	Grade School Methods.	3	3	3	None
Ed. (Mu) 71-72-73	Class Instr. Teaching.	1	1	1	None
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. 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	5	
Ed. 51-52-53	Instrumentation	1	1	1	None
Mu. 40-41-42 or 43-44-45	Orchestra or chorus.....	1	1	1	
Mu. 56-57-58 or	Piano (3 credits) or				
Mu. 50-51-52	Organ (3 credits).....	1	1	1	Soph. Prac. Music
§Mu. Mu.Elec.	Voice or other instrument.	1	1	1	Soph. Prac. Music

Fourth Year

Ed. 64-65-66	Orchestra Conducting ...	2	2	2	
Phys. Ed. 58-59	Adv. Folk Dancing and Technique		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. 59,60,61 or	Piano (3 credits) or				
Mu. 53-54-55	Organ (3 credits).....	1	1	1	Jr. Prac. Music
¶Mu. Mu.Elec.	Voice or other instrument.	1	1	1	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

SOCIAL STUDIES

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
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	30

Thesis in one of the departments with such additional work as may be necessary for the satisfactory preparation of the thesis.

TEACHERS OF SUBNORMAL CHILDREN

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 hand-work 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	
1f	Art Education...	3	2w	Art Education ...	3		Sociology	5
	Elective	2		Elective	2	3s	Art Education ...	3
							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	
1	History	5	2	History	5	33	Looms	3
37	Art Education ...	2	32	Art Education ...	1	10	Meth. Elem. Grade	
	Elective	3	11	Meth. Prim. Grade			Woodwork	3
				Woodwork	2		Elective	6
				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		151	Psycho-Educational	
51	Sociology	3		Clinic	3		Clinic	3
17	Practice Teaching..	2	52	Elem. Case Work..	3	60	Child Welfare....	3
	Elective	7	17	Practice Teaching..	2	17	Practice Teaching.	2
				Elective	7		Elective	7

FOUR-YEAR CURRICULUM TRADE AND INDUSTRIAL EDUCATION

(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 pre-req.)	5	Eng.Bw, Rhet. prereq., Af)	5	Eng.Cs, Rhet. (prereq., Bw)	5
Ind.4of, Occup. Analy. (no prereq.)	2	Ind.41w, Job Analy. (no prereq.)	2	Ind.42s, Select. of Rel. Material (prereq., 4of)	2
Ind.2of, Ind. History (no prereq.)	2	Ind.3ow, Graphic Presentation	2	Soc.1s, Introd. to Soc. (no prereq.)	5
Shopwork	6	Drawing	3		
Econ.3f, Prin. of Econ. (no prereq.)	5	Shopwork	3	Drawing	3
Psy.1f, Gen. Psy. (no prereq.)	3	Econ.4w, Prin. of Econ. (no prereq.)	5	Ind.25s, Lit. of Voc. Ed. (no prereq.)	2
Ind.6of, Soc. Agencies in Ind. Ed. (no prereq.)	2	Psy.2w, Gen. Psy. (no prereq.)	3	Ed.Psy.55s, Ed. Psy. (prereq., Psy. 12)	3
Shopwork	2	Shopwork	4	Ind.61w, Soc. Sig. of Ind. Ed. (prereq., Ind. 60)	2
Electives	3	Electives	3	Electives	8
Econ.161f, Labor Problems and Trade Unionism (prereq., Econ. 3-4)	3	Ind.7o, Meth.—Shop Subjects (prereq., Ind.41)	2	15s, Tech. of Teach. (prereq., Ed. 55)	3
Ed.Psy.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.Psy.112w, Ed. Diag. (prereq., 111f)	2	Ed.103s, Hist. of Mod. Elem. Ed. (prereq., 6 cr. in Psy. & 6 cr. in Hist.)	3
Ed.124f, Ed. Adm. (prereq., 10 or in Ed.)	3	Drawing		Electives	7
Electives	5	Electives	6		
Ind.5of, Prac. Teaching (prereq., 11 and Ind. 65, 66, or 67)	2	Ind.51w, Prac. Teach. (prereq., 5of)	2	Ind.52s, Prac. Teach. (prereq., 5ow)	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. 8o, General Industrial Training	2
Ind. 13, Organ. and Super. of Manual Training	3
Ed. 65, The High School (Cr. 167 Jr. H. S.)	3

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
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	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
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	18

5. Co-ordinators and Directors of Part-Time Schools and Classes

	Credits
Ed. Psy. 116, Statistical Method in Ed.....	2
Econ. 167, Industrial Relations	3
Econ. 168, Personnel 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. Psy. 116, Statistical Method in Ed.....	2
Ed. 160f, Supervision of Elementary School Instruction.....	2
Ed. Psy. 64, Vocational Psychology.....	3
Econ. 167, Industrial Relations.....	3
Soc. 100, Social Psychology	3
Soc. 102, Social Control	3
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	18

7. *Supervisors of Industrial Education for Cities and States*

	Credits
Ind. 80, General Industrial Training.....	3
Ed. Psy. 116, Statistical Method in Ed.....	2
Ed. Psy. 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. Psy. 64, Vocational Psychology.....	2
Ed. Psy. 134, 5-6, Mental Tests.....	6
Ed. Psy. 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

SHOPWORK 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.

DESCRIPTION OF COURSES

ADMINISTRATION AND SUPERVISION

Professors ANNE DUDLEY BLITZ, EARL HUDELSON, LEONARD V. KOOS, FLETCHER H. SWIFT; Associate Professor LEO JOHN BRUECKNER; Instructor, J. ORRIN POWERS; Assistants PERCIVAL W. HUTSON, WALTER J. SAUPE.

COURSES

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. MR. KOOS, MR. POWERS.
- 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. MR. HUDELSON.
115. PRACTICE IN SUPERVISION. Problems and practice in the supervision of instruction in the elementary schools of Minneapolis and St. Paul. MR. BRUECKNER.
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. MR. BRUECKNER.
- 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. Miss BLITZ.
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. MR. KOOS.
124. EDUCATIONAL ADMINISTRATION. The present status and tendencies in the organization and administration of state and city school systems with interpretations. MR. HUDELSON.
- 125-126. CITY SCHOOL ADMINISTRATION. For superintendents and principals. Detailed study of the principles and practice of city school administration.

- 160-161-162. SUPERVISION OF ELEMENTARY SCHOOL INSTRUCTION. Factors conditioning quality of teaching and relation of supervision thereto; purpose and function of supervision; status of supervision and improvement thereof; technique of supervision; testing efficiency of supervision. MR. BRUECKNER.
164. PROBLEMS OF 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. MR. KOOS.
- 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. MR. HUDELSON, MR. KOOS.
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. MR. SWIFT.
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. MR. SWIFT.
- 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. (Not offered in 1923-24.)
- 205-206-207. SEMINAR IN EDUCATIONAL ADMINISTRATION. (Not offered fall quarter 1923-24.)
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. MR. SWIFT.
- 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. MR. SWIFT.
- 218-219-220. SEMINAR IN SECONDARY SCHOOL PROBLEMS. MR. KOOS.
- 222-223-224. RESEARCH PROBLEMS IN SECONDARY EDUCATION. MR. HUDELSON.

AGRICULTURAL EDUCATION

COLLEGE OF EDUCATION

Professors ASHLEY V. STORM, DEXTER D. MAYNE; Assistant Professors WILLIAM P. DYER, ALBERT M. FIELD, FRANK W. LATHROP; Instructors SHERMAN DICKINSON, VICTOR NYLIN; Extension Specialists THEODORE A. ERICKSON, GEORGE F. HOWARD, FRANK W. PECK.

COURSES

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. MR. DYER.
21. VOCATIONAL EDUCATION. A short history of vocational education; present status in Europe and the United States; manual training and home arts in the educational system; place of agriculture in the public schools with special reference to Minnesota. MR. MAYNE.
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. MR. FIELD, MR. LATHROP, MR. DICKINSON, MR. NYLIN.
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. MR. FIELD, MR. LATHROP, MR. DICKINSON, MR. NYLIN.
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. MR. DICKINSON.
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. MR. STORM, MR. PECK.
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. MR. STORM, MR. PECK.
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. MR. FIELD.

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. MR. FIELD.
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. MR. STORM, MR. DYER, MR. LATHROP.
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. MR. DYER.
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. MR. DYER.
155. **CONSOLIDATED RURAL SCHOOL PROBLEMS.** Opportunity for intensive study and research in special problems of administration and supervision of village and consolidated rural schools. MR. DYER.
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. MR. FIELD.
- 171SU. **PROBLEMS IN PROCEDURE.** For agricultural 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. MR. LATHROP.
176. **ADVANCED VISUAL PRESENTATION.** Planning and construction of chart and lantern slide sets covering important topics in agriculture. Interpretation and use of agricultural statistics and graphic presentation of the same. Study of problems involved in use of visual aids.
- 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. MR. STORM, MR. DYER, MR. FIELD, MR. LATHROP.

ART EDUCATION

Assistant Professor RUTH RAYMOND, Chairman; Instructors AGNES JEAN DOUGLASS, HAZEL MARTIN, GERTRUDE D. ROSS; Assistant LUCILE SUTORIUS.

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. MISS RAYMOND, MISS DOUGLASS, MISS ROSS.
- 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 original 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. MRS. MARTIN.
- 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. Prerequisites: 18 credits in design except in specially arranged cases. MRS. MARTIN.
- 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. (Not offered in 1923-24.) MISS RAYMOND.
- 55-56-57. FUNDAMENTAL ART PRINCIPLES (for public school teachers of subjects other than art). (Not offered in 1923-24.) MRS. MARTIN.

DRAWING

- 4,5,6. STILL LIFE. Drawings from objects in charcoal and pencil. Emphasis on value relations, form and perspective. MISS DOUGLASS, MISS SUTORIUS.
- 7,8,9. SKETCH-DRAWING FROM THE POSED FIGURE IN CHARCOAL AND PENCIL. Action and memory drawings. Emphasis on action, form, and value relation. MISS DOUGLASS, MRS. MARTIN, MISS SUTORIUS.
- 10-11-12. COMPOSITION. Drawing from imagination. Stimulation by poetry and music. The medium: charcoal. MISS RAYMOND, MISS SUTORIUS.
- 23,24,25. WATER COLOR. Drawings from objects. Emphasis on form, color, and technical handling. MRS. MARTIN.
- 26,27,28. CHARCOAL, PENCIL, PEN TECHNIQUES. Drawings from objects in these mediums. MRS. MARTIN.
- 29-30-31. SKETCH FROM POSE. MRS. MARTIN, MISS DOUGLASS.

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. MISS ROSS.

33. BOOK-BINDING. 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. MISS ROSS, MISS SUTORIUS.

35. CLAY-MODELING. Representation of familiar objects, and illustrative modeling. (Not offered in 1923-24.) MRS. MARTIN.

37,38. ELEMENTARY WEAVING, BASKETRY, AND ALLIED CRAFTS, with reference to use in the grades and in occupational therapy. MISS ROSS, MISS SUTORIUS.

39. ADVANCED BASKETRY. MISS ROSS.

40. ADVANCED WEAVING. MISS ROSS.

41. ELEMENTARY POTTERY. Hand building. MISS ROSS, MISS SUTORIUS.

42w-43s. ADVANCED POTTERY. Work on wheels, casting, firing, and glazing. MISS ROSS, MISS SUTORIUS.

44s. APPLICATION OF DESIGN TO FABRICS by means of block printing, stenciling, batik, and other dyeing processes. MISS ROSS, MISS SUTORIUS.

45w. APPLICATION OF DESIGN IN NEEDLECRAFT. Problems appropriate for public school work. Peasant stitches. MISS ROSS.

46s. METAL WORK. Fundamental processes of shaping, sawing, saw-piercing, riveting, and soldering. MISS ROSS, MISS SUTORIUS.

ART HISTORY AND APPRECIATION

70. ART OF THE ITALIAN RENAISSANCE. (Not offered in 1923-24.)

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. MISS RAYMOND, MISS DOUGLASS, MRS. MARTIN.

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. MISS RAYMOND.

86,87,88. PRACTICE TEACHING IN ART. MISS RAYMOND, MISS DOUGLASS, MRS. MARTIN.

HISTORY AND PHILOSOPHY OF EDUCATION

Professor FLETCHER H. SWIFT, Chairman, DAVID F. SWENSON; Assistant Professor ROSS L. FINNEY; Instructor JEAN H. ALEXANDER.

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. MISS ALEXANDER.
3. EDUCATIONAL SOCIOLOGY. A study of education as a means of solving social problems and directing the evolution of institutions. MR. FINNEY.
5. PUBLIC EDUCATION IN THE UNITED STATES. A brief survey of the factors determining the problem of public education in America, followed by a brief account of the development and organization of typical state school systems. Offered at the University farm. MISS ALEXANDER.
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. MR. SWIFT.
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. MR. SWIFT.
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. MR. SWIFT.
114. PHILOSOPHY OF EDUCATION. A discussion of philosophically formulated ideals of education with an attempt to reach a positive philosophy of educational values. MR. SWENSON.
- 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. MR. SWIFT, MISS ALEXANDER.
- 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. (Not offered in 1923-24.) MISS ALEXANDER.

187-188-189. SEMINAR IN EDUCATIONAL SOCIOLOGY. Investigation of specific problems in the social aspects of education, the selection of problems to be determined in part by the student's interests. The sociological foundations of educational theory will be discussed. MR. FINNEY,

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. MR. SWIFT.

HOME ECONOMICS EDUCATION

Professor WYLLE B. MCNEAL; Associate Professor HARRIET GOLDSTEIN; Assistant Professors ALMA BINZEL, CLARA M. BROWN; Instructors EDNA AMIDON, FLORENCE FALLGATTER, AURA KEEVER, MILDRED NEMECK, LOUISE STODDARD.

COURSES

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. MISS BINZEL.
42. SPECIAL METHODS OF TEACHING HOME ECONOMICS. Curricula, equipment, methods of teaching for home economics. Required of all students preparing to teach. MISS CLARA BROWN, MISS FALLGATTER.
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. MISS H. GOLDSTEIN.
46. OBSERVATION AND TEACHING: RELATED ART. A course similar to 47, but dealing with the teaching of related art. MISS STODDARD.
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. MISS AMIDON, MISS DAY, MISS FALLGATTER, MISS NEMECK.
48. OBSERVATION AND TEACHING: TEXTILES AND CLOTHING. A course similar to 47, but dealing with the teaching of textiles and clothing. MISS CLARA BROWN, MISS KEEVER.
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. MISS CLARA BROWN, MISS FALLGATTER.

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. MISS MCNEAL, MISS CLARA BROWN.

EDUCATIONAL PSYCHOLOGY

Professors MELVIN E. HAGGERTY, Chairman, WILFORD S. MILLER, DONALD G. PATERSON; Assistant Professors JOHN G. ROCKWELL, MARVIN J. VAN WAGENEN; Assistants JOHN BOHAN, WILLARD OLSON.

55. EDUCATIONAL PSYCHOLOGY. A survey of fundamental facts of human behavior involved in educational activities open to juniors and seniors. MR. MILLER.
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. MR. PATERSON.
- 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. MR. VAN WAGENEN.
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. MR. VAN WAGENEN.
- 111T-112T. EDUCATIONAL DIAGNOSIS. Same as above for teachers. MR. VAN WAGENEN.
116. STATISTICAL METHODS IN EDUCATION. A study of statistical methods as applied to educational investigation. This course is ordinarily required of all candidates for advanced degrees. MR. VAN WAGENEN.
- 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. MR. VAN WAGENEN.
- 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 mental tests. A critical study of group tests. Methods of treating superior and subnormal children in schools. MR. MILLER.

- 138-139. **EXPERIMENTAL EDUCATION.** 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. MR. MILLER.
- 143-144-145. **INDIVIDUAL MENTAL EXAMINATION.** For teachers of sub-normal children. Demonstration and practice in mental diagnosis. Careful study will be made of different groups and systems of mental tests, and other clinical methods with discussion of general theory involved.
- 146-147-148. **PRACTICE COURSE IN MENTAL EXAMINATION.** For teachers of subnormal children. Conducted in co-operation with the public schools. Examinations will be made in the schools by both the group and individual methods, and results studied in relation to medical and school data.
- 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. MR. HAGGERTY, MR. MILLER, MR. VAN WAGENEN.
- 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. MR. HAGGERTY.
- 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.
- 201-202-203. **SEMINAR IN EDUCATIONAL PSYCHOLOGY.** A research course for graduate students. Required of all students writing theses in educational psychology. MR. HAGGERTY.

PHYSICAL EDUCATION FOR MEN

Professors FRED W. LUEHRING, Director, T. NELSON METCALF; Associate Professor LOUIS J. COOKE, Assistant Director; Coaches NIELS THORPE, WILLIAM H. SPAULDING, BLAINE MCKUSICK; Instructors PERCY GLIDDEN, EMIL IVERSON, HAROLD T. TAYLOR, HERBERT N. WATSON.

COURSES

- 1-2-3. FRESHMAN PHYSICAL EDUCATION. Mass activities, corrective exercise, apparatus work, swimming, athletics, games, and efficiency tests. MR. WATSON and assistants.
4. FRESHMAN HYGIENE. DR. COOKE, DR. BROWN.
- 7-8-9. ADVANCED LEADERS. One hour of instruction, two hours leading squads in Physical Education 1-2-3 under supervision. MR. WATSON.
- 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, handball, soccer, boxing. Winter: skating, hockey, wrestling, tumbling. Spring: swimming, indoor baseball, volley ball, tennis. MR. METCALF and others.
- 22-23-24. GYMNASTICS. Discussion of general kinesiology, physiology or exercise, principles of corrective gymnastics, gymnastic terminology, technique of gymnastic teaching. Practice in all forms of gymnastics. Lecture two hours, practice three hours. MR. METCALF and others.
27. SCOUTING. Backgrounds of scouting; organizing and conducting a troop; program for meetings and special events; games and stunts; scoutcraft; tenderfoot and second class tests; first aid; map-making; signalling; handicraft and woodcraft; nature study; hiking; camping. MR. WATSON.
29. PHYSICAL EXAMINATION AND NORMAL DIAGNOSIS. Methods of inspection to determine deviations from normal, including posture, musculature, skin, genitals, feet; tests of hearing and vision; inspection of nose, throat, and teeth; examination of heart and lungs; methods of taking principal measurements. DR. COOKE.
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. DR. COOKE.
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. MR. METCALF.
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. MR. METCALF.

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 inter-institutional athletics. Construction, equipment, and care of gymnasias and fields. Athletic management. MR. LUEHRING.
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. MR. LUEHRING.
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. MR. SPAULDING.
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. DR. COOKE.
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. MR. METCALF.
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. DR. COOKE.
- 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

Professor J. ANNA NORRIS, Chairman; Assistant Professors MAY S. KISSOCK, ALICE H. TOLG; Instructors GERTRUDE M. BAKER, IRENE CLAYTON, RHEA M. COXE, GRACE E. DENNY, HELEN W. HAZELTON, CATHERINE SIAS; Lecturer MOSES BARRON.

COURSES

- I-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. MISS KISSOCK, DR. TOLG, MISS CLAYTON, MISS DENNY, MISS HAZELTON, MISS SIAS.
4. PRELIMINARY HYGIENE. One lecture a week. The most essential aspects of the care of personal health. DR. NORRIS.
- 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. DR. TOLG, MISS DENNY.
- 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. MISS BAKER.
- 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. MISS KISSOCK, MISS CLAYTON, MISS HAZELTON.
- 22-23. SOPHOMORE ELEMENTARY SWIMMING. 22, Elementary. 23, Low intermediate. MISS CLAYTON, MISS COXE, MISS SIAS.
- 28-29. SOPHOMORE ADVANCED SWIMMING. 28, High intermediate. 29, Advanced. MISS COXE.
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. MISS KISSOCK, MISS HAZELTON.
- 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. MISS KISSOCK.
- 32-33-34. HOCKEY, BASKET-BALL, AND BASEBALL. Hockey in autumn, basket-ball in winter, baseball in spring. MISS KISSOCK, MISS CLAYTON, MISS HAZELTON.
- 49-50. GYMNASTICS FOR FRESHMEN. An introduction to gymnastics, marching, and apparatus work. MISS CLAYTON.
- 51-52. GYMNASTICS FOR SOPHOMORES. Gymnastics, marching, and apparatus work. MISS HAZELTON.

- 54-55. GYMNASTICS FOR JUNIORS. Gymnastics, marching, and apparatus work. MISS SIAS.
- 56-57. SWIMMING WITH TECHNIQUE. Description of strokes, methods of teaching, practice in teaching and life-saving. MISS COXE.
- 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. MISS BAKER.
- 60-61. MINOR SPORTS WITH TECHNIQUE. Description, and methods of teaching, one hour; practical work, two hours. MISS KISSOCK, MISS CLAYTON, MISS HAZELTON.
- 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. MISS KISSOCK, MISS CLAYTON, MISS HAZELTON.
- 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. MISS BAKER.
- 69-70-71. ADVANCED INTERPRETIVE DANCING WITH TECHNIQUE. Technique and methods of teaching one hour, practical work two hours. MISS BAKER.
75. HISTORY OF PHYSICAL EDUCATION. A historical survey of physical education beginning with that of Greece and including contemporary developments. MR. METCALF.
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. DR. BARRON.
- 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. MISS DENNY.
82. TECHNIQUE OF GYMNASTIC TEACHING. Lectures and quizzes on terminology, and technique of teaching. Practice in teaching within departmental groups. MISS BAKER.
83. PHYSICAL EXAMINATION. Study of all the important anthropometric measurements, and practical application of them in the laboratory. DR. TOLG.

- 84-85. **PRINCIPLES OF PHYSICAL EDUCATION.** 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. MISS BAKER.
86. **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. DR. TOLG.
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. MISS BAKER.
- 92-93-94-95. **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. DR. NORRIS.

THEORY AND PRACTICE OF TEACHING

Associate Professor LEO JOHN BRUECKNER, Chairman; Professors GISLE BOTHNE, MELVIN E. HAGGERTY, EARL HUDELSON, CHARLES P. SIGERFOOS, ANDREW A. STOMBERG; Associate Professor AUGUST C. KREY; Assistant Professors ISAAC W. GEIGER, MARY S. KISSOCK, GEORGIANA LOMMEN; Lecturer J. C. BROWN; Instructors MARIE B. DENNEEN, SOPHIA HUBMAN, REWEY BELLE INGLIS, ARTHUR M. JOHNSON, MARGARET MCGUIRE, FRANCES MOREHOUSE, ABE PEPINSKY, DORA V. SMITH, LYNN E. STOCKWELL, LOUIS A. TOHILL; Special Instructors THADDEUS P. GIDDINGS, WILMA A. GILMAN.

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. MR. BRUECKNER, MR. HUDELSON.

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. MR. JOHNSON.
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. MR. SIGERFOOS.
19. TEACHERS' COURSE IN BOTANY. A course dealing with the principles and methods of teaching botany in high schools. MR. JOHNSON.
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. MR. GEIGER.
21. TEACHERS' COURSE IN ENGLISH. Methods of teaching English in high schools. Required of all students preparing for a teacher's certificate in English. MISS INGLIS.
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. MISS HUBMAN.
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 secondary schools. Students planning to teach government must have 9 credits in political science. MR. KREY.
26. TEACHERS' COURSE IN LATIN. Class drill and discussion of various problems connected with secondary school work in Latin. MISS DENNEEN.

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. MISS MCGUIRE.
28. **JUNIOR HIGH SCHOOL MATHEMATICS.** Mathematics in the junior high school. Lectures, readings, discussions, methods of presentation, assignments, lesson plans, etc. MR. BROWN.
- 29-30-31. **PUBLIC SCHOOL MUSIC.** Preparation for teachers and supervisors of music in the grades. Piano-playing, singing, and sight reading prerequisite. Four hours in class and one half-day weekly public school visiting. Practice teaching demanded. MR. GIDDINGS, MR. PEPINSKY.
- 32-33-34. **ADVANCED PUBLIC SCHOOL MUSIC,** Preparation for teachers and supervisors of music in high and normal schools. Four hours in class and one half-day weekly in public school visiting. Practice teaching demanded. MR. GIDDINGS, MR. PEPINSKY.
35. **TEACHERS' COURSE IN NORWEGIAN.** For students who expect to teach Norwegian in the high schools. MR. BOTHNE.
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. MR. ROLLEFSON.
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. MR. TOHILL.
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. MR. SMITH.
39. **SOCIAL SCIENCE FOR JUNIOR HIGH SCHOOLS.** MISS MOREHOUSE.
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. MR. STOMBERG.
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.) MISS LOMMEN.

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. MISS LOMMEN.
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. MISS LOMMEN.
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. MISS LOMMEN.
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.) MISS LOMMEN.
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 1923-24.) MISS LOMMEN.
- 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.

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. MR. HAGGERTY, MISS SMITH.

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. MR. HUDELSON.
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; submission of proposals of special methods. MR. HUDELSON.

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. MR. JENKS.
- 131-132-133. SUPERVISED AMERICANIZATION WORK. Practical field work among foreign peoples in our vicinity.

TRADE AND INDUSTRIAL EDUCATION

Professor CHARLES A. PROSJEK, Chairman; Lecturer M. REED BASS;
Inspectors CHARLES R. ALLEN, RALPH T. CRAIGO, HOMER J. SMITH,
LYNN E. STOCKWELL.

COURSES

- 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. MR. STOCKWELL.
- 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. MR. STOCKWELL.
- Ind.12. METHODS, ELEMENTARY ELECTRIC WIRING. This course consists of elementary inside electrical wiring, fundamental electrical and mechanical laws, blue print reading and estimating. Methods of presenting this work to a class is a very important part of the work. MR. STOCKWELL.
- 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. MR. STOCKWELL.

- 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. (Not offered in 1923-24.) MISS MOREHOUSE.
- 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. MR. SMITH.
- 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. MR. SMITH.
- 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. MR. ALLEN.
- 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. MR. BASS.
- 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. MR. BASS.
- 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. MR. SMITH.
- 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 cooperation. The special significance of social agencies to vocational education under public support and control. MR. PROSSER.

- 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. MR. ALLEN.
- 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. MR. SMITH.
- 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. MR. SMITH.
- 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. MR. CRAIGO.
- 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. MR. SMITH.
- 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. MR. PROSSER.
- 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. MR. CRAIGO.
- 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. MR. PROSSER.

Ind173. 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. MR. PROSSER.

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.

LIBRARY TRAINING

Instructor ALMA PENROSE.

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. MISS PENROSE.
8. CHOICE AND USE OF REFERENCE MATERIALS FOR A SCHOOL LIBRARY. Study of reference books, periodicals, documents, etc. useful in a school library. Two hours' class work, three hours' practice work in library. MISS PENROSE.
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. MISS PENROSE.

PREVENTIVE MEDICINE AND PUBLIC HEALTH**UNIVERSITY STAFF**

Professors ARTHUR S. HAMILTON (Medicine); Associate Professor FRED L. ADAIR (Obstetrics); Assistant Professors HAROLD S. DIEHL, Director; EDGAR J. HUENEKENS (Pediatrics), JAY A. MYERS; Lecturer MABEL ULRICH; Instructors RUTH E. BOYNTON, HALLY J. FISHER, LEONARD W. LARSON, ERNEST S. MARIETTE (Medicine), WILLIAM P. SHEPARD.

STAFF OF STATE BOARD OF HEALTH

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 R. WILSON ARCHIBALD (Bacteriologist), JAMES A. CHILDS (Engineer), LESTER W. FEEZER (Assistant Director, Division of Venereal Diseases).

50. PUBLIC AND PERSONAL HEALTH. Discusses the causes 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. DR. DIEHL, DR. SHEPARD.
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. DR. DIEHL, DR. SHEPARD.
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 1923-24.)
58. INFANT AND MATERNAL 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. DR. ADAIR, DR. HUENEKENS, DR. BOYNTON, and others.
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. DR. ULRICH.
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. DR. MYERS.
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. DR. HAMILTON.
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. DR. DIEHL, DR. BOYNTON.

PUBLIC SCHOOL MUSIC

Instructors THADDEUS P. GIDDINGS, WILMA A. GILMAN, ABE PEPINSKY.

- 51-52-53. INSTRUMENTATION. (Junior, three quarters). Theoretical study of orchestral and band instruments. Observation of local organizations for timber and color. MR. PEPINSKY.

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. MR. PEPINSKY.

81-82-83. **OBSERVING AND TEACHING.** (Senior year, three quarters). Observation and practice teaching in the high schools, city, and University, under supervision. MR. GIDDINGS, MR. PEPINSKY.

Education 29. **GRADE SCHOOL METHODS.** First term. Piano class-teaching. Practical methods of teaching piano classes, and theory underlying the methods. Practice teaching with the class and with classes of children. This is also a good course in practical schoolroom teaching. MR. GIDDINGS, MR. PEPINSKY.

Education 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. MR. GIDDINGS, MR. PEPINSKY.

Education 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. MR. GIDDINGS, MR. PEPINSKY.

Education 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. MR. GIDDINGS, MR. PEPINSKY.

Education 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. MR. GIDDINGS, MR. PEPINSKY.

Education 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. MR. GIDDINGS, MR. PEPINSKY.

Music 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. MR. PEPINSKY.

Education 59-60. MUSIC APPRECIATION. Fall quarter. Methods of presenting. Practice teaching in class. Selection of material. Use of phonograph and other musical media. Work from kindergarten through the first eight grades.

Winter quarter. Same for junior high schools and high schools.

For description of courses in education, see proper departmental statements in the bulletin of the College of Education.

All other courses listed in the above curriculum will be found described in the bulletin of the College of Science, Literature, and the Arts.

PROGRAM

ANIMAL BIOLOGY

Professors HENRY F. NACHTRIEB, Head; HAL DOWNEY, JOHN B. JOHNSTON, WILLIAM A. RILEY, THOMAS S. ROBERTS, CHARLES P. SIGERFOOS; Associate Professors ROYAL N. CHAPMAN, ELMER J. LUND; Assistant Professors DWIGHT E. MINNICH, OSCAR W. OESTLUND; Instructors JOHN A. CEDERSTROM, MARSHALL HERTIG, EMILY H. PAYNE, ADOLPH RINGOEN; Assistants OSCAR B. BERGMAN, GEORGE H. CHILDS, CLYDE H. FREDERICKSON, LOUIS A. FRIED, BJARNE HOUKOM, EDWIN J. KEPLER, JOSEPH T. KING, GORDON C. MACRAE, LEVRS NOLAN, GEORGE M. ROBERTSON, ETHEL SLIDER, CAROL YOUNG.

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).

COURSES

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w†	General Zoology				
	(10 cred.; all; no prereq.)				
	Sec. 1	Lab. III, IV	MWF	101AB	Ar
	(Limit, 150)	Lect. III	TThS		
			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
		Lect. (Spring: III, IV	WF	313	
		Lab. IV	MThS)		

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

() Numbers in parentheses do not refer to the year 1923-24.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
14f-15w-16sf	General Zoology (9 cred.; Agr., For., H.E.; no prereq.)	See College of Agriculture bulletin.			
21s	Intro. to Prin. of Animal Be havior (5 cred.; fr., soph., jr., sr.; pre- req., 1-2. Chem. or phys. desir- able)	VI, VII, VIII VI, VII, VIII, IX	MW F	10AB	Mr. Lund
22s	General Ecology (5 cred.; fr., soph., jr., sr.; pre- req., 1-2)	VI, VII, VIII VI, VII, VIII, IX	MW F	204AB	Mr. Chapman
23f	Intro. Entomology (5 cred.; soph., jr., sr.; prereq., 1-2)	VI, VII	MTWThF	204, 211AB	Mr. Oestlund
24f	Intro. Animal Parasitology..... (5 cred.; soph., jr., sr.; prereq., 1-2)	VI, VII	MTWThF	202AB	Mr. Riley
25w	Histology (5 cred.; soph., jr., sr.; prereq., 1-2)	III, IV	MTWFS	201, 211AB	Mr. Downey
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-39sf	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.; pre- req., 1-2)	VI, VII, VIII	WF	202AB	Mr. Riley
45w	Insects and Disease..... (3 cred.; fr., soph., jr., sr.; pre- req., 1-2)	VI, VII, VIII	TTh	202AB	Mr. Riley
46w-47sf	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

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

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
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	202AB	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
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 Ger- man)	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 Eugenicis..... (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.; pre- req., 1-2 and special require- ments)	Ar	Ar	Ar	Ar

ENTOMOLOGY AND ECONOMIC ZOOLOGY

COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

Professors WILLIAM A. RILEY, Chief; ARTHUR G. RUGGLES, FREDERIC L. WASHBURN;
Associate Professor ROYAL N. CHAPMAN; Assistant Professors SAMUEL A.
GRAHAM, HARRY H. KNIGHT, OSCAR W. OESTLUND; Instructor MARSHALL HERTIG.

No.	Title	Hour	Day	Bldg.	Instructor
3f,w	Economic Entomology (3 cred.; soph., jr., sr.; prereq., an. biol. 9 cred.)	VI, VII, VIII	WF	306Ad	Mr. Ruggles
4f	Economic Vertebrate Zoology.... (3 cred.; jr., sr.; prereq., an. biol. 9 cred.)	Ar	Ar	Ar	Mr. Washburn

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

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
8f	Varieties and Habits of Fur-bearing Animals- (3 cred.; soph., jr., sr.; prereq. an. biol. 9 cred.)	Ar	Ar	Ar	Ar
12w	Forest Zoology (3 cred.; jr., sr.; prereq. an. biol. 9 cred.)	Ar	Ar	Ar	Mr. Washburn
15of,su	Insecticides and Their Action... (3 or 6 cred.; jr., sr.; prereq. 37-38-39, Agr. Biochem. 7-8, or equiv.)	Ar	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. Oestlund, Mr. Ruggles, Mr. Chapman, Mr. Riley, Mr. Washburn

ANTHROPOLOGY

Professor ALBERT ERNEST JENKS, Chairman,¹ WILSON D. WALLIS; Instructor HERBERT W. KRIEGER; Assistants EVAN BORST, MARION DAY.

No.	Title	Hour	Day	Bldg.	Instructor
51f	Introd. to Anthropology.....	I	TWThF	Ar	Mr. Wallis
		VI	MTWThF	15F	Mr. Krieger
51w	Introd. to Anthropology.....	VI	MTWThF	15F	Mr. Krieger
51s	Introd. to Anthropology.....	I	TWThF	Ar	Mr. Wallis
		VI	MTWThF	15F	Mr. Krieger
54w	Cultural Anthropology	II	TThS	Ar	Mr. Wallis
55f,w,s	General Immigration	II	MWF	25F	Mr. Krieger
62f,w,s	Ethnology	II	TThS	25F	Mr. Krieger
80w	American Indian	IV	MWF	Ar	Mr. Wallis
110f	Phys. Anthropology	II	MWF	Ar	Mr. Wallis
113f	Older Immigrants	III	MWF	Ar	Mr. Wallis
114w	Newer Immigrants	III	MWF	Ar	Mr. Wallis
121s	Adv. Phys. Anthropology.....	III	MWF	Ar	Mr. Wallis
123w	Anth. Problems	Ar.	Ar	Ar	Mr. Wallis
204s	Sem. in Anthropology.....	Ar	Ar	Ar	Mr. Wallis

ARCHITECTURE

COLLEGE OF ENGINEERING AND ARCHITECTURE

Professors FREDERICK M. MANN, Head; LEON E. ARNAL; Associate Professor JAMES H. FORSYTHE; Assistant Professors SAMUEL C. BURTON, ROBERT T. JONES, ROY C. JONES; Special Lecturers PAUL C. GAUGER, ARTHUR R. NICHOLS; Instructors JOHN W. DAWSON, ELMER E. YOUNG.

JUNIOR COLLEGE COURSES

No.	Title	Hour	Day	Bldg.	Instructor
21f-22w†-23s	Freehand Drawing				
	(6 cred.; soph., jr., sr.; prereq. soph. standing)				
	Sec. 1	II, III	MWF	402E	Mr. Young
	2	VII, VIII	MWF		

¹ Absent on leave 1923-24.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
31f-32w†-33s	Elements of Architecture..... (15 cred.; soph., jr.; prereq., soph. standing)	Lect. IV II II	T S ThS (spring)	320E 320E	Mr. R. T. Jones Mr. Forsythe
	Sec. 1	Lab. II, III, IV	MWF	309E	Mr. Dawson
	2	VII, VIII, IX	MWF	309E	
61f-62w-63s	Shades and Shadows..... (6 cred.; soph.; prereq., Math. 5)	Lect. II	T	320E	Mr. Forsythe
	Sec. 1	Lab. VI, VII	Th	309E	
	2	VII, VIII	T	309E	

SENIOR COLLEGE COURSES

14f-15w-16s	History of Architecture..... (6 cred.; jr., sr.; prereq., 31-32- 33)	IV (fall) IV (winter) III III (spring) III	MW Th M M Th	320E 305E 320E 320E 305E	Mr. Forsythe
17f-18w-19s	History of Architecture..... (6 cred.; jr., sr.; prereq., 14-15- 16)	III	TTh	320E	Mr. Mann
34-35-36f,w,s	Architectural Design (12 cred.; jr., sr.; prereq., 31-32- 33, 23)	VI, VII, VIII	MTThF	402E	Mr. R. C. Jones
51f-52w-53s	Building Construction (6 cred.; soph., jr., sr.; prereq., 31-32-33)	III IV III	MW (fall, winter) M } W } (spring)	320E 305E 320E	Mr. R. T. Jones
81f	Color and Design (2 cred.; stud. of dram.; no pre- req.)	VI, VII, VIII	TTh	402E	Mr. Burton
134-135-136f,w,s	Interior Decoration Design..... (24 cred.; sr.; prereq., 34-35-36)	VI, VII, VIII, IX I, II, III, IV	MTWThF S	317E	Mr. Arnal
163s	History of Sculpture and Paint- ing (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	401E	Mr. Mann

ASTRONOMY

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

COURSES

No.	Title	Hour	Day	Bldg.	Instructor
4f-5w†*	Introd. to Astronomy..... (10 cred.; 3d qu. fr., soph., jr., sr.; prereq., trigonometry)	I	TWThFS	124F	Mr. Beal
11f‡*	Descriptive Astronomy (5 cred.; 3d qu. fr., soph., jr., sr.; no prereq.)	III	MTThFS	124F	Mr. Beal

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

* Courses 4-5, 11-25, and 51-52-53 cover much the same field. No student may receive credit for both 4-5 and 11-25. Students are not advised to take both 51-52-53 and 4-5 or 11-25.

‡ Does not satisfy the Junior College requirement for science.

† Satisfies the Junior College requirement for science.

No.	Title	Hour	Day	Bldg.	Instructor
11w½*	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
25s§*	Stellar Astronomy	IV	MWF	124F	Mr. Leavenworth
	(3 cred.; soph., jr., sr.; prereq., 11)				
51f-52w-53s*	General Astronomy	II	MWF	124F	Mr. Leavenworth
	(9 cred.; jr., sr.; prereq., Math. 5, 6, 7, or phys. sci. and Math. 6)				
62f	Elements of Practical Astron....	III	MWF	123F	Mr. Leavenworth
	(3 cred.; jr., sr.; prereq., Astron. 4 or 11 or 51, and Math. 6, 7)				
101f-102w-103s	Practical Astronomy	III	MWF	123F	Mr. Leavenworth
	(9 or 18 cred.; jr., sr., grad.; prereq., Astron. 4 or 11 or 51, and Math. 50)				
111f-112w-113s	Celestial Mechanics	Ar	Ar	123F	Mr. Beal
	(9 cred.; sr., grad.; prereq., Math. 51)				
140w	Method of Least Squares.....	II	TThS	124F	Mr. Leavenworth
	(3 cred.; jr., sr., grad.; prereq., Math. 51)				

BACTERIOLOGY

MEDICAL SCHOOL

Professor WINFORD P. LARSON, Chief; Associate Professor ARTHUR T. HENRICI; Assistant Professor ROBERT G. GREEN; Instructors ANNE BENTON, BERYL S. GREEN, DAVID O. SPRIESTERSBACH; Teaching Fellow MADELEINE GUILLEMIN.

No.	Title	Hour	Day	Bldg.	Instructor
51f,w,s	General Bacteriology	VI, VII, VIII	MWF	MH	Ar
	(5 cred.; jr., sr.; prereq., chem. 10 cred. and biol. 10 cred.)				
101f	Special Bacteriology for Medical Students	I, II	MWF	MH	Ar
	(4 cred.; jr., sr.; prereq., 1)				
103s	Special Bacteriology for Students of Agriculture	III, IV	TThS	MH	Ar
	(4 cred.; jr., sr.; prereq., 1)				
105f	Household Bact.	VII, VIII	TTh	MH	Ar
	(3 cred.; jr., sr.; prereq., 1)				
114s	Higher Bacteria	VII, VIII	TTh	MH	Ar
	(3 cred.; jr., sr.; prereq., 101 or 103)				

* Courses 4-5, 11-25, and 51-52-53 cover much the same field. No student may receive credit for both 4-5 and 11-25. Students are not advised to take both 51-52-53 and 4-5 or 11-25.

§ Does not satisfy the Junior College requirement for science.

No.	Title	Hour	Day	Bldg.	Instructor
116w	Immunity (3 cred.; jr., sr.; prereq., 101 or 103)	VII, VIII	TTh	MH	Ar
117s	Pathogenic Protozoa (3 cred.; jr., sr.; prereq., 101 or 103)	VII, VIII	TTh	MH	Ar
118f	Morphology and Taxonomy of Bacteria (3 cred.; jr., sr.; prereq., 101 or 103)	VII, VIII	TTh	MH	Ar
119f-120w	Bacteriological Chemistry (4 cred.; jr., sr.; prereq., 101 or 103; Physiology 100, 101, 102 or Agric. Biochem. 111-112)	VI, VII, VIII	TTh	MH	Ar
150f-151w or 150w-151s	Advanced Bacteriology (cred. ar.; jr., sr.; prereq. see instructor)	VII, VIII	TTh	MH	Ar

BOTANY

Professors C. OTTO ROSENDAHL, Chairman; EDWARD M. FREEMAN (Plant Pathology and Botany), JOSEPHINE E. TILDEN; Associate Professors FREDERIC K. BUTTERS, RODNEY B. HARVEY; Assistant Professors WILLIAM S. COOPER, EDWARD W. D. HOLWAY,¹ NED L. HUFF; Instructor ARTHUR M. JOHNSON; Assistants ELSA HORN, RAYMOND LANDON, ETHEL MYGRANT, NELLIE A. THOMPSON, JERRY VACHA.

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	Bldg.	Instructor
1f-2w†	General Botany (10 cred.; all; no prereq.)				
	Sec. 1	Lab. I, II	MWF	212, 214, 220P	
		Quiz I	T	212, 214, 220P	
		Lect. II	TThS	210P	
	Sec. 2	Lab. VI, VII	MWF	212, 214, 220P	
		Quiz VII	Th	210P	
		Lect. VI, VII	T	210P	
			Th	210P	
1w-2sf‡	General Botany (See 1f-2w)				
		Lab. III, IV	MWF	212, 214, 220P	
		Quiz IV	T	212, 214, 220P	
		Lect. III	TThS	210P	
1s-(2f)†	General Botany (See 1f-2w)				
		Lab. I, II	TThS	212, 214, 220P	
		Quiz I	W	212, 214, 220P	
		Lect. II	MWF	210P	

¹ Died, March 31, 1923.

† 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 1923-24.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
(1s)-2ff	General Botany				
	(See 1f-2w)				
		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	
		Quiz VIII	W	210P	Mr. Rosendahl,
		Lect. VIII	MF	210P	Mr. Johnson
12f	Morphology of Algae.....	I, II	TThS	213AB	Miss Tilden
	(3 cred.; all; prereq., 2)				
13w	Morphology of Fungi.....	I, II	TThS	213AB	Mr. Johnson
	(3 cred.; all; prereq., 2)				
21s	Elementary Ecology	III, IV	MTWFS	G	Mr. Cooper
	(5 cred.; all; prereq., 2)				
22f,s	Elementary Plant Physiol.....	III, IV	MTWFS	G	Mr. Harvey
	(5 cred.; all; prereq., 2)				
48f	Plant Industry	VIII	MTWThF	Ar	Mr. Rosendahl, Mr. Freeman in charge
	(5 cred.; jr., sr.; no prereq.)				Mr. Rosendahl
51f	Histological Methods	I, II	MWF	213AB	Mr. Rosendahl
	(3 cred.; jr., sr.; prereq., 15 cred.)				
62w	Bryophytes and Pteridophytes...	VI, VII, VIII	TTh	Ar	Mr. Huff
	(3 cred.; jr., sr.; prereq., 15 cred.)				
63s	Gymnosperms and Angiosperms..	VI, VII, VIII	TTh	Ar	Mr. Butters
	(3 cred.; jr., sr., grad.; prereq., 7 or 62)				
107	<i>Bryophytes</i>	<i>Not offered in 1923-24</i>			
	(5 cred.; jr., sr., grad.; prereq., 7 and 62)				
108w	<i>Pteridophytes</i>	Ar	Ar	4AB	Mr. Butters
	(5 cred.; jr., sr., grad.; prereq., 7 and 62)				
110	<i>Gymnosperms</i>	<i>Not offered in 1923-24</i>			
	(5 cred.; jr., sr., grad.; prereq., 7 and 63)				
113f-114w-115s	Adv. Taxonomy	VI, VII	MWF	213AB	Mr. Rosendahl
	(9 cred.; jr., sr., grad.; prereq., 15 cred. incl. 7)				
118w	Cytology	VI, VII, VIII	TTh	213AB	Mr. Rosendahl
	(3 cred.; jr., sr., grad.; prereq., 18 cred.)				
123w	Algae: Blue-Green	VI, VII, VIII	TTh	104AB	Miss Tilden
	(3 cred.; jr., sr., grad.; prereq., 15 cred. incl. 12)				
124f	Algae: Green	VI, VII, VIII	TTh	104AB	Miss Tilden
	(3 cred.; jr., sr., grad.; prereq., 15 cred. incl. 12)				

† The entire course must be completed before credit is received for any quarter.
 () Numbers in parentheses do not refer to the year 1923-24.

No.	Title	Hour	Day	Bldg.	Instructor
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
127S	Anatomy of Vascular Plants.... (5 cred.; jr., sr., grad.; prereq., 18 cred.)	III, IV	MTWFS	213AB	Mr. Butters
131f	Field Ecology (5 cred.; jr., sr., grad.; prereq., 21)	Ar	Ar	G	Mr. Cooper
132W	Ecological Anatomy (5 cred.; jr., sr., grad.; prereq., 21)	III, IV	MTWFS	G	Mr. Cooper
133S	Forest Geography of North America (5 cred.; jr., sr., grad.; prereq., 21)	VI, VII	MWF	G	Mr. Cooper
141f	Physical Phases of Plant Physi- ology (5 cred.; sr., grad.; prereq., 22 and gen. org. chem.)	I, II	MTWThF	G	Mr. Harvey
42W	Plant Metabolism (5 cred.; sr., grad.; prereq., 22 and gen. org. chem.)	I, II	MTWThF	G	Mr. Harvey
143S	Plant Metabolism and Growth.. (5 cred.; sr., grad.; prereq., 22 and gen. org. chem.)	I, II	MTWThF	G	Mr. Harvey
144S	Plant Microchemistry (5 cred.; sr., grad.; prereq., 22 and gen. org. chem.)	III, IV	MTWFS	G	Mr. Harvey

PLANT PATHOLOGY AND BOTANY

DEPARTMENT OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

Professors EDWARD M. FREEMAN, Chief; ELVIN C. STAKMAN; Assistant Professors
ALVIN H. LARSON, JULIAN G. LEACH; Instructors JONAS C. CHRISTENSEN, LOUISE
DOSDALL, RALPH M. NELSON, RAYMOND C. ROSE, JAMES L. SEAL.

Introductory Courses

No.	Title	Hour	Day	Bldg.	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

PROGRAM

97

	Title	Hour	Day	Bldg.	Instructor
	Seed Problems (3 cred.; jr., sr.; prereq., 9)	Ar	Ar	Ar	Mr. Larson
	Plant Disease Control..... (5 cred.; jr., sr.; prereq., 1, Ent. 3)	Ar	Ar	Ar	Mr. Christensen
5f-106W-107S	Mycology (9 cred.; jr., sr.; prereq., Bot. 7, 11, or equiv.)	I, II	MWF	1, 32PP	Miss Dosdall
8f	Methods (3 cred.; jr., sr.; prereq., 1 or 10, Bact. 51)	Ar	Ar	Ar	Mr. Leach
ow	Principles of Pathology..... (3 cred.; jr., sr.; prereq., 1 or 10, Bact. 51)	III, IV	MWF	1, 2PP	Mr. Stakman
1W	Diseases of Field Crops..... (3 cred.; jr., sr.; prereq., 1 or 10)	VI, VII	MWF	1, 2PP	Mr. Stakman, Mr. Christensen
	<i>Diseases of Fruit Crops</i>	<i>Not offered in 1923-24</i>			
	(3 cred.; jr., sr.; prereq., 1 or 10)				
3S	Diseases of Vegetable Crops.... (3 cred.; jr., sr.; prereq., 1 or 10)	VI, VII	MWF	3, 4PP	Mr. Leach
W	Advanced Forest Pathology..... (3 cred.; jr., sr.; prereq., 1 or 10)	VIII, IX	TTh	1, 2PP	Mr. Stakman, Mr. Leach, Mr. Nelson

CHEMISTRY

Professors PAUL H. M.-P. BRINTON, GEORGE B. FRANKFORTER, WILLIAM H. HUNTER, CHARLES F. SIDENER; Associate Professors EVERHART P. HARDING, FRANK H. MACDOUGALL, M. CANNON SNEED; Assistant Professors LILLIAN COHEN, ISAAC W. GEIGER, LAWRENCE M. HENDERSON, LLOYD H. REYERSON, LEE I. SMITH; Instructors CARL FOSSE, WALTER M. LAUER, LANDON A. SARVER.

REQUIREMENTS OF THE DEPARTMENT

For a teacher's certificate.—Major recommendation: Courses 6, 7, 8, or 9, 10; 12, 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, page 48.

COURSES

Division of General Inorganic Chemistry

	Title	Hour	Day	Bldg.	Instructor
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	Ar
	2	Lab.	VI, VII VIII, IX	TTh 110C TTh 110C	Ar Ar

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

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
4f-5w†	Gen. Inorg. Chemistry (for pre-med. and pre-dent.)..... (8 cred.; pre-dent., pre-med. only; prereq., entrance cred. in chem.)	Lect. VI	MWF	100C	Ar
	Sec. 1	Lab. VI, VII	TTh	210C	Ar
	2	VIII, IX	TTh	210C	Ar
6f-7w†-8s	Gen. Inorg. Chemistry..... (15 cred.; those entering without chem.; no prereq.)	Lect. II	MWF	225C	Ar
	Sec. 1	Lab. I, II, III	ThS	210C	Ar
	2 (Limited to 30)	VII, VIII, IX	MW	290C	Ar
9f-10w†	Gen. Inorg. Chemistry..... (10 cred.; all; prereq., entr. cred. in chem.)	Lect. II	MWF	100C	Ar
		Lab. I, II, III	ThS	290C	Ar
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 Miss Cohen assistants
		Lab. VI, VII	MW	290C	
11s	Qual. Chemical Anal. (for pre-med. and pre-dent.)..... (See 11f)	Lect. VI	MWF	100C	Mr. Hender Mr. Henders
	Sec. 1	Lab. VI, VII	TTh	210C	
	2	VIII, IX	TTh	210C	
12f-13w†	Qual. Chemical Anal..... (10 cred.; all; prereq., 8 or 10)	Fall Lect. I	TThS	115C	Ar
		Lab. VI, VII, VIII	MW	290C	Ar
	Winter	Lect. I	TTh	115C	Ar
		Lab. VI, VII, VIII	MWF	290C	Ar
12s-(13f)†	Qual. Chemical Anal..... (See 12f-13w)	Lect. II	MWF	100C	Mr. Sneed Mr. Sneed assistants
		Lab. I, II, III	ThS	290C	
(12s)-13ff	Qual. Chemical Anal..... (See 12f-13w)	Lect. VI	MW	111C	Mr. Kirk
		Lab. VII, VIII, IX	MW	290C	
101s	History of Chemistry..... (2 cred.; sr., grad.; prereq., 36)	Ar	Ar	Ar	Miss Cohen

† The entire course must be completed before credit is received for any quarter.
() Numbers in parentheses do not refer to the year 1923-24.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
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 Rec. VI Lab. VII-IX		M 325C F 315C MF 310C	Mr. Geiger Mr. Geiger Mr. Sidener, Mr. Geiger Mr. Sarver
27f,w	Quant. Analysis (for pre-med.).. (4 cred.; pre-med. only; prereq., 11 or 13)	Lect. VI Sec. 1 Rec. VI 2 VI Sec. 1 Lab. VII, VIII, IX 2 VII, VIII, IX VI, VII, VIII, IX VII, VIII, IX VI, VII, VIII, IX		M 325C W 315C F 315C MW 310C F 310C MF 310C W 310C	Mr. Geiger(f), Mr. Sarver(w) Mr. Sidener Mr. Geiger Mr. Sarver

123f,124w,125s	Adv. Analytical Chemistry..... (3 to 9 cred.; jr., sr., grad.; prereq., 21 or 27)	Lect. VI Lab. VII-IX VI-IX		T 315C T 310C Th 310C	Mr. Sidener(w) Mr. Brinton(f,s) Mr. Sidener Mr. Brinton, Mr. Sarver Mr. Brinton
127f-128w-129s	Chemistry of Rare Elements..... (9 cred.; jr., sr., grad.; prereq., 21)	Ar	Ar	Ar	Mr. Brinton

Division of Organic Chemistry

31w-32s†	Elem. Organic Chemistry..... (8 cred.; pre-med.; prereq., 11)	Lect. IV Sec. 1 Lab. VI-VIII 2 VI-VIII 3 I-III		MWF 100C TTh 390C WF WF	Mr. Smith Mr. Smith
35f-36w†-37s	Organic Chemistry (10 or 15 cred.; jr., sr.; prereq., 15 cred. in college chem.)	Lect. III Rec. III Lab. VI-VIII		MWF 325C Th 111C TTh 390C	Mr. Hunter Mr. Lauer Mr. Lauer
131s	Organic Analysis (3 cred.; jr., sr.; prereq., 21, 37)	Lect. Ar Lab. Ar		Ar ArC Ar 390C	Mr. Lauer Mr. Lauer

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

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
132w	Rise and Development of Organic Chemistry	For program	see bulletin	of the School	of
133f	Reagents in Organic Chemistry.. (3 cred.; jr., sr.; prereq., 37)	II	MWF	325C	Mr. Smith
134w	The Terpenes				
	(2 cred.; jr., sr.; prereq., 37)				
	Lect.	Ar	Ar	ArC	Mr. Frankforter
138,139f,w,s	Adv. Organic Chemistry Lab. Work	Ar	Ar	390C	Mr. Hunter
	(4 to 10 cred.; jr., sr.; prereq., 37)				

Division of Physical Chemistry

140f-141wf-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
149	Princ. of Colloidal Chemistry.... (2 cred.; sr., grad.; prereq., 141)	Not offered in 1923-24			
150s	Appl. of Colloidal Chemistry.... (2 cred.; sr., grad.; prereq., 141)	Ar	Ar	Ar	Mr. Reyerson
151	Radiochemistry	Not offered in 1923-24			
	(2 cred.; sr., grad.; prereq., 141)				
152f,w,s	Radiochemistry Lab.	Ar	Ar	Ar	Mr. Henderson
	(cred. ar.; sr., grad.; to accompany 151)				
156w	Appl. of Phys. Chem. to Org. Chem.	Ar	Ar	ArC	Mr. Henderson
	(3 cred.; sr., grad.; prereq., 37 and 142)				

Division of Technological Chemistry

161f-162w-163s	Food Analysis				
	(9 cred.; jr., sr., grad.; prereq., 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

Professors ROSS A. GORTNER, Chief; CLYDE H. BAILEY, LEROY S. PALMER; Associate Professor JOHN J. WILLAMAN; Assistant Professors CORNELIA KENNEDY, CLARENCE A. MORROW; Instructors ARTHUR K. ANDERSON, ROBERT D. EVANS, SIGFRED M. HAUGE.

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

PROGRAM

Introductory Courses

No.	Title	Hour	Day	Bldg.	Instructor
3f,w,s,su	Types of Carbon Compounds.... (6 cred.; soph., jr., sr.; prereq., chem. 10 cred.)	I	MTWThFS	201Ch	Mr. Anderson
7f-8w	General Agricultural Biochemistry (10 cred.; soph., jr., sr.; prereq., chem. 10 cred.)	Lect. II Lab. VI, VII, VIII	TThS MW	201Ch 203Ch	Mr. Anderson Mr. Hauge
7w-8s	General Agricultural Biochemistry (10 cred.; soph., jr., sr.; prereq., chem. 10 cred.)	Lect. III Lab. VI, VI, VIII	TThS MF	201Ch 203Ch	Mr. Anderson Mr. Hauge
15f,s	Principles of Animal Nutrition.. (3 cred.; jr., sr.; prereq., 7-8)	III	MWF	3St	Mr. Palmer

Advanced Courses

101f,su-102w,su	Agricultural Quantitative Analy- sis	VI, VII, VIII	MWF	105Ch	Mr. Morrow
103s	Dairy Chemistry	(5 cred.; jr., sr.; prereq., 7-8)			
106f	Chem. Tech. of Agricultural Products	Lect. VI Lab. VII, VIII, IX	MWF MWF	251Ch 7Ch	Mr. Palmer Mr. Palmer
108s,su	Chemistry of Wheat and Wheat Products	Ar	Ar	Ar	Mr. Bailey
109s,su	Flour Laboratory Methods.....	II	MWF	201Ch	Mr. Bailey
111f,su-112w,su	Phytochemistry	VI, VII, VIII, IX	MWF	7Ch	Mr. Bailey
113f,su-114w,su- 115s	Biochemical Laboratory Methods. (6 cred.; sr.; prereq., quant. anal., parallel 111-112)	III	MWF	201Ch	Mr. Gortner
116w	Advanced Animal Nutrition..... (2 cred.; jr., sr.; prereq., 15 or equiv.)	VI, VII, VIII	TTh	7Ch	Mr. Morrow
117f,w,s,su	Laboratory Problems in Animal Nutrition	III	TTh	351Ch	Mr. Palmer, Miss Kennedy
118f,w,s,su	Laboratory Problems in Biochem- istry	Ar	Ar	Ar	Mr. Palmer, Miss Kennedy
	(3 or 5 cred.; sr.; prereq., 111- 112, 113-114-115; or 103 or 110)	Ar	Ar	Ar	Ar

COLLEGE OF EDUCATION

COMPARATIVE LITERATURE

Professor OSCAR W. FIRKINS.

No.	Title	Hour	Day	Bldg.	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., per- mission of instructor)	II	TThS	113F	Mr. Firkins

COMPARATIVE PHILOLOGY

Professor FREDERICK KLAEBER, Head; Associate Professor SAMUEL KROESCH (German).

No.	Title	Hour	Day	Bldg.	Instructor
101-102	<i>Science of Language</i> (4 cred.; jr., sr., grad.; prereq., see note)	Not offered in 1923-24			
103f	Universal Language (2 cred.; jr., sr., grad.; prereq., see note)	IV	TS	205F	Mr. Klaeber
105s	Life of Words (2 cred.; jr., sr., grad.; prereq., see note)	VII	TTh	205F	Mr. Klaeber
108f	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.

DRAWING AND DESCRIPTIVE GEOMETRY
COLLEGE OF ENGINEERING AND ARCHITECTUREProfessor WILLIAM H. KIRCHNER,¹ Assistant Professor HOWARD D. MYERS; Instructors JOHN O. CEDERBERG, ALEX S. LEVENS, ROBERT F. SCHUCK.

No.	Title	Hour	Day	Bldg.	Instructor
41-42-43f,w,s	Technical Drawing (6 cred.; all; no prereq.)			455C	Mr. Myers, Mr. Cederberg
	Sec. 1	I, II	MWF		
	2	III, IV	MWF		
	3	VIII, IX	MWF(f,w)		
		VIII, IX	MTF(s)		

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

¹ Absent on leave 1923-24.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
1	Lettering				Mr. Schuck, Mr. Levens
	(1 cred.; all; no prereq.)				
	Sec. 1	IV	T	217ME	Ar
	2	II	Th	107ME	
5	Alphabets	II	TTh	217ME	Mr. Schuck, Mr. Levens
	(2 cred.; soph., jr., sr.; no prereq.)				
7-48-49	Drawing, Engraving, and Decoration				
	(9 cred.; jr., sr.;; no prereq.)	Not offered in 1923-24			

ECONOMICS

Professors GEORGE W. DOWRIE, Head; JOHN D. BLACK, ROY G. BLAKEY, FREDERIC B. GARVER, NORMAN S. B. GRAS, JEREMIAH S. YOUNG, (Political Science); Associate Professors ALVIN H. HANSEN, WILLIAM L. HART (Mathematics), BRUCE D. MUDGETT, H. BRUCE PRICE, J. WARREN STEHMAN, HOLBROOK WORKING; Assistant Professors JOSEPH E. CUMMINGS, Z. CLARK DICKINSON, ERNEST A. HEILMAN, WALTER R. MYERS, JOHN J. REIGHARD; Professorial Lecturer J. FRANKLIN EBERSOLE; Instructors MARION ANDREWS, HENRY D. BROHM, CLAUD F. CLAYTON, RALPH H. FARMER, RICHARD A. GRAVES, MILDRED L. HARTSOUGH, OTTO F. KUHLMANN, DUANE MCCrackEN, HARRY J. OSTLUND, FRED E. RINGHAM, KENNETH SIMS, LAWRENCE SMITH, WALTER B. SMITH, W. BAYARD TAYLOR, WARREN C. WAITE, NINA L. YOUNGS.

REQUIREMENTS OF THE DEPARTMENT

For teacher's certificate.—Major recommendation in commercial subjects, Economics 2, 3-4, 25-26, and 18 credits from the following group: 91, 95, 143-144, 161, 191-192; Biology 37, Political Science 51-52-53.

For teacher's certificate in social studies see specialized curriculum, page 57.

COURSES

No.	Title	Hour	Day	Bldg.	Instructor
2w†	Introd. to Economic History....				Mr. Gras and others
	(10 cred.; fr. pre-bus. and major in econ.; no prereq.)				
	Lect.	III	TThS	MuAud	
	Sec. 1	I	MW	6F	
	2	I	MW	3F	
	3	I	MW	213B	
	4	II	MW	213B(f) 125F(w)	
	5	II	MW	306F(f) 202B(w)	
	6	II	MW	311½F	
	7	III	MW	2F	

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

‡ Students may enter any quarter.

§ Not a Senior College course.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
	(Sections limited to 25 students each)	8	IV	MW	302D
		9	IV	MW	Ar
		10	V	MW	109B
		11	VI	TTh	209B
		12	VI	TTh	102B
		13	VII	TTh	102B
		14	VII	TTh	209B
		15	VIII	TTh	202B(f) 102B(w)
		16	VIII	TTh	213B
(19)-2ft	Introd. to Economic History..... (See 1f-2w)	Lect. III	TThS	202B	Mr. L. Smith and others
		Sec. 1 I	MW	303F	
		2 II	MW	209B	
	(Sections limited to 25 students each)	3 III	MW	Ar	
		4 VI	TTh	202B	
		5 VII	TTh	109B	
19-(2f)†	Introd. to Economic History..... (See 1f-2w)	Lect. III	TThS	301F	Mr. L. Smith and others
		Sec. 1 I	MW	213B	
		2 I	MW	109B	
	(Sections limited to 25 students each)	3 II	MW	125F	
		4 II	MW	109B	
		5 III	MW	109B	
		6 IV	MW	302D	
		7 VI	TTh	209B	
		8 VII	TTh	109B	
3f-4w†*	Principles of Economics..... (10 cred.; soph., jr., sr.; no pre-req.)	Lect. I	Th	Lit Th	Mr. Hansen and others
		Sec. 1 I	TWFS	2F(f) 209B(w)	
		2 II	TThFS	109F	
	(Sections limited to 25 students each)	3 III	TThFS	2F	
		4 IV	MWFS	109B	
		5 VI	MWThF	124F	
		6 II	MWThF	202B	
(3s)-4ft	Principles of Economics..... (See 3f-4w)	Lect. III	F	Lit Th	Mr. Hansen and others
		Sec. 1 I	TThFS	25F	
		2 II	TThFS	209B	
	(Sections limited to 25 students each)	3 IV	MTWS	209B	
		4 VI	MWThF	2F	
		5 VIII	MWThF	102B	
3w-4st	Principles of Economics..... (See 3f-4w)	Lect. II	T	Lit Th	Mr. Hansen and others
		Sec. 1 I	TThFS	2F	
		2 I	TThFS	213B	
		3 II	MWFS	2F	

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

* Open to pre-business students only.

() Numbers in parentheses do not refer to the year 1923-24.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
	(Sections limited to 25 students each)	4	II	MWFS 302D	
		5	III	MWFS 114F	
		6	IV	MWFS 2F	
		7	V	MWFS 102B	
		8	VI	MWThF 2F	
		9	VI	MWThF 5F	
		10	VII	MWThF 2F	
		11	VII	MWThF 206F	
		12	VIII	MWThF 202B(w) 213B(s)	
35-(4f)†*	Principles of Economics..... (See 3f-4w)				Mr. Hansen and others
		Lect. III	W	Lit Th	
		Sec. 1 I	TThFS	109B	
		2 II	TThFS	202B	
	(Sections limited to 25 students each)	3 III	TThFS	109B	
		4 IV	MWFS	109B	
		5 VI	MWThF	102F	
		6 VII	MWThF	9F	
148	Elements of Statistics..... (5 cred.; soph.; prereq., 3-4)				Mr. Mudgett and others
		Lect. III	MW	Mu Aud	
		Sec. 1 VI, VII	MTh	301B	
		2 VIII, IX	MTh	301B	
		3 VI, VII	TF	301B	
		4 VIII, IX	TF	301B	
		5 I, II	MTh	301B	
		6 III, IV	TF	301B	
		7 I, II	TF	301B	
		8 { VI, VII	W	301B	
		{ III, IV	S	301B	
		9 I, II	WS	301B	
25f 26w†	Principles of Accounting..... (8 cred.; soph., jr., sr.; prereq., 3-4, or concurrently with 3-4)				Mr. Heilman and others
		Lect. Sec. 1 I	MWF	301B	
		2 I	TThS	301B(f)	
		3 II	MWF	301B	
	(Sections limited to 30 each)	4 II	TThS	301B	
		5 III	MWF	301B	
		6 III	TThS	301B	
		7 IV	MWF	301B	
		8 V	MWF	301B	
		9 VI	MWF	301B	
		10 II	MWF	303B(f)	
		Lab. Sec. 1 VI, VII	M	303B	
		2 I, II	T	303B	
		3 VI, VII	W	303B	
		4 VI, VII	Th	303B	
		5 VI, VII	F	303B	

† 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 1923-24.

No.	Title	Hour	Day	Bldg.	Instructor
	(Sections limited to 18 each)	6 VII, VIII	M	301B	
		7 VII, VIII	T	301B	
		8 VII, VIII	W	301B	
		9 VII, VIII	Th	301B	
		10 VII, VIII	F	301B	
		11 VIII, IX	T	303B	
		12 VIII, IX	W	303B	
		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)	Lect. Sec. 1 II	MWF	303B	Mr. Heilman and others
		2 I	TThS	301B(w)	
				303B(s)	
		3 III	MWF	102B	
		4 IV	MWF	209B(w)	
				303B(s)	
		5 VI	MWF	213B	
		Lect. Sec. 1 VI, VII	T	303B	
		2 III, IV	W	303B(w)	
				301B(s)	
		3 VIII, IX	M	303B	
		4 VIII, IX	M	2F	
		5 II, III	S	104B	
		6 VII, VIII	F	209B(w)	
				303B(s)	
(25s)-26f†	Principles of Accounting..... (See 25f-26w)	Lect. III	MWF	102B		Mr. Heilman and others
		Lab. VI, VII	T	303B	
27s	Principles of Accounting..... (3 cred.; soph., jr., sr.; prereq., 25-26. Required of all students who intend to specialize in accounting)	I	TThS	209B	Mr. Heilman and others
		VI	MWF	209B	
51f-52w-53s†	Business Law	See Political Science	51-52-53†		Mr. W. B. Smith
62w	Social Insurance	III	TThS	202B	
65w	Colonization	See Political Science	65w		Mr. Cummings
72f	Economics of Transportation.... (3 cred.; jr., sr.; prereq., 3-4) (Sections limited to 30 students)	VI	MWF	202B	
72s	Economics of Transportation.... (3 cred.; jr., sr.; prereq., 3-4) (Sections limited to 30 students)	VII	MWF	109B	Mr. Cummings
74s	Transportation Problems	VI	MWF	102B	Mr. Cummings
	(3 cred.; jr., sr.; prereq., 72)				

() Numbers in parentheses do not refer to the year 1923-24.

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

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
85f	Principles of Marketing..... (3 cred.; jr., sr.; prereq., 3-4)				
	Lect.	I	F	209B	Mr. Price
	Sec. 1	I	TTh	202B	
	2	I	MW	209B	
	3	III	ThS	213B	
	4	IV	WF	Ar	
90s	Economics of Consumption.....	See College of Agriculture bulletin			
103f-104w†	Value and Distribution..... (6 cred.; jr., sr., grad.; prereq., 3-4)	VII	MWF	102B	Mr. Garver, Mr. Working
105s	History of Econ. Ideas..... (3 cred.; jr., sr., grad.; prereq., 103-104)	VIII	MWF	102B	Mr. Garver
106s	Land Economics (5 cred.; sr., grad.; prereq., 3-4)	2:30-4:00	TTh	202B	Mr. Black
107st†	Land Tenure	See College of Agriculture bulletin			
108w	Marketing of Farm Products.... (3 cred.; jr., sr.; prereq., 85)	VIII	MWF	102B	Mr. Price
113w-114s	Theory of Statistics..... (6 cred.; jr., sr., grad.; prereq., 14)	II	TThS	213B	Mr. Mudgett
118-119-120†	<i>Econ. Hist. of Europe, 1750 to the Present</i>	<i>Not offered in 1923-24</i>			
121f-122w-123st†	Econ. Hist. of Europe, 1300-1750	See History 116-117-118			
143f-144w†	The Financial System..... (8 cred.; jr., sr., grad.; prereq., 3-4)				Mr. Dowrie and others
	Lect.	IV	T	Lit Th	
	Sec. 1	VIII	MTW	209B	
	2	II	MWF	109B	
	3	III	MWF	202B	
	4	II	TThS	213F	
	5	III	TThS	209B	
	6	VI	MWF	209B	
	7	III	MWF	302D	
	8	II	MWF	322F	
143w-144st†	The Financial System..... (See 143f-144w)				Mr. Dowrie, Mr. Farmer
	Lect.	IV	S	202B	
	Sec. 1	III	MWF	25F	
	2	IV	MWF	25F	
	3	VII	MWF	213B	
149w	Business Cycles (3 cred.; jr., sr., grad.; prereq., 143-144, 155)	IX	MTW	209B	Mr. Ebersole
149s	Business Cycles (See 149w)	VIII	MTW	209B	Mr. Ebersole
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)	I	MWF	102B	Mr. Reighard

† The entire course must be completed before credit is received for any quarter.
 †† Given at University Farm.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
1558	Corporation Finance				Mr. Stehman
	(3 cred.; jr., sr.; prereq., 143-144)				
		Lect. III	S	Mu Aud	
		Sec. 1 II	TTh	2F	
		2 III	TTh	102B	
		3 III	MW	202B	
		4 IV	MW	209B	
		5 VI	TTh	102B	
		6 VII	TTh	102B	
157f	Police Power	See	Political Science	157f	
158s	Government and Business.....	See	Political Science	158s	
160s	Economic Motives	VII	MWF	202B	
	(3 cred.; jr., sr., grad.; prereq., 3-4, Psy. 1-2-3)				
161f	Labor Problems and Trade Unionism				Mr. Hansen
	(3 cred.; jr., sr., grad.; prereq., 3-1)				
		Lect. IV	MW	202B	
		Sec. 1 IV	F	202B	
		2 IV	F	209B	
		3 I	F	213B	
161w	Labor Problems and Trade Unionism	III	TThS	302D	Mr. Hansen
	(See 161f)				
162w	Labor Movement in America and England	IV	MWF	202B	Mr. Hansen
	(3 cred.; jr., sr., grad.; prereq., 161)				
167w	Personnel Administration	II	TThS	209B	
	(3 cred.; jr., sr., grad.; prereq., 161)				
168s	Advanced Personnel Admin.....	II	TThS	209B	
	(3 cred.; jr., sr., grad.; prereq., 167)				
169s	Labor and Socialist Movement in Europe	IV	MWF	202B	Mr. Hansen
	(3 cred.; jr., sr., grad.; prereq., 161)				
176f	Commercial Policies	I	MWF	202B	Mr. Blakey
	(3 cred.; jr., sr., grad.; prereq., 3-4)				
176s	Commercial Policies	I	MWF	202B	Mr. Blakey
	(See 176f)				
191f-192w†	Public Finance	III	MWF	209B	Mr. Blakey
	(6 cred.; jr., sr., grad.; prereq., 3-4)				
193s	State and Local Taxation.....	III	MWF	209B	Mr. Blakey
	(3 cred.; jr., sr., grad.; prereq., 191-192)				

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

EDUCATION

ADMINISTRATION AND SUPERVISION

COURSES

No.	Title	Hour	Day	Bldg.	Instructor
65f,w	The High School..... (3 cred.; jr., sr.; prereq., Ed. 55)	II	TThS	ArEd	Mr. Koos, Mr. Powers
65s	The High School..... (3 cred.; jr., sr.; prereq., Ed. 55)	III	TThS	Ar	Mr. Koos, Mr. Powers
113w-114s	High School Curriculum..... (4 cred.; sr., grad.; prereq., Ed. 1, 3)	II	TTh	112Ed	Mr. Hudelson
115f,w,s	Practice Supervision (3 cred.; sr., grad.)	Ar	Ar	Ar	Mr. Brueckner
119s	Elementary School Curriculum... (3 cred.; sr., grad.; prereq., 1, 3)	I	TThS	ArEd	Mr. Brueckner
119Tf-120Tw	Elementary School Curriculum... (4 cred.; sr., grad.; prereq., 1, 3)	I, II	S	113Ed	Mr. Brueckner
121w	Educational Advising of Women and Girls (3 cred.; jr., sr., grad.; prereq., 15 qtrs. cred. in educ. and psy.)	Ar	Ar	Ar	Miss Blitz
123s	Supervision of High School In- struction (3 cred.; sr., grad.; prereq., 10 hrs. in education)	VIII	TThF	ArEd	Mr. Koos
124f	Educational Administration (3 cred.; sr., grad.; prereq., 10 hrs. in education)	IX	MWF	205Ed	Mr. Hudelson
125w-126s	City School Administration..... (6 cred.; sr., grad.; prereq., Ed. 124, 111)	IX	MWF	205Ed	
160f-161w-162s	Supervision of Elem. School Instruction (6 cred.; sr., grad.; prereq., 15, or equiv.)	III, IV	S	ArEd	Mr. Brueckner
164w	Problems of High School Admin- istration (3 cred.; sr., grad.; prereq., 1, 3)	VIII	TThF	ArEd	Mr. Koos
167s	Junior High School..... (3 cred.; sr., grad.; prereq., 1, 3)	III	MWF	Ar	Mr. Hudelson
167f-168w	Junior High School..... (4 cred.; sr., grad.; prereq., 1, 3)	III, IV	S	Ar	Mr. Koos
174w	Public School Finance..... (3 cred.; sr., grad.; consult in- structor)	II	MWF	205Ed	Mr. Swift
175s	City School Finance..... (3 cred.; sr., grad.; prereq., 124, 125)	VII	MWF	205Ed	
178f-179w	School Surveys (6 cred.; sr., grad.)	VIII	MWF	ArEd	
205f-206w-207s	Seminar in Educ. Admin..... (6 cred.; grad.; prereq., 124, 125- 126, 160-161-162)	Ar	Ar	Ar	

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
208f	Methods in Ed. Research..... (2 cred.; grad.)	III, IV	S	113Ed	Mr. Swift
215f-216w-217s	Seminar in Education in the United States	IX, X	W	Ar	Mr. Swift
	(6 cred.; grad.; prereq., 1 or 101- 102-103 and 3)				
218f-219w-220s	Seminar in Secondary School Problems	IX, X	Th	111Ed	Mr. Koos
	(6 cred.; grad.)				
222f-223w-224s	Research Problems in Secondary Education	Ar	Ar	Ar	Mr. Hudelson
	(2 cred.; grad.; prereq., Ed. 15 and 113)				

AGRICULTURAL EDUCATION

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
11f	Principles of Vocational Educ... (3 cred.; jr., sr. §; no prereq.)	I	MWF	307Ad	Mr. Dyer
11w	Principles of Vocational Educ... (Same as 11f)	II	TThS	307Ad	Mr. Dyer
11s	Principles of Vocational Educ... (Same as 11f)	I	MWF	317Ad	Mr. Dyer
21f	Vocational Education	III	TThS	307Ad	Mr. Mayne
	(3 cred.; jr., sr.; no prereq.)				
41f	Apprentice Teaching				
	(2 cred.; jr., sr. §¶; prereq., 131)				
	Sec. 1	I	MWF	317Ad	Mr. Dickinson
	2	IV Bloomington	T	317Ad Ar	Mr. Field, Mr. Dickinson, Mr. Nylin
41w	Apprentice Teaching				
	(Same as 41f)				
	Sec. 1	II	MWF	317Ad	Mr. Lathrop
	2	IV Bloomington	T	317Ad Ar	Mr. Field, Mr. Lathrop, Mr. Nylin
41s	Apprentice Teaching	Bloomington		Ar	Mr. Field, Mr. Nylin
	(Same as 41f)				
42f	Teaching				
	(3 cred.; sr. §¶; prereq., 41, Agron. 121, 122, 123)				
	Sec. 1	II	MWF	317Ad	Mr. Dickinson
	2	Bloomington		Ar	Mr. Field, Mr. Nylin
42w	Teaching				
	(Same as 42f)				
	Sec. 1	I	MWF	317Ad	Mr. Dickinson
	2	III	MWF	4Ad	Mr. Lathrop
	3	Bloomington		Ar	Mr. Field, Mr. Lathrop, Mr. Nylin

§ Offered only to those preparing to teach.

¶ Registration limited. Students are admitted to this course only when approved by Mr. Field.

PROGRAM

III

No.	Title	Hour	Day	Bldg.	Instructor
42s	Teaching (Same as 42f)	Bloomington		Ar	Mr. Field, Mr. Nylin
75w,s	Visual Presentation (3 cred.; jr., sr.; prereq., 11)				
	Lect.	VIII	M	317Ad	Mr. Dickinson
	Lab.	VIII, IX	WF	317Ad	
81s	Extension Work (3 cred.; jr., sr.; prereq., 6 cred. in farm mgt., 6 cred. in farm crops, 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 Ar	Mr. Peck
121w	Teachers' Course, Home and School Gardening (2 cred.; prereq., division ap- proval)	Ar		Ar Ar	Mr. Field
131f,w,s†	Methods in Teaching High School Agriculture (5 cred.; jr.,** sr.‡; prereq., 11)	III	MTWThF	317Ad	Mr. Field
151w,s	Organization and Management... (5 cred.; sr.; prereq., 11, 21)	IV	MTWFS	317Ad	Mr. Storm, Mr. Dyer, Mr. Lathrop
153f,s‡	Consolidated Rural Schools..... (3 cred.; jr., sr.; prereq., Ag. Ed. 11)	I	TThS	317Ad	Mr. Dyer
154f	Rural Education and Community Life (3 cred.; jr., sr.; prereq., Ag. Ed. 11)	II	TThS	317Ad	Mr. Dyer
154w	Rural Education and Community Life (Same as 154f)	I	TThS	317Ad	Mr. Dyer
155s	Consolidated Rural School Prob- lems (3 cred.; jr., sr.; prereq., 11, 153 or equiv.)	Ar		Ar Ar	Mr. Dyer
164w‡	Fundamentals of Agriculture.... (3 cred.; jr., sr.; no prereq.)	Ar		Ar Ar	Mr. Field
171su	Problems in Procedure..... (3 cred.; sr.; prereq., 131, 41, 42 or equiv.)	Ar		Ar Ar	Mr. Lathrop
176s	Advanced Visual Presentation... (3 cred.; jr., sr.; prereq., 75)	Ar		Ar Ar	
191f-192w-193s	Seminar in Agricultural Educa- tion (6 cred.; sr.; prereq., Ag. Ed. 11 cred.)	Ar		Ar Ar	Mr. Storm, Mr. Field, Mr. Dyer, Mr. Lathrop

† Offered also during the Summer Session.

†† Broad curriculum approved by the Agricultural Education Division and a position approved by the Agricultural Extension Division are also prerequisites to this course.

‡ Registration limited. Students are admitted to this course only when approved by Mr. Field.

** Open to juniors on the approval of the chief of the division.

‡ Offered also in the summer quarter (eleven weeks).

ART EDUCATION

FUNDAMENTAL PRINCIPLES OF DESIGN

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w-3s	Fund. Principles of Design..... (9 cred.; no prereq.) Sec. 1	(II) III (IV)	TThS	404F	Miss Raymond, Miss Douglass
1f	Fund. Principles of Design..... (3 cred.) Sec. 2	II (III) (IV)	TThS	406F	Miss Raymond
20f-21w-22s	Principles of Harmony in Form and Color (9 cred.; soph., jr., sr.; prereq., 2, 3)	(I) II (III)	TThS	401F	Mrs. Martin
50w-51s	Commercial and Industrial Design (6 cred.; jr., sr.; prereq., 29, 30, 31, 40, 41, 42, or arranged)	VI (VII) (VIII)	MWF	402F	Mrs. Martin
53,54	<i>Design for the Consumer</i> (6 cred.; jr., sr.; pr req., 29, 30, 31, 40, 41, 42)	<i>Not offered in 1923-24</i>			
55f-56w-57s	<i>Fundamental Art Principles</i> (6 cred.; all; no prereq.)	<i>Not offered in 1923-24</i>			

DRAWING

4f,5w,6s	Still Life Drawing..... (3 cred.; all; no prereq.) (Limited to 20)	(I) (II) (III) (IV)	W	404F	Miss Douglass
7f,8w,9s	Sketch (3 cred.; no prereq.) (Limited to 25)	I, II, III, IV VI, VII	F MW	401F 401F	Miss Douglass Mrs. Martin, Miss Douglass
10f	Composition (3 cred.; all; no prereq.) (Limited to 25) Sec. 1	II, III (IV)	M	406F	Miss Raymond
	2	II, III (IV)	W	406F	
11w,12s	Composition (Limited to 25)	II, III (IV)	M	406F	Miss Sutorius
23f,24w,25s	Water Color (3 cred.; soph., jr., sr.; prereq., 4f,5w,6s) (Limited to 20)	(I) II, III (IV)	M	406F	Mrs. Martin
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. Martin
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	Mrs. Martin Mrs. Martin, Miss Douglass
60f,61w,62s	Advanced Water Color	Ar		Ar	
63f,64w,65s	Advanced Techniques	Ar		Ar	
66f,67w,68s	Advanced Sketch	Ar		Ar	

PROGRAM

113

HANDICRAFTS

No.	Title	Hour	Day	Bldg.	Instructor
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	406F	Miss Ross, Miss Sutorius
35f	Clay Modeling (1 cred.; all; no prereq.)	<i>Not offered in 1923-24</i>			
37f	Elementary Weaving, Basketry (2 cred.; all; no prereq.)	(V) VI (VII)	TTh	406F	Miss Ross, Miss Sutorius
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)	<i>Not offered in 1923-24</i>			
44s	Application of Design to Fabrics (2 cred.; all; prereq., 29, 30)	VI, VII (VIII) (VII) VIII	TTh	404F 406F	Miss Ross Miss Sutorius
45w	Application of Design in Needle-craft (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	<i>Art of the Italian Renaissance</i> ... (2 cred.; soph., jr., sr.; prereq., 9 cred. in design) (See statement on page ...)	<i>Not offered in 1923-24</i>			
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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) IV	TTh	402F 402F	Miss Raymond, Mrs. Martin Miss Douglass
83f	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, Miss Martin, Miss Douglass

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, if there is sufficient demand on Saturday mornings. Those interested should consult with the Art Education faculty.

HISTORY AND PHILOSOPHY OF EDUCATION

COURSES

No.	Title	Hour	Day	Bldg.	Instructor
1f	Brief Course in History of Education (5 cred.; jr., sr.; prereq., 6 cred. in psychology)				
	Sec. 1	I	MTWThF	Ed	Miss Alexander
	2	II	MTWThF	Ed	
	3	IV	MTWFS	205Ed	
1w,s	Brief Course in History of Education (See 1f)	II	MTWThF	205Ed	Miss Alexander
3f	Educational Sociology (3 cred.; jr., sr.; prereq., 6 cred. in psychology)				
	Sec. 1	II	MWF	Ar	Mr. Finney
	2	III	MWF	Ar	Mr. Finney
3w,s	Educational Sociology (See 3f)	III	MWF	205Ed	Mr. Finney
5s	Public Education in the U. S. (Offered at U. Farm)..... (3 cred.; jr., sr.; prereq., 6 cred. in psychology)	VI	MWF	217Ad	Miss Alexander
101f	Found. of Mod. Educ..... (3 cred.; jr., sr., grad.; prereq., 6 cred. in psychology and 6 cred. in history)	VIII	MWF	205Ed	Mr. Swift
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	205Ed	Mr. Swift
103s	Hist. of Mod. Elem. Education.. (3 cred.; jr., sr., grad.; prereq., 6 cred. in psychology, and 6 cred. in history)	VIII	MWF	205Ed	Mr. Swift
114w	Philosophy of Education..... (3 cred.; jr., sr., grad.; prereq., 10 cred. in educ. or phil.)	Ar		Ar Ar	Mr. Swenson
129w-130s†	Educational Classics (6 cred.; jr., sr., grad.; prereq., 1 or 101-102-103)	IX	MWF	Ar	Mr. Swift, Miss Alexander
131w-132s†	Comparative School Systems.... (6 cred.; jr., sr., grad.; prereq., 1 or 101-102-103)				
187f-188w-189s	Seminar in Educational Sociology (6 cred.; grad.; prereq., Ed. 1 or 101-102-103 and 3)	I, II	S	Ar	Mr. Finney
211f-212w-213s	Seminar in History of Education. (6 cred.; grad.; prereq., 101-102-103 or their equiv. and 6 cred. in history)	IX, X	F	214Ed	Mr. Swift

† Offered only to those preparing to teach.

HOME ECONOMICS EDUCATION

COURSES

No.	Title	Hour	Day	Bldg.	Instructor
40f	Child-Training (3 cred.; jr., sr.; prereq., H.E. 37, Psychol. 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, Psychol. 1-2, Agr. Ed. 11 or 55)	VIII	MTWThF	313HE	Miss Clara Brown, Miss Fallgatter
43w	Organ. & Methods for Related Art Teaching (3 cred.; sr.; prereq., H.E. 42, 52, 53, 131)	II	TThS	309HE	Miss H. Goldstein
46f,w	Observation and Teaching: Related Art (8 cred.; sr.; prereq., 42, H.E. 53)	Lect. IX	TTh	213HE	Miss Clara Brown
	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 Fallgatter
	Teaching	Ar	Ar	Ar	Miss Nemeck
48f,w	Observation and Teaching: Textiles and Clothing (8 cred.; sr.; prereq., H.E. 42)	Lect. IX	TTh	213HE	Miss Clara Brown
	Teaching	Ar	Ar	Ar	Miss Keever
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 Amidon
1418	Problems in Home Economics Education (3 cred.; sr., grad.; prereq., 42, Ed. Psy. 55)	VI	MWF	Ar	Miss McNeal, Miss Clara Brown

EDUCATIONAL PSYCHOLOGY

COURSES

No.	Title	Hour	Day	Bldg.	Instructor
55f	Educational Psychology (3 cred.; jr., sr.; prereq., 6 cred. in psychology) Sec. 1	I	MWF	Psy	Mr. Miller
	2	I	TThS	Psy	
55w,s	Educational Psychology (See 55f)	I	MWF	Psy	Mr. Miller

No.	Title	Hour	Day	Bldg.	Instructor
64s	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
106f-107w-108s	Advanced Educational Psychology (9 cred.; jr., sr., grad.; prereq., 55 or equiv.)	III	MWF	Psy	Mr. Van Wageningen
111s	Educational Diagnosis (3 cred.; jr., sr., grad.; prereq., 55 or equiv.)	II	MWF	Psy	Mr. Van Wageningen
111Tf-112Tw	Educ. Diagnosis (for teachers).. (4 cred.; jr., sr., grad.; prereq., 55 or equiv.)	I, II	S	Psy	Mr. Van Wageningen
116f	Statistical Methods in Education. (2 cred.; sr., grad.)	IX, X	T	Psy	Mr. Van Wageningen
117w-118s	Advanced Statistical Methods in Education	IX, X	T	Psy	Mr. Van Wageningen
134f-135w-136s	Mental Tests and Mental Diagnosis	VII, VIII	MW	Psy	Mr. Miller
138w-139s	Experimental Education (4 cred.; sr., grad.; prereq., 55 or equiv.)	IX, X	MW	Psy	Mr. Miller
143f-144w-145s	Individual Mental Examination.. (6 cred.; sr., grad.; prereq., 55 or equiv.)	I, II	S	Psy	Mr. Rockwell
146f-147w-148s	Practice Course in Mental Examination	Ar	Ar	Psy	
149f-150w-151s	Psycho-Educational Clinic (3 to 9 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	Ar	Ar	Mr. Haggerty, Mr. Miller, Mr. Van Wageningen
184f-185w-186s	Mental Deficiency	III, IV	S	Psy	
191w	Systematic Educ. 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
197f-198w-199s	Seminar: Problems of Subnormality	IX, X	F	Psy	
201f-202w-203s	Seminar in Educ. Psychology.... (6 cred.; grad.)	IX, X	M	Ed	Mr. Haggerty

PHYSICAL EDUCATION FOR MEN

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w-3s	Freshman Physical Education... (no cred.; fr.; no prereq.)	II	TTh	A	Mr. Watson & assistants
		III	TTh		
		VI	TTh		
		VII	TTh		
		VIII	TTh		
4f	Freshman Hygiene (no cred.; fr.; no prereq.)*	II	T	A	Dr. Cooke, Dr. Brown
		II	S		
		III	W		
		III	S		
		IV	T		
		IV	S		
4w,s	Freshman Hygiene (See 4f)	V	T		Dr. Brown
		VI	Th		
7f-8w-9s	Advanced Leaders (3 cred.; soph., jr., sr.; prereq., 1-2-3)	IV	T	A	Mr. Watson
		2 hrs.	Ar		
10f-11w-12s	Minor Sports (6 cred.; soph., jr., sr.; prereq., 1-2-3)	Lect. V	T	A	Mr. Metcalf & others
		Lab. IV	MWF		
22f-23w-24s	Gymnastics (9 cred.; jr., sr.; prereq., 1-2-3, Anat. 3)	Lect. III	TTh	A	Mr. Metcalf & others
		Lab. III	MWF		
27s	Scouting (2 cred.; soph., jr., sr.; prereq., none)	III, IV, V	S	A	Mr. Watson
29w	Physical Examination and Normal Diagnosis (3 cred.; sr.; prereq., Physiol. 57-58)	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)	VI	TTh	A	Mr. Metcalf
32w	Principles of Physical Educ.... (3 cred.; sr.; prereq., 31, 10-11- 12, 22-23-24)	VI, VII	TTh	A	Mr. Metcalf
33s	Organization and Administration of Physical Education..... (3 cred.; sr.; prereq., 32)	VI, VII	TTh	A	Mr. Luehring
35w	Athletic Organization and Ad- ministration (2 cred.; jr., sr.; prereq., none)	III	TTh	A	Mr. Luehring
37f	Football Coaching (3 cred.; sr.; prereq., none)	Lect. VI	MWF	A	Mr. Spaulding
		Lab. Ar	Ar		
38w	Basketball (2 cred.; sr.; prereq., none)	VI	MWF	A	Dr. Cooke

No.	Title	Hour	Day	Bldg.	Instructor
39s	Track Athletics	VI	MWF	A	Mr. Metcalf
	(2 cred.; sr.; prereq., none)				
42s	Baseball	VII	MWF	A	Dr. Cooke
	(2 cred.; sr.; prereq., none)				
43f,44w,45s	Practice Teaching	Ar	Ar	A	
	(6 cred.; sr.; prereq., 10-11-12, 22-23-24, Ed. 55)				

PHYSICAL EDUCATION FOR WOMEN

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w-3s†	Elementary Physical Training.... (no cred.; required of all new stu- dents; no prereq.)	Sec. 1 IV 2 VI 3 VII 4 VIII 5 III	MWF MWF MWF MWF TThS	3, 151, 163 3, 151, 163 3, 151, 163 3, 151, 163 3, 151, 163	WGm Ar WGm Ar WGm Ar WGm Ar WGm Ar
4f	Preliminary Hygiene	Sec. 1 I 2 II 3 III 4 IV 5 VI	M T W T Th	201WGm 201WGm 201WGm 201WGm 201WGm	Dr. Norris
7f-8w-9s†	Sophomore Physical Training.... (no cred.; soph.; prereq., 1-2-3)	IV	TS	153WGm	Ar
10f-11w-12s*	Sophomore Orthopedic Gymnastics (no cred.; soph.; prereq., 1-2-3)	IV VI	TS TTh	3WGm 3WGm	Dr. Tolg Miss Denny
13f,s-14w	Sophomore Interpretive Dancing.. (no cred.; soph.; prereq., 1-2-3)	VIII	TTh	151WGm	Miss Baker
13f-14w-15s	Sophomore Interpretive Dancing.. (See 13f,s-14w)	IX	TTh	153WGm	Miss Baker
13s	Sophomore Interpretive Dancing.. (See 13f,s-14w)	VII	TTh	153WGm	Miss Baker
16f-17w-18s*	Sophomore Games and Folk Danc- ing	III	MF	151WGm	Ar
19f-20w-21s*	Sophomore Major Sports..... (no cred.; soph.; prereq., 1-2-3)	Sec. 1 VI Sec. 2 VII	TTh TTh	151WGm 151WGm	Miss Kissock Miss Hazelton
22f-23w-22s||	Sophomore Elementary Swimming (no cred.; soph.; prereq., 1-2-3)	IV Sec. 1 VII 2 Fall and spring only 3 III 4 IV 5 VII 6 VIII 7 III	MW MW WF TS TTh TTh MW	51WGm 51WGm 51WGm 51WGm 51WGm 51WGm 51WGm	Miss Coxé

† 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.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
8f-29w-28s	Sophomore Advanced Swimming (no cred.; soph.; prereq., 1-2-3, swimming test)	Sec. 1 VIII 2 II	MW TTh	51WGm 51WGm	Miss Cox Miss Cox
31f,w,s	General Swimming (no registration required; all; no prereq.)	IX	MWThF	51WGm	
32f-33w-34s	Hockey, Basket-Ball, and Baseball (no registration required; fr., jr., sr.; no prereq.)	IX	MWThF		Miss Kissock Miss Hazelton, Miss Clayton
37f-38w-39s	Freshman Major Sports (no cred.; fr. majors in Phys. Ed.)	I	TTh	151WGm	Miss Kissock, Miss Hazelton
43f-44w-45s	Play and the Playground (3 cred.; jr., sr.; prereq., 6 quar- ters)	VI VIII (fall & w.) VII (spring)	TTh F Th	151WGm	Miss Kissock
49f-50w	Gymnastics for Freshmen (no cred.; fr. majors in Phys. Ed.; no prereq.)	V (fall) V (winter)	W MWF	153WGm	Miss Clayton
51f-52w	Gymnastics for Sophomores (1 cred.; soph. majoring or jrs. minoring; prereq., 1-2-3)	II	MF	153WGm	
54f-55w	Gymnastics for Juniors (1 cred.; jrs. majoring and srs. minoring; prereq., 51-52)	VII	TTh	153WGm	Miss Sias
56w-57s	Swimming with Technique (1 cred.; soph., jr.; prereq., Phys. Ed. 28)	VII (winter) III IV (spring)	MW T F	51WGm 51WGm	Miss Cox Miss Cox
58w-59s	Advanced Folk Dancing with Technique (2 cred.; jr.; prereq., 6 qtrs.)	I VII (winter) I (spring)	MW F MWF	151WGm	Miss Baker
60f	Minor Sports with Technique (1 cred.; jr.; prereq., 6 qtrs.)	II	TWTh	153WGm	Miss Kissock, Miss Hazelton
61s	Minor Sports with Technique (See 60f)	II	MWF	153WGm	Miss Hazelton, Miss Clayton
63f-64w-65s	Major Sports with Technique (3 cred.; soph., jr.; prereq., 37)	I IX	TTh M	151WGm 151WGm	Miss Kissock Miss Hazelton
66f-67w-68s	Interpretive Dancing (3 cred.; jr.; prereq., 6 qtrs.)	III	MWF	151WGm	Miss Baker
69f-70w	Advanced Interpretive Dancing with Technique (2 cred.; sr.; prereq., 66-67-68)	Lect. III Lab. IV	T TS	151WGm	Miss Baker
71s	Advanced Interpretive Dancing with Technique (See 69f-70w)	Lect. VI Lab. IV	Th TS	151WGm	Miss Baker
75f	History of Physical Education (1 cred.; jr., sr.; prereq., Ed. 1)	VI	T	201WGm	Mr. Metcalf

† No student may register for more than two quarters of swimming without permission.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
76w	Physical Diagnosis and Prophylaxis) (2 cred.; sr.; prereq., Physiol. 57-58)	I, II	W		Dr. Barron
80f-81w	Kinesiology (8 cred.; jr.; prereq., Anat. 3, Farm En. 23)	II III	F TThS	201WGm	Miss Denny
82s	Technique of Gymnastic Teaching (3 cred.; jr.; prereq., 54-55, 80-81)	III VI	TThS MTF	Ar	Miss Baker
83s	Physical Examination (2 cred.; jr.; prereq., 80-81)	VI VII	Th MF	201WGm	Dr. Tolg
84f	Principles of Gymnastics. (3 cred.; sr.; prereq., 54-55, 82)				
	Lect.	I	MWF	201WGm	Miss Baker
85w	Principles of Physical Education. . (2 cred.; sr.; prereq., 84)	III	ThS	201WGm	Miss Baker
86s	Personal and School Hygiene. . . . (3 cred.; sr.; prereq., Physiol. 57-58)	III VI	ThS F TTh	201WGm 201WGm	Miss Baker
88f-89w	Orthopedic and Remedial Gym. . . (3 cred.; sr.; prereq., 83)	VII	MTh	3WGm	Dr. Tolg
90s	Orthopedic and Remedial Gym. . . (See 88f-89w)				
	Lect.	VII	T	3WGm	Dr. Tolg
	Pract. teach.		Ar		
91f	Principles of Dancing. (2 cred.; sr.; prereq., 66-67-68)	VII	WF	151WGm	Miss Baker
92f-93w-94s	Practice Teaching in Playground, Gymnastics, Major Sports. . . . (1½ to 1 cred.; sr.; prereq., 45, 65, 84)	Ar	Ar		
95s	Practice Teaching in Swimming and Dancing.	Ar	Ar		
	(1 cred.; sr.; prereq., 57, 69, 91)				
97w	Organization and Administration. . (2 cred.; sr.; prereq., 85)	II	TTh	201WGm	Dr. Norris

THEORY AND PRACTICE OF TEACHING

GENERAL METHODS

No.	Title	Hour	Day	Bldg.	Instructor
Ind.11w	Methods, Primary Grade Wood- Work (2 cred.; all; no prereq.)	VII, VIII	TTh	24Ed	Mr. Stockwell
15f,w,s	Technique of High School In- struction (3 cred.; jr., sr.; prereq., Ed. 55)	I	MWF	205Ed	Mr. Brueckner
	Sec. 1				
15f,s	Technique of High School In- struction (3 cred.; jr., sr.; prereq., Ed. 55)	IV	MWF	205Ed	Mr. Hudelson
	Sec. 2				

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Title	Hour	Day	Bldg.	Instructor
Technique of High School In- struction				
(3 cred.; jr., sr.; prereq., Ed. 55)	I	TThS	205Ed	Mr. Hudelson
Practice Teaching	Ar	Ar	Ar	Mr. Johnson
(5 cred.; sr., grad.; prereq., Ed. 15 and Special Methods Course)				
Practice Teaching of Subnormal Children	Ar	Ar	Ar	
(2 cred.; jr., sr.)				

SPECIAL METHODS

Teachers' Course in Animal Biol- ogy	V, VI, VII	TTh	213AB	Mr. Sigerfoos
(3 cred.; jr., sr., grad.; prereq., An. Biol. 1-2, Ed. 15)				
Teachers' Course in Botany.....	VII	MTWThF	210P	Mr. Johnson
(5 cred.; jr., sr.; prereq., 18 cred. in botany and Ed. 15).....				
Teachers' Course in Chemistry... III	MWF	315C	Mr. Geiger	
(3 cred.; jr., sr.; prereq., gen. chem. and qual. chem. and Ed. 15)				
Teachers' Course in English..... II	TWThF	206Ed	Miss Inglis	
(4 cred.; jr., sr.; prereq., see statement, Ed. 15)				
Teachers' Course in French..... II	MWF	111Ed		
(3 cred.; jr., sr.; prereq., 13-14-15 and 1 conv. comp. course, 1 lit- erary course and Ed. 15)				
Teachers' Course in Geography... I	MWF	ArP		
(3 cred.; jr., sr.; prereq., Geog. 114 and Ed. 15)				
Teachers' Course in German..... II	MWF	112Ed	Miss Hubman	
(3 cred.; jr., sr.; prereq., 52 and 55 and Ed. 15)				
Teachers' Course in History..... VIII	MWF	111Lib.	Mr. Krey	
(3 cred.; jr., sr.; prereq., see statement, Ed. 15)				
Teachers' Course in Latin..... I	MWF	101Ed	Miss Denneen	
(3 cred.; jr., sr.; prereq., any 2 of Courses 51-53 or equiv. and Ed. 15)				
Teachers' Course in Mathematics.. II	MTWFS	102Ed	Miss McGuire	
(5 cred.; jr., sr.; prereq., Math. 50 and Ed. 15)				
Junior High School Mathematics.. III, IV	S	113Ed	Mr. Brown	
(2 cred.; jr., sr.)				
Public School Music, Grade School Methods	4:00-5:30	WF	117Ed	Mr. Giddings, Mr. Pepinsky
(9 cred.; jr., sr.)				
Public School Music, H. S. Methods	12:30-2:30	W	117Ed	Mr. Giddings, Mr. Pepinsky
(9 cred.; jr., sr.)				
Teachers' Course in Norwegian.. Ar	Ar	206F	Mr. Bothne	
(3 cred.; sr., grad.; prereq., Scand. 4-5, or 10-11-12 and Ed. 15)				

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
36s	Teachers' Course in Physics..... (3 cred.; jr., sr.; prereq., see statement, Ed. 15)	VII	MWF	8Ed	Mr. Rollefson
37s	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)	VII	M	204Ed	Mr. Tohill
38w	Methods and Problems in Sec- ondary School Science..... (3 cred.; jr., sr.; consult instr.)	VII	MWF	112Ed	Mr. Smith
39f	Social Science for Junior High Schools (2 cred.; jr., sr.)	Ar	Ar	Ar	Miss Morehouse
40w	Teachers' Course in Spanish..... (3 cred.; jr., sr.; prereq., 35-36 and 1 conv. comp. course, 1 lit- erary course, and Ed. 15)	II	MWF	111Ed	
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
42f	Fundamental Educational Theories Relating to Instruction in the Elementary School (2 cred.; jr., sr.)	I, II	S	101Ed	Miss Lomme
43f	The Teaching of English in the Elementary School (2 cred.; jr., sr.; prereq., Ed. 37f)	III, IV	S	101Ed	Miss Lomme
44w	Children's Literature (2 cred.; jr., sr.; prereq., Ed. 37f)	III, IV	S	101Ed	Miss Lomme
45s	Teaching of Geography and His- tory in the Elementary School.. (2 cred.; jr., sr.; prereq., Ed. 37f)	III, IV	S	101Ed	Miss Lomme
46f,w,s	Practice Teaching with Special Methods (5 cred.; jr., sr.)	Ar	Ar	Ar	Miss Lomme
47f	<i>Field Problems in High School Training Departments</i> (2 cred.; jr., sr.)	<i>Not offered in 1923-24</i>			
48w	Teachers' and Supervisor's Course in Arith. for Lower Grades.. (2 cred.; jr., sr., grad.; prereq. 15 cred. in Educ.)	Ar	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 Educ.)	Ar	S	Ar	Mr. Brown

For methods courses in Art Education and Manual Training see respectively departmental
nouncements for Art Education and Trade and Industrial Education.

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No.	Title	Hour	Day	Bldg.	Instructor
50w-s	Normal School Teaching and Administration	Ar	S	Ar	Mr. Brown
	(4 cred.; jr., sr., grad.; prereq. 15 cred. in Educ.)				

COURSES OPEN TO GRADUATE STUDENTS

118f	Problems in Junior High School English	I, II	S	205Ed	Mr. Haggerty, Miss Smith
	(2 cred.; jr., sr., grad.; prereq., 15 cred. in educ. or equiv.)				
193f	Foundations of Secondary School Methods	VIII	MWF	Ar	Mr. Hudelson
	(3 cred.; sr., grad.; prereq., Ed. 15)				
195w	Problems of High School English Teaching	III, IV	S	112Ed	Mr. Hudelson
	(2 cred.; sr., grad.; prereq., Ed. 15 and 21)				

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
131f-132w-133s	Supervised Americanization Work (9 cred.; jr., sr., grad.; prereq., 128)	VI	T and Ar	12F	

TRADE AND INDUSTRIAL EDUCATION

Ind.10f	Methods, Elem. Woodwork..... (2 cred.; all; no prereq.)	IX, X	TTh	24Ed	Mr. Stockwell
Ind.11w	Methods, Primary Grade Woodwork	VII, VIII	TTh	24Ed	Mr. Stockwell
	(2 cred.; all; no prereq.)				
Ind.12w	Methods, Elem. Electric Wiring.. (2 cred.; all; no prereq.)	IX, X	TTh	24Ed	Mr. Stockwell
Ind.14s	Methods, Mech. Drawing..... (2 cred.; all; no prereq.)	IX, X	TTh	115Ed	Mr. Stockwell
Ind.20f	Industrial History	<i>Not offered in 1923-24</i>			
	(2 cred.; all; no prereq.)				
Ind.25s	Literature of Industrial Educ... (2 cred.; all; no prereq.)	III, IV,	S	202Ed	Mr. Smith
Ind.30w	Graphic Presentation	IX, X	W	202Ed	Mr. Smith
	(2 cred.; all; no prereq.)				
Ind.40f	Occupational Analysis	IX, X	M	202Ed	Mr. Allen
	(2 cred.; all; no prereq.)				
Ind.41w	Job Analysis	IX, X	M	202Ed	Mr. Bass
	(2 cred.; all; prereq., Ind. 40)				
Ind.42s	Selection of Related Materials... (2 cred.; all; prereq., Ind. 40 and 41)	IX, X	M	202Ed	Mr. Bass
Ind.50f-51w-52s	Practice Teaching	Ar	Ar	Ar	Mr. Smith
	(6 cred.; jr., sr.; prereq., 66, 70, or 80)				
Ind.60f	Social Agencies in Education.... (2 cred.; jr., sr.; no prereq.)	IX, X	T	202Ed	Mr. Prosser

No.	Title	Hour	Day	Bldg.	Instructor
Ind.61s	Social Significance of Industrial Education	IX, X	Th	202Ed	M. Allen
	(2 cred.; jr., sr.; prereq., Ind. 60)				
Ind.65f	Methods, Non-Vocational Subjects	III, IV	S	202Ed	Mr. Smith
	(2 cred.; all; no prereq.)				
Ind.66s	Methods, Related Subjects.....	IX, X	W	202Ed	Mr. Smith
	(2 cred.; jr., sr.; prereq., 40 and 41 or 42)				
Ind.70w	Methods, Shop Subjects.....	IX, X	Th	202Ed	Mr. Craigo
	(2 cred.; jr., sr.; prereq., 40)				
Ind.80w	General Industrial Training.....	III, IV	S	202Ed	Mr. Smith
	(2 cred.; all; no prereq.)				
Ind.150f- 151w-152s	Seminar in Vocational Educ.....	7:30	T	202Ed	Mr. Prosser
	(6 cred.; graduates only)				
171f	Admin. of Indus. Educ.—Day Schools	IX, X	Th	202Ed	Mr. Craigo
	(2 cred.; jr., sr., grad.; no prereq.)				
172w	Admin. of Indus. Educ.—Evening Schools	IX, X	T	202Ed	Mr. Prosser
	(2 cred.; jr., sr., grad.; prereq., 171)				
173s	Admin. of Indus. Educ.—Part-Time Classes	IX, X	T	202Ed	Mr. Prosser
	(2 cred.; jr., sr., grad.; prereq., 172)				

ENGLISH

Professors JOSEPH M. THOMAS, Chairman; RICHARD BURTON,¹ FREDERICK KLAEBER (Comparative Philology), ELMER E. STOLL; Associate Professors JOSEPH W. BEACH,² CECIL A. MOORE,² FRANK M. RARIG; Assistant Professors MARY ELLEN CHASE, DAVIS EDWARDS, JAMES T. HILLHOUSE, ELIZABETH JACKSON, KEMP MALONE, LAWRENCE MASON, CHARLES W. NICHOLS, MARJORIE H. NICOLSON, ANNA H. PHELAN, THOMAS M. RAYSOR, MARTIN B. RUUD, HAZELTON SPENCER, EMERSON G. SUTCLIFFE; Instructors AMY E. ARMSTRONG, ELIZABETH ATKINS, CECIL C. BEAN, ARTHUR R. BRAUNLICH, JR., MURIEL B. CARR, HAROLD L. COOK, ALEXANDER COWIE, FRANCES K. DEL PLAINE, IRA T. C. DISSINGER, WILLIAM P. DUNN, JAMES R. FOSTER, MARGARET GABLE, BRYAN A. GILKINSON, EARL L. GRIGGS, JOHN M. KIERZEK, GLENN M. LEWIS, CHARLES F. LINDSLEY, FRANCIS LUDLOW, DOROTHY McSPARRAN, MARGARET E. MACGREGOR, ARIEL MACNAUGHTON, RAY C. MORRISON, EMMA F. POPE, GRACE E. RICHARDS, HARLOW C. RICHARDSON, HARRY W. ROBBINS, SELMA W. SCHNEIDER, ALPHEUS W. SMITH, HAROLD C. SPROUL, E. AUSTIN WARREN, JR., LOIS WHITNEY; Teaching Assistants MARION HAIGH, DOROTHY R. HUDSON, EDITH JONES, WILMA L. KENNEDY, KATHLEEN F. M. O'BRIEN, MILDRED PEDERSON, WENDELL O. ROGERS, GREGOR ZIEMER.

¹ Absent on leave, fall and winter quarters.

² Absent on leave, 1923-24.

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 18 and 19 and 3 additional credits in English; 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 18 and 19 and 3 additional credits in English.

For a teacher's certificate in public speaking, a student must satisfy the department that he is actively interested in some phase of public speaking either as a member of a literary or debating society or a participant in a contest or dramatic performance, or as a lecturer; he must have the approval of the department; he must complete the following courses: English-Rhetoric A-B-C; 18 and 19 and 3 additional credits, 41-42-43, and 9 additional hours in public speaking.

COURSES

No.	Title	Hour	Day	Bldg.	Instructor
A-B-C	Freshman English (See Rhetoric)				
1f-2w-3s*	English Survey				
	(9 cred.; soph., jr., sr.; prereq., 9 cred. in rhet.)				
	Sec. 1	Lect. II	M	Mu Aud	
		Rec. II	WF	114F	
	2	Lect. II	M or		
		IV	T	Mu Aud	
		Rec. III	WF	311F	
	3	Lect. VII	M	Mu Aud	
		Rec. VII	TTh	107F	
6f	Chaucer	II	TWThS	205F	Mr. Malone
	(4 cred.; soph., jr., sr.; prereq., A-B-C or equiv.‡)	V	MTWF	204F	Miss Carr
6w	Chaucer	II	TWThS	205F	Mr. Malone
	(See 6f)	V	MTWF	204F	Mr. Ruud
6s	Chaucer	II	TWThS	204F	
	(See 6f)	VII	MWThF	204F	Mr. Malone
8f	Shakespeare	I	TThFS	204F	Mr. Stoll
	(4 cred.; soph., jr., sr.; prereq., A-B-C or equiv.‡)	VI	MTThF	204F	Mr. Mason, Miss Nicolson
8w	Shakespeare	I	TThFS	204F	Mr. Stoll
	(See 8f)	VI	MTThF	204F	Miss Nicolson
8s	Shakespeare	I	TThFS	204F	Mr. Spencer
	(See 8f)	VI	MTThF	124F	Mr. Mason
40s	Bible as Literature.....	III	MWF	301F	Mr. Burton
	(3 cred.; soph., jr., sr.; prereq., A-B-C or equiv.‡)				
41	<i>Browning and Tennyson</i>	Not offered in 1923-24			
	(3 cred.; soph., jr., sr.; prereq., A-B-C or equiv.‡)				
42s	<i>Browning</i>	IV	MWF	301F	Mr. Burton
	(3 cred.; soph., jr., sr.; prereq., A-B-C or equiv. ‡. Not open to students with credit for 41)				

* Students may enter any quarter.

‡ Course 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	Bldg.	Instructor
44f-45w†	American Literature (6 cred.; soph., jr., sr.; prereq., A-B-C or equiv.‡)	IV	MWF	301F	Miss Jackson
50f	Old English (4 cred.; jr., sr.; prereq., A-B-C or equiv.‡)	III	TThFS	205F	Mr. Malone
51f	Spenser (3 cred.; jr., sr.; prereq., A-B-C or equiv.‡)	VI	MWF	205F	Mr. Mason
53	<i>Seventeenth-Century Lyrists</i> (4 cred.; jr., sr.; prereq., A-B-C or equiv.‡)	<i>Not offered in 1923-24</i>			
58f-59w†	Nineteenth-Century Prose (6 cred.; jr., sr.; prereq., A-B-C or equiv.‡)	II	TThS	204F	Mr. Mason
60w	History of English Language.... (2 cred.; jr., sr.; prereq., 50)	IX	TTh	204F	Mr. Klaeber
62w	Milton (4 cred.; jr., sr.; prereq., A-B-C or equiv.‡)	VII	MTWF	204F	Mr. Stoll
64s	Bacon (3 cred.; jr., sr.; prereq., A-B-C or equiv.‡)	VI	MWF	204F	Mr. Dunn
66	<i>English Novel</i> (4 cred.; jr., sr.; prereq., A-B-C or equiv.‡)	<i>Not offered in 1923-24</i>			
70	<i>Elizabethan Drama</i> (4 cred.; jr., sr.; prereq., 8)	<i>Not offered in 1923-24</i>			
101f	Middle English (2 cred.; jr., sr., grad.; prereq., 6 and 50)	VI	TTh	205F	Mr. Klaeber
103s	Beowulf (3 cred.; jr., sr., grad.; prereq., 50 and either 6 or 8)	VI	MWF	205F	Mr. Klaeber
105w-106s†	Eighteenth-Century Poetry (6 cred.; jr., sr., grad.; prereq.‡)	VII	MWF	205F	Mr. Mason
107-108	<i>Eighteenth-Century Prose</i> (6 cred.; jr., sr., grad.; prereq.‡)	<i>Not offered in 1923-24</i>			
109f-110w†	Romantic Poets (6 cred.; jr., sr., grad.; prereq.‡)	III	TThS	204F	Mr. Raysor
111w-112s†	Seventeenth-Century Prose (6 cred.; jr., sr., grad.; prereq.‡)	III	MWF	204F	Mr. Mason
123-124-125†	<i>Victorian Novelists</i> (9 cred.; jr., sr., grad.; prereq.‡)	<i>Not offered in 1923-24</i>			
129s	Modern Drama (4 cred.; sr., grad.; prereq., 8, and one other course numbered above 5)	II	MWThF	301F	Mr. Burton
133f	Ballads (3 cred.; jr., sr., grad.; prereq.‡)	III	MWF	204F	Mr. Ruud
136s	Advanced Shakespeare (4 cred.; jr., sr., grad.; prereq., grade of B in Eng. 8)	I	TThFS	205F	Mr. Stoll

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

‡ Course A-B-C, as a prerequisite, has for its equivalent any two quarters of English 1-2-3 and 9 credits in rhetoric.

§ Courses 6 and 8, or either 6 or 8 and one other course numbered above 5.

PROGRAM

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No.	Title	Hour	Day	Bldg.	Instructor
140s	Advanced Chaucer	II	TWThS	205F	Mr. Malone
	(4 cred.; jr., sr., grad.; prereq., 6, and one other course numbered above 5*)				
141f-142w-143sf	Historical Grammar	Ar	Ar	Ar	Mr. Klaeber
	(6 cred.; sr., grad.; prereq.§)				
146-147	<i>The Metrical Romances</i>	<i>Not offered in 1923-24</i>			
	(6 cred.; jr., sr., grad.; prereq., 6, and one other course numbered above 5)				
148f-149w†	The Arthurian Romances	VIII	MWF	205F	Mr. Malone
	(6 cred.; jr., sr., grad.; prereq., 6, and one other course numbered above 5)				
150f	Victorian Poetry	VII	MTWF	205F	Mr. Stoll
	(4 cred.; jr., sr., grad.; prereq.§)				
151	<i>Recent Poetry</i>	<i>Not offered in 1923-24</i>			
	(4 cred.; jr., sr., grad.; prereq.§)				
152w	Pre-Elizabethan Drama	III	TThFS	205F	Mr. Malone
	(4 cred.; jr., sr., grad.; prereq., 8, and one other course numbered above 5)				
155	<i>American Novel</i>	<i>Not offered in 1923-24</i>			
	(4 cred.; jr., sr., grad.; prereq., 44-45 and either 6 or 8)				

RHETORIC

No.	Title	Hour	Day	Bldg.	Instructor
(Aw-Bs)-Cf	Freshman English				
	(15 cred.; all; no prereq.)				
	Lect.	III	W	Lit Th	
	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	Mu Aud	
	Rec.	I	TThFS	Ass'd on registration	
		II	TThFS		
	Lect.	IV	T	Mu Aud	
	Rec.	III	MWFS	Ass'd on registration	
		IV	MWFS		
	Lect.	VII	M	Mu Aud	
	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	Lit Th (w) Ar (s)	
	Rec.	II	MTThS	Ass'd on registration	
		III	MTThS		
		VI	MTThF		
		VIII	MTThF		

* Open without further prerequisites to students receiving B in English 6.

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

() Numbers in parentheses do not refer to the year 1923-24.

§ Courses 6 and 8, or either 6 or 8 and one other course numbering about 5.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
4f-5w-6s	Composition for Technical Students (9 cred.; all; no prereq.)	I	MWF	311F	
		II	MWF	311F	
		III (Chemists only)	MWF	215C	
		I	TThS	311F	
4w-5s-(6su)	Composition for Technical Students (9 cred.; all; no prereq.)	II	TThS	311F	
(4s)-5f-6w	Composition for Technical Students (dental nurses only) (See 4f-5w-6s)	I	MWF	304F	
4s-(5f-6w)	Composition for Technical Students (dental nurses only) (See 4f-5w-6s)	I	MWF	304F	
15w-16s†	Argument (6 cred.; soph., jr., sr.; prereq., A-B-C or 4-5-6)	II	MWF	304F	Mr. Cowie
18f-19w*	Formal Exposition; Informal Exposition (6 cred.; soph., jr., sr.; prereq., A-B-C or 4-5-6)	Sec. 1	III	TThS 304F	Mrs. del Plaine
		2	IV	MWF 306F	Miss Nicolson
		3	V	MWF 304F	Miss Gable
		4	VII	MWF 306F	Miss Macgregor
18w-19s*	Formal Exposition; Informal Exposition (See 18f-19w)	Sec. 1	II	TThS 304F	Miss Carr
		2	III	MWF 306F	Mrs. Phelan
		3	VII	MWF 304F	Mr. Sutcliffe
31w	Technical Writing	Consult College of Engineering bulletin			
47f-48w*†	Description; Narration (6 cred.; soph., jr., sr.; prereq., A-B-C, or 4-5-6 ¹)	Sec. 1	IV	MWF 303F	Mr. Nichols
		2	VII	MWF 305F	Miss Chase
47w-48s*†	Description; Narration (See 47f-48w)	II	MWF	306F	Mr. Hillhouse
63-64	<i>Studies in Structure and Style</i> (6 cred.; jr., sr.; prereq., 15-16 or 18-19 or 47-48)	Not offered in 1923-24			
67f	Imitative Writing (4 cred.; jr., sr.; prereq. ²)	IV	MTWF	304F	Miss Chase
69s	Short Story-Writing (3 cred.; jr., sr.; prereq. ²)	IV	MWF	304F	Ar
100-101†	Versification (6 cred.; jr., sr., grad.; prereq. ³)	Not offered in 1923-24			

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

* Students may not receive credit for both 18-19 and 47-48.

() Numbers in parentheses do not refer to the year 1923-24.

¹ Open to students who have received grades of B, B, and C, in A-B-C.

² Open to those who have taken 15-16 or 18-19 or 47-48 and received a grade of B in each quarter.

³ Open to those who have taken 15-16 or 18-19 or 47-48 and have taken or are taking nine hours in the historical study of English poetry.

PROGRAM

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No.	Title	Hour	Day	Bldg.	Instructor
111W-112S	Essay-Writing	III	MWF	304F	Mr. Sutcliffe
	(6 cred.; jr., sr., grad.; prereq., 15-16 or 18-19 or 47-48)				
115-116-117	Dramatic Technique	<i>Not offered in 1923-24</i>			
	(9 cred.; jr., sr., grad.; prereq. ⁴)				
119f-120W-121S	Seminary in Writing.....	VI, VII		Th304F	Mr. Thomas
	(9 cred.; sr., grad.; prereq. ⁵)				

PUBLIC SPEAKING

No.	Title	Hour	Day	Bldg.	Instructor
41f-42W-43S	Public Speaking				
	(9 cred.; soph., jr., sr.; prereq., Rhet. A-B-C, or 4-5-6)				
	Sec. 1	I	MWF	308F	Ar
	2	II	MWF	308F	Ar
	3	III	TThS	308F	Ar
	4	VII	MWF	18Mu	Miss Mac- naughton
	5	I	TThS	308F	Ar
	6	II	TThS	308F	Mr. Edwards
45f-46w	Public Speaking				
	(1 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				
	(Sec 45f-46w)				
	Sec. 1	IV	MTWFS	3F	Ar
	2	VI	MTWThF	301F	Ar
	3	VII	MTWThF	308F	Ar
(45S)-46f	Public Speaking	VI	MTWThF	308F	Mr. Lindsley
	(See 45f-46w)				
45W-46S	Public Speaking	VI	MTWThF	308F	Mr. Lindsley
	(See 45f-46w)				
55f-56W-57S	Agr. and Debating.....	VII	MWF	102F	Mr. Lindsley
	(9 cred.; jr., sr.; prereq., 41-42- 43, or 45-46)				
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	114F	Mr. Edwards
85f-86W-87S	Adv. Public Speaking.....	III	MWF	308F	Mr. Rarig
	(9 cred.; jr., sr.; prereq., 41-42- 43, or 45-46)				
91f-92W-93S	Play Production	VIII	MWF	18Mu	Miss Mac- naughton
	(9 cred.; jr., sr.; prereq., 81-82- 83, Eng. 8)				
97f,w	Adv. Debate and Oratory.....	Ar	Ar	308F	Mr. Rarig, Mr. Lindsley
	(3 cred.; jr., sr.; prereq. §)				

§ Open to intercollegiate debaters and orators.

() Numbers in parentheses do not refer to the year 1923-24.

¹ Open to those who have taken 18-19 or 47-48 and have taken or are taking English 129.

² Open with special permission to seniors and graduates. Prerequisites: 18-19 or 47-48, and nine additional credits in rhetoric.

GEOLOGY AND MINERALOGY

Professors WILLIAM H. EMMONS, Head; FRANK F. GROUT, CLINTON R. STAUFFER; Associate Professor DARRELL A. DAVIS (Geography); Assistant Professor GEORGE M. SCHWARTZ; Instructors IRA S. ALLISON, W. HORATIO BROWN, JOHN W. GRUNER, THOMAS S. LOVERING, GEORGE A. THIEL; Assistants EARL R. CARLSON, TINGOO CHU.

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.

COURSES

COURSES IN GEOGRAPHY

No.	Title	Hour	Day	Bldg.	Instructor	
1f-2w	Introd. to Geography..... (10 cred.; 3d qu. fr., soph., jr., sr. by special permission; no prereq.)					
		Sec. 1	I§	TWThFS	200aP	Mr. Davis
		2	IV§	MTWFS	200aP	Mr. Davis
1s-(2f)	Introd. to Geography..... (See 1f-2w)		I§	TWThFS	200aP	Mr. Davis
3s	Geography of Commercial Pro- duction..... (5 cred.; soph., jr., sr.; prereq., 1-2)		IV	MTWFS	200aP	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)		II	MWThFS*	210P	
1s§	General Geology..... (See 1f)		III	MTThFS*	110P	
4	<i>Geology of Minnesota</i> (3 cred.; soph., jr., sr.; prereq., Geol. 1)			<i>Not offered in 1923-24</i>		
9f§	Historical Geology..... (5 cred.; soph., jr., sr.; prereq., 1)		III	MTThFS*	200aP	Mr. Allison
9w§	Historical Geology..... (See 9f)		VII	MTWThF*	110P	Ar

§ Students registering for this course should have either Wednesday or Thursday afternoon free for field excursions.

‡ Course 1 may be followed by 9, 10, 11 to satisfy the Junior College requirements for science.

() Numbers in parentheses do not refer to the year 1923-24.

* Additional hour of laboratory to be arranged.

PROGRAM

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No.	Title	Hour	Day	Bldg.	Instructor
98§	Historical Geology (See 9f)	II	MWThFS*	210P	Ar
10f§	Economic Geology (5 cred.; soph., jr., sr.; prereq., 1)	III	MTThFS*	104P	Mr. Schwartz
10w§	Economic Geology (See 10f)	Sec. 1 III 2 VII	MTThFS* MTWThF*	110P 200aP	Mr. Emmons
10s§	Economic Geology (See 10f)	II	MWThFS*	200aP	
11f§	Elements of Paleontology..... (5 cred.; soph., jr., sr.; prereq., 1)	III } IV }	MTWFS	105P	Mr. Stauffer
11w§	Elements of Paleontology..... (See 11f)	III } IV }			
11s§	Elements of Paleontology (See 11f)	III } IV }	MTWFS	105P	Mr. Stauffer
15s¶	Minerals and Rocks..... (1 cred.; jr., sr.; prereq., 1 or 29)	Ar				Ar	100P	Mr. Gruner
21w-22s†	Essentials of Mineralogy..... (6 cred.; soph., jr., sr.; prereq., course in chem.)	Lect. IV Lab. VII, VIII, IX	MWF	210P F 100P	Mr. Gruner
23f-24w-25s†	Elem. of Mineralogy..... (9 cred.; soph., jr., sr.; prereq., course in chem.)	III	MWF	100P	
27s¶	Outlines of Mineralogy..... (1 cred.; jr., sr.; no prereq.)	Ar	Ar	100P	Mr. Gruner
29f	General Physiography (5 cred.; soph., jr., sr.; no pre- req.)	III	MThFS	210P	Ar
61f	Blowpipe Analysis (3 cred.; jr., sr.; prereq., 22 or 25)	Consult Mines program			
65	<i>Crystallography</i> (3 cred.; jr., sr.; prereq., 22)	<i>Not offered in 1923-24</i>			
67w	Mineralogy of Chemical Materials (3 cred.; jr., sr.; prereq., Chem., 5 cred.)	Consult Chemistry program			
73f	Economic Geology (3 cred.; jr., sr.; prereq., 21 or 23)	VI	MWF	110P	Mr. Schwartz
85su	Field Work in Northern Minne- sota (6 cred.; jr., sr.; prereq., 2, 9, 10, or 11)	Ar	Ar	Ar	Mr. Gruner, Mr. Thiel
91f-92w-93s	Index Fossils of North America.. (9 cred.; jr., sr.; prereq., 2, 9, 10, or 11)	Lect. I Lab. VI, VII	F MW	105P 105P	Mr. Stauffer Mr. Stauffer

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

¶ Does not count for a Senior College course.

* Additional hour of laboratory, to be arranged.

§ Course 1 may be followed by 9, 10, or 11, to satisfy the Junior College requirement for science.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
101f	Princip. of Stratig. (3 cred.; jr., sr., grad.; prereq., 23-24-25)	Ar	Ar	Ar	Mr. Allison
105f	Rock Study (3 cred.; jr., sr., grad.; prereq., 22 or 25)	Lect. VI Lab. VII, VIII	TTh T Th	110P 200P 200P	Mr. Grout
106w	Petrography (3 cred.; jr., sr., grad.; prereq., 105)	VII, VIII	MF	200P	Mr. Grout
107f-108w-109s	Paleontologic Practice (9 cred.; jr., sr., grad.; prereq., 57-58-59)	Ar	Ar	105P	Mr. Stauffer
111f	Ore Deposits (3 cred.; jr., sr., grad.; prereq., 2, 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.; sr., grad.; prereq., 2, 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 Lab. VI, VII, VIII	TThS F	200P 200P	Mr. Grout
137w	Testing Econ. Minerals,..... (3 cred.; jr., sr., grad.; prereq., 2, 9, 10, or 11, and 105)	Lect. VI Lab. VIII, IX	T MW	200P 200P	Mr. Grout Mr. Grout
140w-141s	Applied Petrography (6 cred.; jr., sr., grad.; prereq., 131)	Lect. II Lab. I, II	F MW	200P	Mr. Grout
144w-145s	Const. and Inter. of Geologic Maps (6 cred.; jr., sr., grad.; prereq., 2, 9, 10, or 11)	VI-VIII	TTh	104P	Mr. Allison
150s	Field Geol. (Black Hills)..... (Cred. ar.; jr., sr., grad.; see members of department)	Ar	Ar	Ar	Mr. Emmons, Mr. Schwartz
151f-152w-153s	Adv. General Geology..... (9 cred.; jr., sr., grad.; prereq., 2, 9, 10, or 11)	III	MWF	200aP	Mr. Stauffer
166w-167s	Mineralography (6 cred.; sr., grad.; prereq., 111)	Ar	Ar	103P	Mr. Schwartz

GERMAN

Professors CARL SCHLENKER, Chairman; FREDERICK KLAEBER (Comparative Philology); Associate Professors OSCAR BURKHARD, SAMUEL KROESCH; Assistant Professors JAMES DAVIES, GEORGE F. LUSSKY; Instructors EMMA BACH, HARRY S. CANNON, LINWOOD G. DOWNS; Assistant ESTHER HENDRICKSON; Teaching Fellows ALVIN PROTTENGEIER, VICTOR REIM.

REQUIREMENTS OF THE DEPARTMENT

For a teacher's certificate.—Major recommendation: Courses 50-51-52, 56-57-58, 66, 67, and six additional credits in courses numbered above 50. Course 65 may be substituted for either Course 66 or Course 67. Course 108 is especially recommended.
 • Minor recommendation: Courses 50-51-52, and six additional credits in courses numbered above 50.

COURSES

No. if	Title	Hour	Day	Bldg.	Instructor
	Beginning A..... (5 cred.; all; no prereq.)				
	Sec. 1	I	TWThFS	207F	Ar
	2	I	TWThFS	209½F	Ar
	3	II	MWThFS	207F	Ar
	4	III	MTThFS	207F	Ar
	5	IV	MTWFS	207F	Ar
	6	IV	MTWFS	212F	Ar
	7	VI	MTWTThF	207F	Ar
	8	VI	MTWTThF	209½F	Ar
1W	Beginning A..... (See 1f)				
	Sec. 1	II	MWThFS	209F	Ar
	2	VII	MTWTThF	207F	Ar
1S	Beginning A.....				
	Sec. 1	III	MTThFS	212F	Ar
	2	VI	MTWTThF	209½F	Ar
2f	Beginning B..... (5 cred.; all; prereq., 1 or one yr. prep. German)				
	Sec. 1	II	MWThFS	212F	Ar
	2	VII	MTWTThF	209½F	Ar
2W	Beginning B..... (See 2f)				
	Sec. 1	I	TWThFS	207F	Ar
	2	I	TWThFS	209½F	Ar
	3	II	MWThFS	207F	Ar
	4	III	MTThFS	207F	Ar
	5	IV	MTWFS	207F	Ar
	6	IV	MTWFS	212F	Ar
	7	VI	MTWTThF	207F	Ar
	8	VI	MTWTThF	209½F	Ar
2S	Beginning B..... (See 2f)				
	Sec. 1	II	MWThFS	209F	Ar
	2	VII	MTWTThF	207F	Ar
3f	Beginning C..... (5 cred.; all; prereq., 2)				
	Sec. 1	III	MTThFS	209F	Ar
	2	VII	MTWTThF	209F	Ar

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor	
3w	Beginning C..... (See 3f)					
		Sec. 1	II	MWThFS	212F	Ar
		2	VII	MTWThF	209½F	Ar
3s	Beginning C..... (See 3f)					
		Sec. 1	I	TWThFS	207F	Ar
		2	I	TWThFS	209½F	Ar
		3	II	MWThFS	207F	Ar
		4	III	MTThFS	207F	Ar
		5	IV	MTWFS	207F	Ar
		6	IV	MTWFS	212F	Ar
		7	VI	MTWThF	207F	Ar
		8	VI	MTWThF	209F	Ar
4f	Rapid Reading..... (5 cred.; all; prereq., 3)					
		Sec. 1	II	MWThFS	209F	Ar
		2	III	MTThFS	212F	Ar
		3	VI	MTWThF	209F	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	212F	Ar
		2	VII	MTWThF	209½F	Ar
7f	Prose and Poetry..... (5 cred.; all; prereq., 2 yrs. prep. German)		III	MTThFS	306F	Ar
7w	Prose and Poetry..... (See 7f)		VII	MTWThF	212F	Ar
7s	Prose and Poetry..... (See 7f)		II	MWThFS	102F	Ar
8w	Adv. Prose and Poetry..... (5 cred.; all; prereq., 7)		III	MTThFS	102F	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. Kroesch
27f	Narr. Prose for Chemists..... (3 cred.; chemists, miners; pre- req., 26 or 2 yrs. prep. Ger- man)		II	MWF	209½F	Mr. Downs
28w-29s†	Chemical German (6 cred.; chemists, miners; pre- req., 27)		II	MWF	209½F	Mr. Downs
31f-32w†	Medical German (6 cred.; pre-med.; prereq., 4 or 15)		I	MWF	209F	Mr. Cannon

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

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
31w-32s†	Medical German				
	(See 31f-32w)				
		Sec. 1	I	MWF 212F	Mr. Lussyky
		2	I	TThS 209F	Mr. Downs
31s-(32f)†	Medical German	I		MWF 209F	Mr. Cannon
	(See 31f-32w)				
(31s)-32f†	Medical German	I		TThS 209F	Mr. Downs
	(See 31f-32w)				
50f-51w-52s†	Composition	IV		TS 209F	Mr. Downs
	(6 cred.; jr., sr.; prereq., 4 or 4 yrs. prep. German)				
56f-57w-58s†	Essay-Writing	IV		TS 101F	Mr. Schlenker
	(6 cred.; jr., sr.; prereq., 52)				
62w	Nineteenth-Century Prose	VI		MTWThF 209F	Miss Bach
	(5 cred.; jr., sr.; prereq., 4 or 8, or 4 yrs. prep. German)				
62s	Nineteenth-Century Prose	III		MTThFS 209F	Mr. Lussyky
	(See 62w)				
63f	Modern Drama	IV		MWF 209F	Mr. Davies
	(3 cred.; jr., sr.; prereq., 4 or 8)				
64w	Classic Drama	IV		MWF 209F	Mr. Davies
	(3 cred.; jr., sr.; prereq., 62 or 63)				
65s	Survey through Reformation.....	III		TThS 209½F	Mr. Kroesch
	(3 cred.; jr., sr.; prereq., 8 cred. above 60)				
66f	Eighteenth-Century Survey	III		TThS 209½F	Mr. Burkhard
	(3 cred.; jr., sr.; prereq., 3 cred. above 60)				
67w	Nineteenth-Century Survey	III		TThS 209½F	Mr. Burkhard
	(3 cred.; jr., sr.; prereq., 3 cred. above 60)				
72	<i>Drama since 1880 (Sudermann)...</i>			<i>Not offered in 1923-24</i>	
	(3 cred.; jr., sr.; prereq., 8 cred. above 60)				
73	<i>Drama since 1880 (Hauptmann)...</i>			<i>Not offered in 1923-24</i>	
	(3 cred.; jr., sr.; prereq., 8 cred. above 60)				
74	<i>German Poets</i>			<i>Not offered in 1923-24</i>	
	(3 cred.; jr., sr.; prereq., 62 or 63 or 64)				
77s	Faust I	IV		MWF 209F	Mr. Schlenker
	(3 cred.; jr., sr.; prereq., 6 cred. above 60)				
100f-101w-102s†	Middle High German.....	Ar		Ar Ar	Mr. Kroesch
	(9 cred.; sr., grad.; prereq., 65 and 11 cred. above 60)				
107f	Historical Grammar	Ar		Ar Ar	Mr. Kroesch
	(3 cred.; sr., grad.; prereq., 11 cred. above 60)				
108w	Phonetics	Ar		Ar Ar	Mr. Kroesch
	(3 cred.; sr., grad.; prereq., 9 Senior College cred. in mod. lang.)				
109f-110w-111s†	Hist. of German Language.....	Ar		Ar Ar	Mr. Klaeber
	(9 cred.; sr., grad.; prereq., see statement under Comp. Phil., S. L. & A. bulletin)				

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

() Numbers in parentheses do not refer to the year 1923-24.

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
150f-151w-152s†	Novelle	Not offered in 1923-24			
	(9 cred.; sr., grad.; prereq., 67 and 11 cred. above 60)				
153f-154w-155s†	Aspects: Realism	VII, VIII, IX	Th	Ar	Mr. Burkhard
	(9 cred.; sr., grad.; prereq., 67 and 11 cred. above 60)				
160f-161w-162s†	Lyric Poetry	VII, VIII, IX	F	Ar	Mr. Davies
	(9 cred.; sr., grad.; prereq., 66 or 67 and 11 cred. above 60)				
225f-226w-227s†	Lit. Problems	VII, VIII, IX	T	Ar	Mr. Schlenker
	(9 cred.; grad., sr. with completed major sequence)				

GREEK

Professor CHARLES ALBERT SAVAGE, Chairman; Assistant DOROTHY B. STRONG.

COURSES

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w†-3s	Beginning Greek	IV	MTWFS	114F	Mr. Savage, Miss Strong
	(10 or 15 cred.; all; no prereq.)				
4f-5w-6s	History and Epic Poetry.....	III	MTThFS	115F	Mr. Savage, Miss Strong
	(5, 10, or 15 cred.; all; prereq., 1-2-3)				
7f,w	Everyday Greek	VIII	MWF	114F	Mr. Savage
	(3 cred.; soph., jr., sr.; prereq., 1 yr. of language)				
51f	Philosophy		Ar	115F	Mr. Savage
	(3 cred.; jr., sr.; prereq., 4-5, or 4-6, or 5-6)				
52w	Oratory	Ar	Ar	115F	Mr. Savage
	(3 cred.; jr., sr.; prereq., 4-5, or 4-6, or 5-6)				
53s	Dramatic Poetry	Ar	Ar	115F	Mr. Savage
	(3 cred.; jr., sr.; prereq., 51 or 52)				
105f	Lyric Poetry	Ar	Ar	112F	Mr. Savage
	(3 cred.; sr., grad.; prereq., 53)				
106w*	Advanced Drama	Ar	Ar	112F	Mr. Savage
	(3 cred.; sr., grad.; prereq., 53 or 105)				
107s	Advanced Prose	Ar	Ar	112F	Mr. Savage
	(3 cred.; sr., grad.; prereq., 51-52, or 51-53, or 52-53)				
108s†	Advanced Epic Poetry.....	Ar	Ar	112F	Mr. Savage
	(3 cred.; sr., grad.; prereq., 105 or 106)				
109s‡	New Testament	Ar	Ar	112F	Mr. Savage
	(3 cred.; jr., sr., grad.; prereq., 51 and 52)				

* Courses 106 and 107 are offered alternately.

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

‡ Courses 108 and 109 are offered alternately.

Courses for which no knowledge of Greek is required.

No.	Title	Hour	Day	Bldg.	Instructor
42s¶	Greek Sculpture	VII	TTh	114F	Mr. Savage
	(2 cred.; jr., sr.; no prereq.)				
43f¶	Greek Drama	VII	TTh	114F	Mr. Savage
	(2 cred.; jr., sr.; no prereq.)				
44w¶	Greek Literature and Life.....	VII	TTh	114F	Mr. Savage
	(2 cred.; jr., sr.; no prereq.)				
44s¶	Greek Literature and Life.....	I	WF	114F	Mr. Savage
	(See 44w)				
45f¶	Greek Mythology	I	MW	114F	Mr. Savage
	(2 cred.; jr., sr.; no prereq.)				
45w¶	Greek Mythology	I	WF	114F	Mr. Savage
	(See 45f)				

HISTORY

Professors GUY STANTON FORD, Chairman; SOLON J. BUCK, WILLIAM S. DAVIS, NORMAN S. B. GRAS, ALBERT B. WHITE; Associate Professors AUGUST C. KREY, LESTER B. SHIPPEE; Assistant Professors HAROLD S. QUIGLEY, (Political Science), GEORGE M. STEPHENSON; Professorial Lecturer SAMUEL B. HARDING; Instructor GEORGINA T. DROITCOUR; Assistants FANNY M. DOWNS, FLOYD B. MOE; Teaching Fellows CLARA J. EMERSON, ARTHUR S. HADDAWAY, HENRIETTA M. LARSEN, LOU E. MILES, LEAH MOREHOUSE, LOUISE NIXON, JOHN PRITCHETT; Scholar JOSEPH UTSCHEN.

REQUIREMENTS OF THE DEPARTMENT

For a teacher's certificate.—Major recommendation: at least 36 credit hours. At least one of the courses taken must be of intensive grade.

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.

COURSES

No.	Title	Hour	Day	Bldg.	Instructor
1f§	Modern World, 1648-1799.....				
	(5 cred.; all; no prereq.)				
	Lect.	II	TThS	Mu Aud	Mr. Ford, Mr. Krey
	Sec. 1	I	MW	2F	
	2.	I	MW	111Lib	
	3	I	MW	112Lib	
	4	I	MW	204F	
	5	II	MW	303F	
	6	II	MW	111Lib	
	7	II	MW	109F	
	8	II	MW	110F	
	9	III	MW	205F	
	10	V	MW	111Lib	
	11	V	MW	112Lib	
	12	VII	MW	112Lib	
	13	VIII	MW	110F	

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

§ To receive credit for Course 1, a student must complete both 1 and 2.

No.	Title	Hour	Day	Bldg.	Instructor
2w||	Modern World, 1799-1914..... (5 cred.; all; no prereq.)	Lect. II	TThS	Mu Aud	Mr. Ford, Mr. Krey
			Sections as in 1f		
3s	World Politics..... (5 cred.; all; prereq. 2)	Lect. II	TThS	Mu Aud	Ar
			Sections as in 1f		
9f-10w†	Introd. to Econ. History..... (10 cred.; 3d qu. fr., soph., jr., sr.; prereq., 10 cred.)	Lect. III	TThS	Mu Aud	Mr. Gras and others
	Sections. See Economics 1f-2w, Introd. to Econ. History..... (See 9f-10w)	Lect. III	TThS	301F	Mr. Smith and others
9s-(10f)†	Sections. See Economics 1s-(2f), Medieval History..... (10 cred.; 3d qu. fr., soph., jr., sr.; prereq., 10 cred., except for mus. and int. dec.)	IV	MWF	111Lib	Mr. Krey
			(fall, winter) MWF and ar (spring)		
16s	Europe in the Middle Ages..... (5 cred.; all; prereq., 10 cred. in history if taken by fr.)	II	MWThFS	25F	Mr. Krey
21f-22w†	American History..... (10 cred.; soph., jr., sr.; no pre- req.)	Lect. VII Sect. 1 VII 2 I 3 IV 4 III	MWF TTh TS TS TTh	301F 102F 107F 111Lib 311†F	Mr. Alvord, Mr. Shippee
(21s)-22f†	American History..... (See 21f-22w)	III	MTThFS	3F	Mr. Shippee
23s	Recent American History..... (5 cred.; soph., jr., sr.; prereq., 10 cred. in hist. or pol. sci.)	VII	MTWThF	301F	Mr. Shippee
31f-32w†	England, 1066 to Present..... (10 cred.; all; no prereq.)	Lect. VII Sect. 1 I 2 III 3 IV 4 VI 5 VII 6 VII	MWF TTh TTh TS TTh TTh TTh	Lit Th 112Lib 303F 112Lib 112Lib 15F 112Lib	Mr. White
31s-(32w)†	England, 1066 to Present..... (See 31f-32w)	III	MTThFS	321F	Mr. White
33w-34s†	Eng. Legal Institutions..... (5 cred.; soph., jr., sr.; prereq., Hist. 31-32†)	II	MW (winter) MWF (spring)	112Lib	Mr. White

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

‡ For those who had History 5 in the spring quarter, 1923.

() Numbers in parentheses do not refer to the year 1923-24.

|| To receive credit for Course 2, a student must complete either 1 and 2 or 2 and 3.

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No.	Title	Hour	Day	Bldg.	Instructor
101f-102w	French Revolution: Napoleonic Era (6 cred.; jr., sr., grad.; prereq., 15 cred. in hist. or 20 cred. in soc. sci. incl. 10 cred. in hist.)	I	TThS	111Lib	Mr. Ford
103f	Near East: Old Orient..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist.)	VIII	MWF	111Lib	Mr. Davis
104s	Near East: Modern..... (5 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist.)	III	MTThFS	111Lib	Mr. Davis
105w	History of Rome..... (5 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist.)	III	MTThFS	111Lib	Mr. Davis
107f-108w	Europe, 1848-1914..... (8 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist.)	VII	MTThF	111Lib	Ar
109s	Modern England..... (5 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist.)	IV	MTWFS	125F	Mr. Harding
111w	European Background and American Immigration..... (4 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist.)	VI	TWThF	111Lib	Mr. Stephenson
112s	American Immigration..... (4 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist.)	VI	TWThF	111Lib	Mr. Stephenson
113-114-115†	<i>Econ. Hist. of Europe and U. S.</i> (9 cred.; jr., sr., grad.; prereq., 20 cred. in hist., econ., or both)	<i>Not offered in 1923-24</i>			
116f-117w-118s†	<i>Econ. Hist. of Eur., 1300-1750..</i> (9 cred.; jr., sr., grad.; prereq., 20 cred. in hist., econ., or both)	II	TThS	111Lib	Mr. Gras
119s	Renaissance and Reformation.... (5 cred.; jr., sr., grad.; prereq., 20 cred.)	III	MTThFS	112Lib	Mr. Krey
120f	Medieval Civilization..... (5 cred.; jr., sr., grad.; prereq., 20 cred.)	III	MTThFS	112Lib	Mr. Krey
121w-122s†	English Background of American Colonization (6 cred.; jr., sr., grad.; prereq., 20 cred. in hist. or pol. sci.)	II	TThS	112Lib	Mr. White
125f	American Diplomatic Hist..... (3 cred.; jr., sr., grad.; prereq., 20 cred. incl. Hist. 21-22 or 10 cred. in pol. sci.)	III	MWF	15F	
127w	American Foreign Relations..... (3 cred.; jr., sr., grad.; prereq., 20 cred. incl. Hist. 21-22 or 10 cred. in pol. sci.)	III	MWF	15F	

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

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
129-130†	<i>Modern German Empire</i> (6 cred.; jr., sr., grad.; prereq., 15 cred. in hist. or 20 cred. in soc. sci. incl. 10 cred. in hist.)	<i>Not offered in 1923-24</i>			
133f	Pol. Hist.: Greece..... (5 cred.; jr., sr., grad.; prereq., 20 cred., or major in Greek or Latin)	III	MTThFS	111Lib	Mr. Davis
134W	Ancient Civilization: Greece..... (3 cred.; jr., sr., grad.; prereq., 20 cred. incl. 133, or equiv., or major in Greek or Latin and consent of instr.)	VIII	MWF	111Lib	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	111Lib	Mr. Davis
136f	Far Eastern Govt. and Politics.. (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. with World Politics, or 10 cred. in pol. sci. and Hist. 107-108)	VII	MWF	15F	Mr. Quigley
137W	Far Eastern Diplomacy..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. with World Politics, or 10 cred. in pol. sci. and Hist. 107-108)	VII	MWF	15F	Mr. Quigley
141f	West in Amer. Hist. to 1815.... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist. incl. 21-22)	VIII	MWF	112Lib	Mr. Buck
142W	West in Amer. Hist., 1815-1865.. (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 15 cred. in hist. incl. 21-22)	VIII	MWF	112Lib	Mr. Shippee
144-145†	<i>Hist. of Minnesota</i> (6 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. Hist. 21-22 or consent of instr.)	<i>Not offered in 1923-24</i>			
146W-147S†	Constitutional Hist. of U.S..... (6 cred.; jr., sr., grad.; prereq., 15 cred. in hist. or 10 cred. in hist. and 10 cred. in soc. sci. incl. Pol. Sci. 1)	IV	MWF	112Lib	Mr. Shippee
148f-149W-150S†	British Empire in 18th Century.. (9 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. 10 cred. in hist.)	VI	MWF	112Lib	Mr. Alvord
153S	Topics, West since 1865..... (5 cred., sr., grad.; prereq., 20 cred. incl. 21-22)	VII, VIII	MW	218aLib	Mr. Buck
154	<i>Topics, Minnesota</i> (5 cred.; sr., grad.; prereq., 20 cred. incl. 21-22)	<i>Not offered in 1923-24</i>			

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

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
155f	United States, 1850-1865..... (5 cred.; sr., grad.; prereq., 20 cred. incl. 21-22)	VII,VIII	WF	218aLib	Mr. Shippee
156	U.S. Reconstruction..... (5 cred.; sr., grad.; prereq., 20 cred. incl. 21-22)	<i>Not offered in 1923-24</i>			
158f-159w	Topics, 19th Century..... (5 cred.; sr., grad.; prereq., 20 cred. incl. 107-108 or 101-102)	VII,VIII	TTh	Ar	Ar
160w	Topics, American Colonial..... (5 cred.; sr., grad.; prereq., 20 cred. incl. 21-22 or 148-149-150)	VIII,IX	MW	218aLib	Mr. Alvord
161s	Topics, West in Revolutionary Era..... (5 cred.; sr., grad.; prereq., 20 cred. incl. 21-22 or 148-149-150)	VII,VIII	MW	Ar	Mr. Alvord
162f	Begin. of Parliament..... (5 cred.; sr., grad.; prereq., 20 cred., knowledge of high school Latin)	VIII,IX	TTh	218aLib	Mr. Whit:
164w	Studies in Crusades..... (5 cred.; sr., grad.; prereq., 20 cred., knowledge of high school Latin)	VIII,IX	TTh	218aLib	Mr. Krey
166f	Topics, Hist. of Immigration.... (5 cred.; sr., grad.; prereq., 20 cred., consent of instr.)	VII,VIII	TTh	Ar	Mr. Stephenson
169	Econ. Hist. of U.S. since 1865... (3 cred.; sr., grad.; prereq., 20 cred in history or econ.)	<i>Not offered in 1923-24</i>			
183s	Stuart Period..... (5 cred.; sr., grad.; prereq., 20 cred., incl. 31-32)	VIII,IX	TTh	218bLib	Mr. Harding

HOME ECONOMICS

COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

Associate Professors ALICE BIESTER, HARRIET GOLDSTEIN, MARION WELLER; Assistant Professors ALICE M. CHILD, AMY P. MORSE, E. MAUD PATCHIN, ETHEL L. PHELPS, LUCY A. STUDLEY; Instructors CARLOTTA M. BROWN, VETTA GOLDSTEIN, AGNES KOLSHORN, RUTH LINDQUIST, RUTH NOER, IRENE SELL.

NOTE.—Only courses with 15 credits prerequisite will count as Senior College courses.

Junior College Courses

No.	Title	Hour	Day	Bldg.	Instructor
1f,w,s	Textiles (5 cred.; no prereq.)	Sec. 1	I,II	MTWThF	211,307HE Miss Weller, Miss Phelps
	(Sections limited to 20 students each)	2	III,IV	MTWFS	211,307HE Miss Weller, Miss Phelps
1f,w,s	Textiles (Ed., S. L. & A.)..... (3 cred.; no prereq.; not open to students in H. E.) (Limited to 20)	VII,VI	MWF	211,307HE	Miss Phelps, Miss Noer

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
11f,w,s	Garment-Making				
	(3 cred.; no prereq.)	Sec. 1	I,II	MWF 304HE	Miss Noer, Miss Sell
	(Limited to 20 each)	2	I,II	TThS 304HE	Miss Noer, Miss Sell
13f,s	Dressmaking				
	(5 cred.; soph., jr., sr.; prereq., 3, 11, 51, home pract. in garment-making)	Sec. 1	III,IV	MTWFS 304HE	Miss Patchin
13w	(Limited to 20 each)	2	I,II	TWThFS 305HE(f) 114HE(s)	Miss Patchin
	Dressmaking		III,IV	MTWFS 304HE	Miss Patchin
21f,w,s	(Same as 13f,s) (Limited to 20)				
	Foods and Cookery.....				
22f,w,s	(5 cred.; soph., jr., sr.; prereq., chem. 10 cred., Physiol. 4 parallel)	Sec. 1	VI,VII	MTWThF 209HE	Miss Kolshorn
	(Limited to 20)	2	I,II	MTWThF 209HE	Miss Kolshorn
51f,w,s	Food Economics.....				
	(Same as 22f)	Sec. 1	III,IV	MTWFS 205,207HE	Miss Child
52f	(Limited to 20 cred.)	2	VI,VII	MTWThF 205,207HE(f,w) 205,103HE(s)	Ar
	Drawing and Design.....				
52w	(3 cred.; no prereq.)	Sec. 1	I,II	MWF 401HE	Miss V. Goldstein
	(Limited to 20 each)	2	I,II	TThS 401HE	Miss V. Goldstein
		3	VI,VII,VIII	TTh 402HE	Miss V. Goldstein
52s	Art History and Appreciation....		VIII	MWF 209HE	Miss H. Goldstein
52f	(Same as 52f)	Sec. 1	II	MWF 309HE	Miss V. Goldstein
		2	VIII	MWF 309HE	Miss V. Goldstein
53f	Art History and Appreciation....				
	(3 cred.; jr., sr.; prereq., 51)	Sec. 1	III	TThS 309HE	
		2	II	MWF 309HE	Miss V. Goldstein
53w		3	VIII	MWF 309HE	Miss V. Goldstein
	Advanced Design.....				
	(4 cred.; jr., sr.; prereq., 51)	Sec. 1	VI,VII,VIII	MWF 402HE	Miss H. Goldstein
53f	(Limited to 20 each)	2	I,II	MWThF 402HE	Miss H. Goldstein
	Advanced Design.....		I,II	MWThF 402HE	Miss H. Goldstein
53w	(Same as 53f,s) (Limited to 20)				

No.	Title	Hour	Day	Bldg.	Instructor
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 sci- ence) (Limited to 20)	VI,VII	MWF	103HE	Miss Lindquist

Senior College Courses

No.	Title	Hour	Day	Bldg.	Instructor
17f,w	Advanced Clothing Construction.. (3 cred.; 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)	VIII	MWF	203HE	Miss Studley
71w	Elementary Dietetics for the So- cial Worker..... (3 cred.; soph., † jr., sr.; prereq., 70, Physiol. 4 or parallel)	VI,VII	MWF	105HE	Miss Lindquist
72s	Special Problems in Home Man- agement (3 cred.; soph., † jr., sr.; prereq., H.E. 71, Econ. 3-4 or parallel)	VI	MWF	106HE	Miss Lindquist
123w	Clothing Economics..... (2 cred.; jr., sr.; prereq., 13, Agr. Econ. 5)	III	TTh	313HE	Miss Weller
		Sec. 1	III	TTh 313HE	Miss Weller
		2	(for teachers) III,IV	S	Miss Weller
123s	Clothing Economics..... (Same as 123w)				
131f,w,s	Home Management: House Plan- ning 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

HUMAN ANATOMY

MEDICAL SCHOOL

Professors CLARENCE M. JACKSON,¹ Head, RICHARD E. SCAMMON; Associate Professor CHARLES A. ERDMANN; Instructor SHIRLEY P. MILLER.

† 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.

¹ Absent on leave 1923-24.

COURSES

No.	Title	Hour	Day	Bldg.	Instructor
16of	Physical Development of the Child.. (2 cred.; jr., sr., grad.)	VI	MF	211A	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

Professors ELIAS P. LYON, Dean; JESSE F. MCCLENDON, FREDERICK H. SCOTT; Associate Professors RICHARD OLDING BEARD, FRANCIS B. KINGSBURY, CHAUNCEY J. V. PETTIBONE; Assistant Professor ESTHER GREISHEIMER; Instructors WILLIAM W. SWANSON, GERTRUDE I. THOMAS; Teaching Fellows FRANK H. HECK, HENRY A. ROUST, EMMETT ROWLES; Student Assistant MAURICE VISSCHER.

No.	Title	Hour	Day	Bldg.	Instructor
4f,w,s,su	Human Physiology (5 cred.; all; prereq., 1 qu. biol., 1 qu. chem.)	Lect. IV	MWF	315MH	Dr Beard and others
	Sec. A Dem. and rec.	III, IV	T		
	B	III	TTh		
	Div. A (primarily Lab. for nurses)	I, II, III	Th		
	B	II, III, IV	S		
56f,su	Physiol. Chemistry (4 cred.; jr., sr.; prereq., Chem. 1-2-3 or 4-5)	I	TThS	310MH	Mr. Pettibone and others
	Div. A Lab.	II, III, IV	T		
	B	VI, VII, VIII	W		
57w-58s,57su- 58su	Human Physiology (8 cred.; jr., sr.; prereq., Biol. 1-2, or 5-6-7; Chem. 1-2-3 or 4-5)	I	TThS	301MH	Dr. Lyon, and others
	Div. A Lab.	II, III, IV	T		
	B	VI, VII, VIII	W		
100w-101s,100su- 101su	Physiol. Chemistry (12 cred.; jr., sr.; prereq., biol., org. chem., and physics)	IV	MWF	310MH	Mr. McClendon, Mr. Pettibone, Dr. Swanson
	Div. A Lab.	I, II, III	TTh		
	B	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	Mr. Scott 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, Mr. Scott, and others

For other courses see Medical School bulletin.

JOURNALISM

Instructors REUEL R. BARLOW, THOMAS E. STEWARD; Assistant GENEVIEVE BOUGHNER.

No.	Title	Hour	Day	Bldg.	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. 3-4, Pol. Sci. 1, Hist. 1-2, 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

Professor JOSEPH B. PIKE,¹ Head; Assistant Professor ROBERT V. CRAM; Instructor KATHERINE GOETZINGER; Assistant EMILY A. BABCOCK.

REQUIREMENTS OF THE DEPARTMENT

For a teacher's certificate.—Major recommendation: any two of Courses 51, 52, 53, and any two of 121-133 or equivalent.

Minor recommendation: any two of Courses 51-53 or equivalent.

Junior College Courses

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w†	Beginning Latin (10 cred.; all; no prereq.)				
	Sec. 1	IV	MTWFS	109F	Miss Goetzinger
	2	VI	MTWThF	109F	Miss Goetzinger
3s	Caesar (5 cred.; all; prereq., 1-2 or 1 yr. Latin)	IV	MTWFS	109F	Miss Goetzinger
11f	Ovid (5 cred.; all; prereq., 1-2, 3, or 2 yrs. Latin)	III	MTThFS	109F	Miss Goetzinger
12w	Virgil I and II (5 cred.; all; prereq., 1-2, 3, or 2 yrs. Latin)	III	MTThFS	109F	Miss Goetzinger
13s	Virgil II and IV (5 cred.; all; prereq., 1-2, 3, or 2 yrs. Latin)	III	MTThFS	109F	Miss Goetzinger

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

¹ Absent on leave, 1923-24.

No.	Title	Hour	Day	Bldg.	Instructor
21f§	Selections (5 cred.; all; prereq., any 2 of 11, 12, 13, or 3 or 4 yrs. Latin)	IV	MTWFS	107F	Mr. Cram
22w§	Selections and Survey..... (5 cred.; all; prereq., any 2 of 11, 12, 13, or 3 or 4 yrs. Latin)	IV	MTWFS	107F	Mr. Cram
23s§	Plautus and Terence..... (5 cred.; all; prereq., any 2 of 11, 12, 13, or 3 or 4 yrs. Latin)	IV	MTWFS	107F	Mr. Cram.

Students entering second quarter.—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 two years of Latin may elect 13s. Students with three or four years of Latin may elect 23s.

Senior College Courses

51f	Pliny's Letters (3 cred.; jr., sr.; prereq., any 2 of 21, 22, 23, or equiv.)	I	MWF	107F	Mr. Cram
52w	Elegiac Poets (3 cred.; jr., sr.; prereq., any 2 of 21, 22, 23, or equiv.)	I	MWF	107F	Mr. Cram
53s	Suetonius, Selected Lives..... (3 cred.; jr., sr.; prereq., any 2 of 21, 22, 23, or equiv.)	I	MWF	107F	Mr. Cram
61	<i>Tacitus' Agricola and Germania.</i> (3 cred.; jr., sr.; prereq., any 2 of 21, 22, 23, or equiv.)	<i>Not offered in 1923-24</i>			
62	<i>Horace's Odes and Epodes.</i> (3 cred.; jr., sr.; prereq., any 2 of 21, 22, 23, or equiv.)	<i>Not offered in 1923-24</i>			
63	<i>Apuleius</i> (3 cred.; jr., sr.; prereq., any 2 of 21, 22, 23, or equiv.)	<i>Not offered in 1923-24</i>			
121f	Advanced Virgil (3 cred.; jr., sr., grad.; prereq., any one of 51, 52, 53, or equiv.)	II	MWF	107F	Mr. Cram
122	<i>Cicero's Letters</i> (3 cred.; jr., sr., grad.; prereq., any two of 51, 52, 53, or equiv.)	<i>Not offered in 1923-24</i>			
123	<i>Medieval Latin</i> (3 cred.; jr., sr., grad.; prereq., any two of 51, 52, 53, or equiv.)	<i>Not offered in 1923-24</i>			
131	<i>Juvenal</i> (3 cred.; jr., sr., grad.; prereq., any two of 51, 52, 53, or equiv.)	<i>Not offered in 1923-24</i>			
132w	Seneca's Epistles (3 cred.; jr., sr., grad.; prereq., any two of 51, 52, 53, or equiv.)	II	MWF	107F	Mr. Cram

NOTE.—Courses 51, 52, and 53 are open without petition to sophomores who have the prerequisites and who satisfy the requirements given in General Information, sec. 41 of 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 51, 52, 53.

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No.	Title	Hour	Day	Bldg.	Instructor
133s	Petronius and Martial..... (3 cred.; jr., sr., grad.; prereq., any two of 51, 52, 53, or equiv.)	II	MWF	107F	Mr. Cram
201-202-203	<i>Grad. Seminar: Tacitus.....</i> (3 cred.)	<i>Not offered in 1923-24</i>			
211f-212w-213s	Grad. Seminar: Lucretius..... (3 cred.)	Ar	Ar	108F	Mr. Cram
221f-222w-223s	Graduate Seminar (9 cred.)	Ar	Ar	108F	Mr. Cram
<i>Courses for which no knowledge of Latin is required</i>					
43s	Roman Literature (2 cred.; jr., sr.†; no prereq.)	VI	TTh	107F	Mr. Cram

LIBRARY TRAINING

No.	Title	Hour	Day	Bldg.	Instructor
7f	School Library Organization and Routine	VIII	Th	117Ed	Miss Penrose
8w	Choice and Use of Reference Materials for a School Library..	VIII	TTh	117Ed	Miss Penrose
9s	Book Selection for the High School Library	VIII	TTh	117Ed	Miss Penrose

MATHEMATICS

Professors WILLIAM H. BUSSEY, Chairman; DUNHAM JACKSON; Associate Professors RAYMOND W. BRINK, WILLIAM L. HART, ROYAL R. SHUMWAY, ANTHONY L. UNDERHILL; Instructors GLADYS E. C. GIBBENS, ELLA THORP; Assistants ELIZABETH CARLSON, WILLIAM H. MCEWEN, PERCIVAL H. NYGAARD, CECIL PHIPPS.

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.

3f	Higher Algebra (pre-medical stu- dents only)				
	(4 cred.; pre-med. only; prereq., 1 yr. elem. alg.)				
		Sec. 1	II	MWFS	104F
		2	VIII	MTThF	104F
3w	Higher Algebra (pre-medical stu- dents only)				
	(See 3f)		VIII	MTThF	105F

* 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.

No.	Title	Hour	Day	Bldg.	Instructor	
4f	Algebra and Trigonometry (pre-medical students only)..... (4 cred.; pre-med. only; prereq., 3 or 5, or prep. higher alg.)	Sec. 1	II	MWFS	102F	Ar
		2	VIII	MTThF	105F	Ar
4w	Algebra and Trigonometry (pre-medical students only)..... (See 4f)	Sec. 1	II	MWFS	104F	Ar
		2	VIII	MTThF	104F	Ar
4s	Algebra and Trigonometry (pre-medical students only)..... (See 4f)		VIII	MTThF	105F	Ar
5f	Higher Algebra (5 cred.; all; prereq., 1 yr. elem. alg.)	Sec. 1	II	MWThFS	105F	Ar
		2	IV	MTWFS	104F	Ar
		3	VI	MTWThF	104F	Ar
			VI	MTWThF	105F	Ar
5w	Higher Algebra (See 5f)		VI	MTWThF	105F	Ar
5s	Higher Algebra (See 5f)	Sec. 1	III	MTThFS	102F	Ar
		2	VII	MTWThF	104F	Ar
5s	Higher Algebra (See 5f)	Sec. 1	III	MTThFS	102F	Ar
		2	VII	MTWThF	104F	Ar
6f¶	Trigonometry (5 cred.; all; prereq., 5 or prep. higher algebra)	Sec. 1	I	TWThFS	102F	Ar
		2	VII	MTWThF	104F	Ar
6w¶	Trigonometry (See 6f)		IV	MTWFS	104F	Ar
6s¶	Trigonometry (See 6f)	Sec. 1	I	TWThFS	105F	Ar
		2	VI	MTWThF	104F	Ar
7f¶	College Algebra (5 cred.; all; prereq., 6)		IV	MTWFS	105F	Ar
7w¶	College Algebra (See 7f)	Sec. 1	I	TWThFS	102F	Mr. Underhill
		2	VII	MTWThF	104F	Ar
7s¶	College Algebra (See 7f)		IV	MTWFS	104F	Ar

† Not a Senior College course.

¶ 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.

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No.	Title	Hour	Day	Bldg.	Instructor
8f¶	Commerce Algebra (5 cred.; pre-bus. stud.; prereq., 5 or prep. high. alg.)	I	MTWFS	104F	Ar
8w¶	Commerce Algebra (See 8f)				
	Sec. 1	II	MWThFS	105F	Ar
	2	VI	MTWThF	104F	Ar
8s¶	Commerce Algebra (See 8f)	VI	MTWThF	105F	Ar
20f	Mathematics of Investment..... (5 cred.; all; prereq., 8, or 6 and 7)	I	MTWFS	105F	Mr. Hart
20w	Mathematics of Investment..... (See 20f)	I	MTWFS	105F	Mr. Hart
20s	Mathematics of Investment..... (See 20w)	II	MWThFS	105F	Mr. Hart
30f	Analytical Geometry (5 cred.; all; prereq., 6 and 7)	III	MTThFS	104F	Mr. Brink
30w	Analytical Geometry (See 30f)	IV	MTWFS	105F	Mr. Brink
30s	Analytical Geometry (See 30f)	I	TWThFS	102F	Mr. Underhill
<i>Senior College Courses</i>					
50f§	Calculus I (5 cred.; jr., sr.; prereq., 30)	III	MTThFS	101F	Mr. Jackson
50w§	Calculus I (See 50f)	III	MTThFS	104F	Mr. Hart
50s§	Calculus I (See 50f)	IV	MTWFS	105F	Mr. Brink
51w§	Calculus II (5 cred.; jr., sr.; prereq., 50)	III	MTThFS	101F	Mr. Jackson
51s§	Calculus II (See 51w)	III	MTThFS	104F	Mr. Hart
52f§	Calculus III (5 cred.; jr., sr.; prereq., 51)	III	MTThFS	102F	Mr. Underhill
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
70s	Hist. of Elem. Math..... (3 cred.; jr., sr.; prereq., 30)	I	MWF	104F	Mr. Bussey
71f	Solid Analytical Geometry..... (3 cred.; jr., sr.; prereq., 50)	VII	MWF	101F	Mr. Hart
90f-91w	Advanced Analytic Geometry.... (6 cred.; jr., sr.; prereq., 50)	II	MWF	101F	Miss Gibbens
92s	Synthetic Projective Geometry... (3 cred.; jr., sr.; prereq., 50)	II	MWF	101F	Mr. Shumway
106f	Differential Equations (3 cred.; jr., sr., grad.; prereq., 51)	III	MWF	105F	Mr. Hart
107w-108s	Advanced Calculus (6 cred.; jr., sr., grad.; prereq., 52)	III	MWF	105F	Mr. Brink

§ Courses 50, 51, and 52 are open without petition to sophomores who have the prerequisites.

¶ Courses 6 and 8 involve some duplication of material, and no student may take both without special permission. No student may receive credit for both of Courses 7 and 8. Pre-business students who elect mathematics to meet the requirement of 10 credits in mathematics or laboratory science, should take 5 and 8 if they have not had high school higher algebra, and 8 and 20 if they have had high school higher algebra.

No.	Title	Hour	Day	Bldg.	Instructor
121-122-123	<i>Math. Theory of Statistics</i> (9 cred.; jr., sr., grad.; prereq. 50-51)	Not offered in 1923-24			
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

Professor GIRARD STURTEVANT, Colonel, Infantry; Assistant Professors HENRY H. RUTHERFORD, Lieutenant Colonel, Medical Corps; BERNARD LENTZ, Major, Infantry; FREDERICK R. WUNDERLICH, Major, Dental Corps; LEE R. WATROUS, JR., Major, Coast Artillery Corps; ROGER HILSMAN, Captain, Infantry; VERNON W. HALL, Captain, Coast Artillery Corps; JAMES T. WATSON, JR., Captain, Signal Corps; LEO J. FARRELL, Captain, Infantry; ANDREW C. TYCHSEN, Captain, Infantry; NEWTON W. SPEECE, Captain, Infantry; HAL M. ROSE, 1st Lieutenant, Cavalry; MYRON J. CONWAY, 1st Lieutenant, Infantry; Instructors JOSEPH HAVLICEK, Regimental Commissary Sergeant, U.S.A., Retired; JOHN MCWILLIAMS, 1st Sergeant, U.S.A., Retired; ALFRED BRANDT, Technical Sergeant; HARRY E. STRIDER, Technical Sergeant; AUBREY R. DUNKUM, Staff Sergeant; EDMUND T. McCANN, Sergeant; HENRY W. BROWN, Sergeant; JOE WEIR, Sergeant; ROBERT M. THURSTON, Sergeant; ERNEST R. MYLK, Private 1st Class.

COURSES

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w	First-Year Basic Course..... (no cred.; fr.; no prereq.)	II	MWF	A	Ar
		IV	MWF	A	Ar
		V	MWF	A	Ar
		VI	MWF	A	Ar
		VII	MWF	A	Ar
3s	First-Year Basic Course..... (no cred.; fr.; prereq., 1f-2w)	IX	T or W	A	Ar
		VII, VIII,			
4f-5w	Second-Year Basic Course..... (no cred.; soph.; no prereq.)	I	MWF	A	Ar
		III	MWF	A	Ar
		VIII	MWF	A	Ar
6s	Second-Year Basic Course..... (no cred.; soph.; prereq., 4f-5w)	VII, VIII,			
51f-52w	First-Year Adv. Course..... (cred.; § fr.; prereq., 4f-5w-6s†)	IX	Th	A	Ar
		III	TS	A	Ar
53s	First-Year Adv. Course..... (cred.; § jr.; prereq., 51f-52w)	VII, VIII,			
		IX	T or W	A	Ar
54f-55w	Second-Year Adv. Course..... (cred.; § sr.; prereq., 51f-52w-53s)	III	TS	A	Ar
		VII, VIII, IX	Th	A	Ar
56s	Second-Year Adv. Course..... (cred.; § sr.; prereq., 54f-55w)	IV	TS	A	Ar
		VII, VIII,			
		IX	T or W	A	Ar
		IV	TS	A	Ar

* Identical with Astronomy 140.

† Must be legally eligible for enrollment in Reserve Officers' Training Corps. Consult P.M.S.&T.

§ The University allows three credits per quarter for advanced R.O.T.C. work, with a maximum of eighteen credits for the two years' work. The number of credits which can be counted toward the bachelor of arts degree is six.

MUSIC

Professors CARLYLE M. SCOTT, Chairman; EARLE G. KILLEEN; Associate Professor DONALD N. FERGUSON; Assistant Professor WILLIAM LINDSAY; Instructors HENRY CUNNINGTON, GASTON DUBOIS, GEORGE FAIRCLOUGH, THADDEUS GIDDINGS, GERTRUDE R. HULL, BLANCHE KENDALL, HELEN LAWRENCE, ABE PEPINSKY, GERTRUDE REEVES, KARL SCHEURER, CLYDE W. STEPHENS; Assistant HELEN STAPLES.

COURSES

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	Bldg.	Instructor
1f-2w-3s†	Harmony				
	(9 cred.; fr. mu.; no prereq.)				
	Sec. 1	II	MWF	Mu	Mr. Scott
	2	VII	MWF	Mu	Mr. Scott
1w-2s-(3su)†	Harmony	III	MWF	Mu	Mr. Scott
	(See 1f-2w-3s)				
4f-5w-6s†	Counterpoint	III	TTh	Mu	Mr. Ferguson
	(6 cred.; soph. mu.; prereq., 1-2-3)				
7f-8w-9s	Ear-Training				
	(Cred.)* soph. mu.; prereq., 1-2-3)				
	Sec. 1	VI	T	Mu	Ar
	2	VII	Th	Mu Aud	
7w-8s-(9su)	Ear-Training	VI	T	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.)				
19f-20w-21s	Second-Year Pianoforte	Ar	Ar	Mu	Ar
	(6 or 12 cred.; soph. mu.; prereq., 16-17-18)				
22f-23w-24s	First-Year Violin	Ar	Ar	Mu	Ar
	(6 or 12 cred.; fr. mu.)				
25f-26w-27s	Second-Year Violin	Ar	Ar	Mu	Ar
	(6 or 12 cred.; soph. mu.; prereq., 22-23-24)				
28f-29w-30s	First-Year Vocal Training.....	Ar	Ar	Mu	Ar
	(6 or 12 cred.; fr. mu.)				
31f-32w-33s	Second-Year Vocal Training.....	Ar	Ar	Mu	Ar
	(6 or 12 cred.; soph. mu.; prereq., 28-29-30)				

* 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	Bldg.	Instructor
34f-35w-36s	First-Year of Other Orchestral Instruments	Ar	Ar	Mu	Ar
	(6 or 12 cred.; fr. mu.)				
37f-38w-39s	Second-Year of Other Orchestral Instruments	Ar	Ar	Mu	Ar
	(6 or 12 cred.; soph. mu.; pre-req., 37-38-39)				
40f-41w-42s	Orchestra	7:30 p.m.	W	Mu	Mr. Pepinsky
	String Section	IX	T	Mu	Ar
	(3 cred.; jr., sr.)				
43f-44w-45s	University Choir	7 p.m.	T	Mu	Mr. Killeen
	(3 cred.; fr. and soph. mus., acad. jr., sr.)				
46f-47w-48s	Appreciation of Music	VI	Th	Mu Aud	Ar
	(No cred.; required of fr. and entering soph.; no prereq.)				
50f-51w-52s	Third-Year Organ	Ar	Ar	Mu	Ar
	(6 or 12 cred.; sr.; prereq., 13-14-15)				
53f-54w-55s	Fourth-Year Organ	Ar	Ar	Mu	Ar
	(6 or 12 cred.; sr.; prereq., 50-51-52)				
56f-57w-58s	Third-Year Piano	Ar	Ar	Mu	Ar
	(6 or 12 cred.; jr.; prereq., 19-20-21)				
59f-60w-61s	Fourth-Year Piano	Ar	Ar	Mu	Ar
	(6 or 12 cred.; sr.; prereq., 56-57-58)				
62f-63w-64s	Third-Year Violin	Ar	Ar	Mu	Ar
	(6 to 12 cred.; jr.; prereq., 25-26-27)				
65f-66w-67s	Fourth-Year Violin	Ar	Ar	Mu	Ar
	(6 or 12 cred.; sr.; prereq., 62-63-64)				
68f-69w-70s	Third-Year Violin Training	Ar	Ar	Mu	Ar
	(6 or 12 cred.; jr.; prereq., 31-32-33)				
71f-72w-73s	Fourth-Year Vocal Training	Ar	Ar	Mu	Ar
	(6 or 12 cred.; sr.; prereq., 68-69-70)				
74f-75w-76s	Third Year of Other Orchestral Instruments	Ar	Ar	Mu	Ar
	(6 or 12 cred.; jr.; prereq., 37-38-39)				
77f-78w-79s	Fourth Year of Other Orchestral Instruments	Ar	Ar	Mu	Ar
	(6 or 12 cred.; sr.; prereq., 74-75-76)				
86f-87w-88s	Normal Piano	VII	MWF	Mu	Miss Reeves
	(6 cred.; jr.; prereq., 2 yrs. piano)				
89f-90w-91s	Adv. Normal Piano	VIII	MWF	Mu	Miss Reeves
	(6 cred.; sr.; prereq., 86-87-88)				
100f-101w-102s	Composition Orchestration	Ar	Ar	Mu	Mr. Ferguson
	(9 cred.; jr., sr.; prereq., 1-2-3, 4-5-6)				

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
103f-104w-105s	Analysis (3 cred.; jr., sr.; prereq., 1-2-3, 4-5-6)	IV	W	Mu	Mr. Pepinsky
106f-107w-108s	History of Music..... (3 cred.; jr., sr.; prereq., 1-2-3, 4-5-6)	II	MWF	Mu	Mr. Ferguson
109f-110w-111s	Bach and Beethoven..... (9 cred.; sr.; p-req., 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	Miss Hull
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 Counterpoint (6 cred.; sr., prereq., 4-5-6)	Ar	Ar	Mu	Mr. Ferguson

PHILOSOPHY

Professors NORMAN WILDE, Head; DAVID F. SWENSON; Assistant Professor GEORGE P. CONGER.

No.	Title	Hour	Day	Bldg.	Instructor
1f	Problems of Philosophy..... (5 cred.; soph. jr., sr.; no pre-req.)	VII	MTWThF	322F	Mr. Conger
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)	VI	MTWThF	322F	Mr. Conger
2f	Logic (5 cred.; soph., jr., sr.; no pre-req.)				
	Sec. 1	III	MTThFS	321F	Mr. Swenson
	2	IV	MTWFS	321F	Mr. Conger
2w	Logic (See 2f)	IV	MTWFS	321F	Mr. Conger
2s	Logic (See 2f)				
	Sec. 1	III	MTThFS	5F	Mr. Swenson
	2	IV	MTWFS	321F	Mr. Conger
3f	Ethics (5 cred.; soph., jr., sr.; no pre-req.)	IV	MTWFS	322F	Mr. Wilde
3s	Ethics (See 3f)	I	TWThFS	322F	Mr. Wilde

No.	Title	Hour	Day	Bldg.	Instructor
105'	Science and Religion..... (2 cred.; soph., jr., sr.; prereq., 10 cred. in phil. or a science)	VII	TTh	321F	Mr. Conger
50w	Ancient and Medieval Philosophy. (5 cred.; jr., sr.; prereq., 10 cred. or 15 cred. in phil. and soc. sci.)	IV	MTWFS	322F	Mr. Wilde
51s	Modern Philosophy	IV	MTWFS	322F	Mr. Wilde
	(5 cred.; jr., sr.; prereq., 10 cred. or 15 cred. in phil. and soc. sci.)				
100f	History of Religions..... (3 cred.; jr., sr., grad.; prereq., 10 cred.)	II	TThS	322F	Mr. Conger
101w	Psychology of Religion..... (3 cred.; jr.; sr., grad.; prereq., 10 cred.)	II	TThS	322F	Mr. Conger
102s	Philosophy of Religion..... (3 cred.; jr., sr., grad.; prereq., 10 cred.)	II	TThS	322F	Mr. Swenson
103s	Esthetics	II	MWF	322F	Mr. Swenson
	(3 cred.; jr., sr., grad.; prereq., 10 cred.)				
104	<i>History of Esthetics</i>	<i>Not offered in 1923-24</i>			
	(3 cred.; jr., sr., grad.; prereq., 10 cred.)				
108-109	<i>History of Ethics</i>	<i>Not offered in 1923-24</i>			
	(6 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 10 cred. in phil.)				
120w	Scandinavian Philosophy..... (3 cred.; jr., sr., grad.; prereq., 10 cred.)	2-3:20	TTh	316F	Mr. Swenson
124f	Political and Social Ethics..... (5 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 10 cred. in phil.)	I	TWThFS	322F	Mr. Wilde
129w	Modern Political Thought..... (5 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 10 cred. in phil.)	I	TWThFS	322F	Mr. Wilde
135f-136w	Philosophy of Plato..... (6 cred.; jr., sr., grad.; prereq., 10 cred.)	VIII	MWF	316F	Mr. Swenson
141f-142w	Metaphysics	II	MWF	316F	Mr. Swenson
	(6 cred.; jr., sr., grad.; prereq., 10 cred. in phil. incl. 2)				
147	<i>Advanced Logic</i>	<i>Not offered in 1923-24</i>			
	(3 cred.; jr., sr., grad.; prereq., 10 cred. in phil. incl. 2)				
151-152	<i>Modern Idealism</i>	<i>Not offered in 1923-24</i>			
	(4 cred.; sr., grad.; prereq., 15 cred in phil.)				
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

Professors HENRY A. ERIKSON, Chairman; JOHN T. TATE, ANTHONY ZELNY; Associate Professor LOUALLEN F. MILLER; Assistant Professors GREGORY BREIT, JOSEPH VALASEK, JOHN H. VAN VLECK; Instructors J. WILLIAM BUCHTA, ARCHIE D. POWER; Assistants SIDNEY E. BORGESON, NIELS P. CHRISTIANSEN, IWAO FUKUSHIMA, ERNEST O. LAWRENCE, MERLE TUVE; Teaching Fellows IRWIN M. ELLESTAD, HERBERT R. GRUMMANN, BENJAMIN M. KNUTSON, WALTER M. NIELSEN, KARL W. SELANDER.

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, page ...

Introductory Courses

No.	Title	Hour	Day	Bldg.	Instructor
1f,w	Elem. of Mechanics and Sound.. (3 cred.; all; prereq., Math. 6, or equiv.)	Lect. VIII Quiz. IX	MWF	30Ph 100C	Mr. Erikson
1s	Elem. of Mechanics and Sound.. (See 1f,w)	Lect. III Quiz. IX	TThS	30Ph 100C	Mr. Erikson
2f,w,s	Elem. of Mechanics Lab..... (1 cred.; all; prereq., 1 or reg. in 1)	Sec. 1 VI, VII 2 VIII, IX 3 VIII, IX	T	16Ph 16Ph 16Ph	Mr. Erikson and assistants
9s	Acoustics (3 cred.; all; no prereq.)	Ar	Ar	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 Quiz. IX	TThS	30Ph W 30Ph	Mr. Miller 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 2 VIII, IX 3 VI, VII 4 VIII, IX	M	23Ph 23Ph 23Ph 23Ph	Mr. Miller and assistants
22w	(For schedule of hours, see Physics 24w, Engineering program)				
31f,s	Optics (3 cred.; all; prereq., 1)	Lect. I Quiz. IX	TThS	30Ph M 30Ph	Mr. Valasek Mr. Valasek

No.	Title	Hour	Day	Bldg.	Instructor	
32f,s	Optics Laboratory..... (1 cred.; all; prereq., 2, 31, or reg. in 31)	Sec. 1	VI, VII	Th	23Ph	Mr. Valasek
		2	VIII, IX	Th	23Ph	Mr. Valasek
		3	VI, VII	F	23Ph	Mr. Valasek
		4	VIII, IX	F	23Ph	Mr. Valasek
35W	Optics (2 cred.; all; prereq., 1)	I		TTh	30Ph	Mr. Valasek
41W	Magnetism and Electricity..... (3 cred.; all; prereq., 1)	Lect.	III	TThS	30Ph	Mr. Zeleny
		Quiz.	IX	W	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	Th	31Ph	
		4	VI, VII	W	31Ph	
42S	(For schedule of hours, see Physics 44S, Engineering program)					

Intermediate Courses

101f-103W-105S, 107f-109W-111S	Theoretical Physics..... (4 cred.; jr., sr., grad.; prereq., 12 cred. in phys.; Math. 51)	IV		MTWF	18Ph	Mr. Tate
102f-104W-106S, 108f-110W-112S	Experimental Physics..... (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..... (3 cred.; jr., sr., grad.; prereq., 106, Math. 51)	Ar		Ar	1Ph	Mr. Tate
115f-117W-119S	Elem. of Math. Physics..... (3 cred.; jr., sr., grad.; prereq., 105, Math. 51)	Ar		Ar	20Ph	Ar
122S	Pyrometry and Heat..... (3 cred.; jr., sr., grad.; prereq., 21 and 22)	VI-VIII		MWF	9Ph	Mr. Miller
132W	Applied Optics..... (3 cred.; jr., sr., grad.; prereq., 31 and 32)	Ar		Ar	3Ph	Mr. Valasek
142f	Elect. Measurements (3 cred.; jr., sr., grad.; prereq., 41 and 42)	See Engineering program				Mr. Zeleny
146W	Elect. Meas. of Precision..... (3 cred.; jr., sr., grad.; prereq., 142)	Ar		Ar	12Ph	Mr. Zeleny
145W-147S	Radioactivity (3 cred.; jr., sr., grad.; prereq., 106)	Ar		Ar	15Ph	Mr. Erikson

NOTE.—Credits stated are credits per quarter.

POLITICAL SCIENCE

Professors CEPHAS D. ALLIN, Chairman; ROY G. BLAKEY (Economics), SOLON J. BUCK (History), ALBERT B. WHITE (History), NORMAN WILDE (Philosophy), JEREMIAH S. YOUNG; Associate Professors WILLIAM ANDERSON, ALVIN H. HANSEN (Economics), LESTER B. SHIPPEE (History); Assistant Professors MORRIS B. LAMBIE, HAROLD S. QUIGLEY; Instructor RODNEY L. MOTT; Lecturer BENJAMIN W. PALMER; Assistants JOHN P. DALZELL, INGOLF DILLAN, RUSSELL H. EWING, JAMES D. MCGILL; Scholars LANDRETH HARRISON, ROBERT A. KINGSLEY.

REQUIREMENTS OF THE DEPARTMENT

For a teacher's certificate in government.—Minor recommendation: at least 18 credits in political science including American Government. Introduction to Political Science, and either Municipal, or State, or Comparative European Government.

Bureau for Research in Government.—This bureau is organized to conduct and direct special investigations into practical politics and administrative problems, national, state, and local. Mr. Anderson will act as director, but all members of the staff will take part in the work of the bureau. Advanced and graduate students are strongly urged to take advantage of its facilities.

Introductory Courses

No.	Title	Hour	Day	Bldg.	Instructor
1f,w,s	American Government (5 cred.; soph., jr., sr.; and fr. with 10 cred. in hist.; no pre- req.)	Lect. IV Sec. 1 I	MWF TTh	Lit Th 205F(f,w) 104F(s)	Mr. Young
		2 II	TTh	104F(f,w) 213F(s)	
		3 III	TTh	6F	
		4 IV	TS	5F	
7f,w,s	State Government (5 cred.; soph., jr., sr.; and fr. with 10 cr. in hist.; no prereq.)	Lect. VI VI Sec. 1 VII 2	MWF TTh TTh	306D(f) 202B(w,s) 6F 306F(f,w) 15F(s)	Mr. Lambie

Intermediate Courses

3w,s	Compar. European Government.. (5 cred.; soph., jr., sr.; prereq., 1)	IV	MTWFS	2F(f) 125F(w) 15F(s)	Ar
11f,w,s	Municipal Government (5 cred.; soph., jr., sr.; prereq., 1 or 7)	Lect. I	TWThFS	109B(f,w) 301F(s)	Mr. Anderson
15f	Introd. to Political Science (5 cred.; soph., jr., sr.; prereq., 1 or 7)	III	MTThFS	306D(f,w) 302D(s)	

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
25f	World Politics (5 cred.; soph., jr., sr., and fr. with Hist. 1-2; prereq., 1 and 10 cred. in hist.)	VI	MTWThF	109B	Mr. Quigley
25s	World Politics (5 cred.; 3d qu. fr., soph., jr., sr.; prereq., Hist. 1-2, or 1 and 10 cred. in hist.)	Sections as in History 3s, History program			
33w-34sf	English Legal Institutions.....	Lect. II See History statement	TThS	Mu Aud	
<i>Advanced Courses</i>					
51f-52w-53sf§	Business Law (9 cred.; jr., sr.; prereq., 10 cred. in pol. sci., or 10 cred. in econ., or 5 cred. in each)	Lect. II Sec. 1 I 2, 3, 4, II 5 VI 6 VII 7 Ar	WF M M M M Ar	Lit Th 102F 3F, 6F, 321F 303F 303F Ar	Mr. Young
58	<i>Political Parties</i> (5 cred.; jr., sr.; prereq., 10 cred.)	<i>Not offered in 1923-24</i>			
107f-108w	Europe: 1848-1914	See History statement			
109s	Modern England	See History statement			
111f	Municipal Functions .. (3 cred.; jr., sr., grad.; prereq., 11)	III	TThS	4F	Mr. Anderson
113w	Municipal Problems (3 cred.; jr., sr., grad.; prereq., 11, or 15 cred.)	III	TThS	213B	Mr. Anderson
115s	Municipal Corporations (3 cred.; jr., sr., grad.; prereq., 11, or 15 cred.)	III	TThS	204F	Mr. Anderson
117s	Municipal Engineering (3 cred.; jr., sr., grad.; no prereq.)	See Civil Engineering 53-3s			
121f-122w	International Law (6 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. 10 cred. in pol. sci. or Hist. 107- 108)	IV	MWF	15F	Mr. Allin
124	<i>Problems in International Law..</i> (3 cred.; jr., sr., grad.; prereq., 121-122)	<i>Not offered in 1923-24</i>			
131w	Public Administration (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. 10 cred. in pol. sci.)	VII	MWF	25F	Mr. Lambie
133s	Problems in Administration..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. 1 Senior College course)	VII	MWF	25F	Mr. Lambie

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

§ Cannot be included in a major or minor sequence.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
136f	Far Eastern Politics..... (3 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. incl. Course 25; or 10 cred. in pol. sci. and Hist. 107-108)	VII	MWF	15F	Mr. Quigley
137w	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. 107-108)	VII	MWF	15F	Mr. Quigley
145	Legislative Power and Meth.... (3 cred.; jr., sr., grad.; prereq., 15 cred.)	<i>Not offered in 1923-24</i>			
146w-147sf	Const. Hist. of U. S.....	See History statement			
153s	West in American Politics since 1865	See History statement			
155w	Compar. Administrative Law.... (3 cred.; jr., sr., grad.; prereq., 15 cred.)	II	TThS	306D	Mr. Young
157f	Police Power	II	TThS	102B	Mr. Young
158s	Government and Business..... (3 cred.; jr., sr., grad.; prereq., 15 cred. in pol. sci. or econ.)	II	TThS	124F	Mr. Young
161s	Comparative Federal Government (3 cred.; jr., sr., grad.; prereq., 20 cred.)	IV	MWF	303F	Mr. Allin
166w	Gov't. of the British Empire.... (3 cred.; jr., sr., grad.; prereq., 15 cred. or Hist. 109)	II	MWF	15F	Mr. Allin
167s	British Politics	II	MWF	15F	Mr. Allin
169s	Labor and Socialist Movement in Europe	See Economics statement			
181w	Modern Political Thought..... (5 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci., or 10 cred. in philos.)	I	TWThFS	322F	Mr. Wilde
185f	Political and Social Ethics..... (5 cred.; jr., sr., grad.; prereq., 20 cred. in soc. sci. or 10 cred. in philos.)	I	TWThFS	322F	Mr. Wilde
191f-192w†	Public Finance	See Economics statement			
193s	State and Local Taxation.....	See Economics statement			

PREVENTIVE MEDICINE AND PUBLIC HEALTH

50f,su	Public and Personal Health.... (3 cred.; jr., sr.; prereq., An. Biol. 1-2 and Psy. 1-2)	V	MWF	315MH	Dr. Shepard
53f	Elements of Preventive Medicine.	II	MW	MHFacRm	Dr. Diehl,
54w	Public Health Methods and Prac- tices	II, III	S		Dr. Shepard
	(3 cred.; jr., sr.; prereq., 53) (3 cred.; jr., sr.; prereq., Psy. 1-2; Bact. 1 or equiv.)	<i>Not offered in 1923-24</i>			

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

No.	Title	Hour	Day	Bldg.	Instructor
58w,su	Maternal and Child Hygiene.... (1½ cred.; jr., sr.; prereq., 50, 52, or 53)	II	MW	MHFacRm	Dr. Adair, Dr. Huenekens, Dr. Boynton
59w	Social Hygiene	II	S	MHFacRm	Dr. Ulrich
60w	The Tuberculosis Problem..... (1 cred.; jr., sr.; prereq., 50, 52, or 53)	II	Th	MHFacRm	Dr. Myers
61w	Mental Hygiene	II	T	MHFacRm	Dr. Hamilton and others
8of,su	Educational Hygiene	V	MWF	129MH	Dr. Diehl, Dr. Boynton
	(3 cred.; jr., sr.; prereq.; An. Biol. 1-2, Psy. 1-2)				

PSYCHOLOGY

Professors RICHARD M. ELLIOTT, Chairman; WILLIAM S. FOSTER, DONALD G. PATERSON;
Associate Professors KARL S. LASHLEY, HERBERT WOODROW; Assistant Professor
CHARLES BIRD; Instructor KATHERINE LUDGATE; Teaching Fellows CARNEY LANDIS,
ELIZABETH MUENZINGER, ELLA OSBOURN; Scholar RUTH GULETTE.

COURSES

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w†	General Psychology				
	(6 cred.; soph., jr., sr.; no prereq.)				
	Lect.	I	Th or F or S	Mu Aud	Mr. Elliott, Mr. Foster
	Rec. (one hour)	II	Th or F or S	Psy	
		I	MW	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	Mu Aud	Mr. Elliott, Mr. Foster, Mr. Paterson
	Rec. (one hour)	III	Th or F or S	Psy	
		IV	F or S	Psy	
3s	Psychology Applied to Daily Life (3 cred.; soph., jr., sr.; prereq., 1-2)				
	Lect.	II	MW	202B	Mr. Elliott, Mr. Paterson
	Rec. (one hour)	I	F	Psy	
		II	Th or F or S	Psy	

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

PROGRAM

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No.	Title	Hour	Day	Bldg.	Instructor
4f-5w†	Intro. Lab. Psychology..... (4 cred.; soph., jr., sr.; with or after 1-2, or 1-6 by permission) (Sections limited to 40)				
	Sec. 1	I, II	TTh	211Psy	Mr. Foster and others
	2	III, IV	TS	211Psy	
	3	VI, VII	TTh	211Psy	
	4	III, IV	MW	211Psy	
	5	VIII, IX	TTh	211Psy	
7s	Intro. Lab. Psychology..... (See 4f-5w) (Identical with 4f-5w combined)				
	Sec. 1	VI, VII	MTWF	211Psy	Mr. Foster and others
	2	III, IV	MTWF	211Psy	
9s	Animal Behavior (3 cred.; soph., jr., sr.; prereq., 1-2 or 1-6)	III	MWF	109Psy	Mr. Lashley
56w	Psychology of Advertising..... (3 cred.; jr., sr.; prereq., 1-2 or 1-6, Econ. 3-4)	VII	MWF	115Psy	Mr. Paterson
60f	Employment Psychology (3 cred.; jr., sr.; prereq., 1-2 or 1-6, Econ. 3-4)	VII	MWF	115Psy	Mr. Paterson
64s	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
101f-102w†-103s	Experimental Psycho' gy (6 or 9 cred.; jr., sr., grad.; pre- req., 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)	VIII, IX IX	M W	116Psy	Mr. Woodrow, 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; 4-5 or 7 or Biol. 1-2)	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.)	II	MWF	109Psy	Mr. Bird
144w-145s†	Abnormal Psychology (6 cred.; jr., sr., grad.; prereq., 1; 2 or 6; 4-5 or 7, or Biol. 1-2 or 10 cred. in soc.)	IV	MWF	109Psy	Mr. Lashley

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

PUBLIC SCHOOL MUSIC

No.	Title	Hour	Day	Bldg.	Instructor
51f-52w-53s	Instrumentation	VIII	W	Ar	Mr. Pepinsky
	(3 cred.; jr., sr.)				
54f-55w-56s	Advanced Instrumentation	VIII	T	Ar	
	(3 cred.; jr., sr.)				
64f-65w-66s	Orchestra-Conducting	VIII, IX	Th	Ar	Mr. Pepinsky
	(6 cred.; jr., sr.)				
81f-82w-83s	Observation of Teaching.....	VIII	T	Ar	
	(6 cred.; jr., sr.; prereq., 32-33-34)				

ROMANCE LANGUAGES

Professors EVERETT W. OLMSTED, Head; IRVILLE C. LeCOMPTE, COLBERT SEARLES; Associate Professors FRANCIS B. BARTON, RUTH S. PHELPS;¹ Assistant Professors HERBERT E. CLEFTON, JULES T. FRELIN, JOSEPH E. GILLET, KEMP MALONE (English), EUGENE F. PARKER, EDWARD H. SIRICH, GUSTAVE VAN ROOSBROECK;² Instructors PAUL BOSANKO, NELSON F. COBURN, ANTONY CONSTANS, W. IRVING CROWLEY, ROBERT A. GUINN, MARGUERITE GUINOTTE, PAUL C. KING, OLAF K. LUNDEBERG, ELIZABETH NISSEN, ARTURO TORRES-RIOSECO, GEORGE B. WATTS; Assistants ELEANOR CEDERSTROM, CHARLES R. HIELD, ELLA M. WILSON; Teaching Fellows EMMA DUBETZ, DOROTHY MCGHEE, JENNIE M. McMULLEN.

REQUIREMENTS OF THE DEPARTMENT

For a teacher's certificate.—Major recommendation: in addition to Courses 1-2 and 3-4, 36 credits in one language.

Minor recommendation: In addition to Courses 1-2 and 3-4, 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	Bldg.	Instructor
(1s)-2f†	Beginning French	I	TWThFS	202F	Ar
	(See 1f-2w)	VI	MTWThF	213F	Ar
1f-2w†	Beginning French	I	TWThFS	213F	Ar
	(10 cred.; all; no prereq.)	II	MWThFS	227F	Ar
		III	MThFS	226F	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	15F	Ar
	(See 1f-2w)	VII	MTWThF	209F	Ar

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

() Numbers in parentheses do not refer to the year 1923-24.

¹ Absent on leave, 1923-24.

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
(3s)-4f	Intermediate French (See 3f-4w)	II	MWThFS	2F	Ar
		III	MTThFS	301F	Ar
		IV	MTWFS	125F	Ar
		VI	MTWThF	202F	Ar
3f-4w	Intermediate French (10 cred.; all; prereq., 1-2, or 2 yrs. high school French)	I	TWThFS	125F	Ar
		II	MWThFS	301F	Ar
		III	MTThFS	213F	Ar
		VII	MTWThF	213F	Ar
		VIII	MTWThF	201F	Ar
3w-4s	Intermediate French (See 3f-4w)	I	TWThFS	202F	Ar
		VI	MTWFS	213F	Ar
3s-(4f)	Intermediate French (See 3f-4w)	I	TWThFS	213F	Ar
		II	MWThFS	227F	Ar
		III	MTThFS	226F	Ar
		IV	MTWFS	201F	Ar
		VI	MTWThF	226F	Ar
8f-9w-10s¶	Scientific French (pre-med.)... (9 cred.; pre-med.; prereq., 3 or equiv.)	I	MWF	205F(f,w) 25F(s)	Ar Ar
20f‡	Oral and Written French..... (5 cred.; all; prereq., 3, or 3 yrs. high school French)	III	MTThFS	125F	Mr. Frelin
		VII	MTWThF	206F	Mr. King
20s‡	Oral and Written French..... (See 20f)	I	TWThFS	125F	Ar
		II	MWThFS	109F	Ar
		III	MTThFS	213F	Ar
		VII	MTWThF	213F	Ar
21f-22w-23s†	Survey of French Lit..... (9 cred.; all; prereq., 3-4 or 20 or 4 yrs. high school French)	II	TThS	209½F	Mr. Le-Compte
		III	TThS	105F	Mr. Sirich
		VII	MWF	107F	Mr. Searles
24w-25s†	Survey of French Lit..... (10 cred.; all; prereq., 3-4 or 20 or 4 yrs. high school French)	III	MTThFS	125F	Ar
		VII	MTWThF	125F	Ar
49f	French Pronunciation	VII	MWF	212F	Mr. Constantans
50f-51w-52s†	French Conversation††	III	MW	201F	
		VI	MW	107F	Mr. Frelin
53f-54w-55s†	French Composition	III	F	201F	
		VI	F	107F	Mr. Frelin
56f-57w-58s†	Adv. French Conversation††..... (3 cred.; jr., sr.*; prereq., 20 or 50-51-52)	II	MW	113F	Mr. Parker
		III	MW	4F	Miss Guinotte
		VI	MW	125F	Miss Guinotte
59f-60w-61s†	Adv. French Composition..... (3 cred.; jr., sr.*; prereq., 20 or 53-54-55)	II	F	113F	Mr. Sirich
		III	F	4F	Mr. Coburn
		VI	F	125F	Miss Guinotte

* Open without petition to sophomores who have the prerequisites and who satisfy the requirements.

† 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 1923-24.

†† Courses in conversation may be taken only when accompanied by the corresponding courses in composition. Courses in composition may be taken separately.

No.	Title	Hour	Day	Bldg.	Instructor
62f	Practical French Phonetics..... (3 cred.; jr., sr.*; prereq., 20 or 50-51-52 and 53-54-55)	VIII	MWF	4F	Mr. Constans
80f-81w-82s†	French Lit.: 19th Century..... (9 cred.; jr., sr.*; prereq., 21-22-23 or 24-25)	IV VII	MWF	101F 114F	Mr. Barton Mr. Sirich
100w-101s†	French Oral Diction..... (6 cred.; jr., sr., grad.; prereq., 62)	VIII	MWF	4F	Mr. Constans
103f-104w-105s†	French Syntax and Comp..... (3 cred.; jr., sr., grad.; prereq., 59-60-61)	VI	F	203F	Mr. Barton
115f-116w-117s†	French Lit.: 17th Century..... (9 cred.; jr., sr., grad.; prereq., 21-22-23, or 24-25)	III	TThS	201F	Mr. Searles
118f-119w-120s†	French Lit.: 18th Century..... (9 cred.; jr., sr., grad.; prereq., 21-22-23, or 24-25)	III	MWF	113F	Mr. Parker
121-122-123	French Lit.: 16th Century..... (9 cred.; jr., sr., grad.; prereq., 80-81-82, or 115-116-117 or 118-119-120)	<i>Not offered in 1923-24</i>			
141f-142w-143s†	Realistic Novel: 19th Century... (6 cred.; jr., sr., grad.; prereq., 80-81-82)	VII	TTh	203F	Mr. LeCompte
150f-151w-152s†	French Dramatic Lit..... (6 cred.; jr., sr., grad.; prereq., 21-22-23 or 24-25)	III	TTh	203F	Mr. Olmsted
153-154-155	French Lyric Poetry..... (6 cred.; jr., sr., grad.; prereq., 20-21-22, or 24-25)	<i>Not offered in 1923-24</i>			
159-160-161†	French Criticism..... (6 cred.; jr., sr., grad.; prereq., 80-81-82)	<i>Not offered in 1923-24</i>			
171-172-173†	Explication de Textes..... (6 cred.; sr., grad.; prereq., 56-57-58, 59-60-61, and 115-116-117 or 118-119-120)	<i>Not offered in 1923-24</i>			
174-175-176†	Lectures in French..... (6 cred.; jr., sr., grad.; prereq., 50-51-52, 53-54-55 (or 20); and 80-81-82)	<i>Not offered in 1923-24</i>			
191-192-193†	Research Meth. and Material.... (3 cred.; sr., grad.; prereq., consent of instructor)	<i>Not offered in 1923-24</i>			

ITALIAN

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w†	Beginning Italian..... (10 cred.; soph., jr., sr.; no prereq.)	II	MWThFS	4F	Miss Nissen
80s	Italian Survey: Renaissance Period..... (5 cred.; jr., sr.; prereq., 1-2)	<i>Not offered in 1923-24</i>			

* Open without petition to sophomores who have the prerequisites and who satisfy the requirements.

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

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
81s	Italian Survey: Romantic Period (5 cred.; jr., sr.; prereq., 1-2)	II	MWThFS	4F	Miss Nissen
159f-160w-161s†	Dante (6 cred.; jr., sr., grad.; prereq., 80 or 81)	IV	MW	4F	Mr. Malone
162f-163w-164s†	Dante (in English) (3 cred.; jr., sr., grad.; prereq., 4 cred. in Eng. besides A-B-C, or Fr. 21-22-23. Req. of stu- dents taking 159-160-161)	IV	F	4F	Mr. Malone

SPANISH

No.	Title	Hour	Day	Bldg.	Instructor
(1s)-2f†	Beginning Spanish (See 1f-2w)	I	TWThFS	201F	Ar
1f-2w†	Beginning Spanish (10 cred.; all; no prereq.)	VII	MTWThF	201F	Ar
		I	TWThFS	15F	Ar
		II	MWThFS	226F	Ar
		III	MTThFS	227F	Ar
		IV	MTWFS	226F	Ar
		VI	MTWThF	201F	Ar
		VII	MTWThF	226F	Ar
1w-2s†	Beginning Spanish (See 1f-2w)	VIII	MTWThF	202F	Ar
		II	MWThFS	202F	Ar
		III	MTThFS	212F(w)	Ar
		VII	MTWThF	2F(s)	Ar
		VII	MTWThF	227F	Ar
1s-(2f)	Beginning Spanish (See 1f-2w)	II	MWThFS	201F	Ar
(3s)-4f	Intermediate Spanish (See 3f-4w)	VI	MTWThF	109F	Ar
		I	TWThFS	301F	Ar
		II	MWThFS	202F	Ar
		III	MTThFS	25F	Ar
		IV	MTWFS	202F	Ar
		VI	MTWThF	227F	Ar
3f-4w	Intermediate Spanish (10 cred.; all; prereq., 1-2 or 2 yrs. high school Spanish)	II	MWThFS	201F	Ar
		III	MTThFS	202F	Ar
		VI	MTWThF	322F	Ar
3w-4s	Intermediate Spanish (See 3f-4w)	I	TWThFS	201F	Ar
3s-(4f)	Intermediate Spanish (See 3f-4w)	VII	MTWThF	201F	Ar
		I	TWThFS	226F	Ar
		II	MWThFS	226F	Ar
		III	MTThFS	227F	Ar
		IV	MTWFS	226F	Ar
		VI	MTWThF	201F	Ar
		VII	MTWThF	305F	Ar
		VIII	MTWThF	202F	Ar
20s‡	Oral and Written Spanish (5 cred.; all; prereq., 3 or 3 yrs. high school Spanish).....	III	MTThFS	202F	Ar
		VII	MTWThF	226F	Ar
50f-51w-52s†	Spanish Conversation†† (3 cred.; jr., sr.*; prereq., 3-4 or 4 yrs. high school Spanish)	II	MW	213F	Mr. Torres
53f-54w-55s†	Spanish Composition (3 cred.; jr., sr.*; prereq., 3-4 or 4 yrs. high school Spanish)	II	F	213F	Mr. Torres

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

() Numbers in parentheses do not refer to the year 1923-24.

‡ 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 51-52-53 and 53-54-55.

†† Courses in conversation may be taken only when accompanied by the corresponding courses in composition. Courses in composition may be taken separately.

No.	Title	Hour	Day	Bldg.	Instructor
56f-57w-58s†	Adv. Spanish Conversation††... (3 cred.; jr., sr.*; prereq., 20 or 50-51-52)	VI	MW	4F	Mr. Coburn
59f-60w-61s†	Adv. Spanish Composition..... (3 cred.; jr., sr.*; prereq., 20 or 53-54-55)	VI	F	4F	Mr. Coburn
62-63-64†	<i>Practical Spanish Phonetics</i> (6 cred.; jr., sr.*; prereq., 65-66-67, and 20, or 50-51-52 and 53-54-55)	<i>Not offered in 1923-24</i>			
65f-66w-67s†	Survey of Spanish Lit..... (9 cred.; jr., sr.*; prereq., 3-4)	II	TThS	101F	Mr. Gillet
68w-69s†	Survey of Spanish Lit..... (10 cred.; jr., sr.*; prereq., 3-4)	VI	MTWThF	227F	Mr. Torres
70-71-72†	<i>So. Am. Life and Institutions</i> ... (6 cred.; jr., sr.*; prereq., 20, or 50-51-52 and 53-54-55)	<i>Not offered in 1923-24</i>			
73-74-75†	<i>Span. Commer. Correspond</i> (3 cred.; jr., sr.*; prereq., 20 or 53-54-55)	<i>Not offered in 1923-24</i>			
80f-81w-82s†	Spanish Lit.: 19th Century..... (9 cred.; jr., sr.*; prereq., 65-66-67, or 68-69)	IV	MWF	227F	Mr. Torres
83f-84w-85s†	<i>Spanish American Lit</i> (6 cred.; jr., sr.*; prereq., 65-66-67 or 68-69 or 20 or 50-51-52 and 53-54-55)	VII	MW	4F	Mr. Torres
100-101-102†	<i>Spanish Oral Diction</i> (6 cred.; jr., sr., grad.; prereq., 56-57-58)	<i>Not offered in 1923-24</i>			
103f-104w-105s†	Spanish Syntax (3 cred.; jr., sr., grad.; prereq., 59-60-61)	VIII	W	203F	Mr. Torres
115-116-117†	<i>Spanish Lit.: 17th Century</i> (6 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	<i>Not offered in 1923-24</i>			
141-142-143†	<i>Spanish Novel</i> (6 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	<i>Not offered in 1923-24</i>			
150-151-152†	<i>Spanish Dramatic Lit</i> (6 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	<i>Not offered in 1923-24</i>			
156-157-158†	<i>Spanish Lit.: 16th Century</i> (6 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	<i>Not offered in 1923-24</i>			
159f-160w-161s†	Cervantes (6 cred.; jr., sr., grad.; prereq., 65-66-67, or 68-69)	IV	TS	227F	Mr. Gillet
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

† 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.

* Open without petition to sophomores who have the prerequisites and who satisfy the requirements.

SCANDINAVIAN

Professors GISLE C. J. BOTHNE, Head; ANDREW A. STOMBERG; Scholar ALMA GJERTSEN.

REQUIREMENTS OF THE DEPARTMENT

For a teacher's certificate.—Major recommendation: eighteen credits in addition to beginning, intermediate, and advanced.

Minor recommendation: nine credits in addition to beginning, intermediate, and advanced.

No.	Title	Hour	Day	Bldg.	Instructor
1f-2w	Beginning Norwegian	I	TWThFS	206F	Mr. Bothne
	(10 cred.; all; no prereq.)				
3s	Intermediate Norwegian	I	TWThFS	206F	Mr. Bothne
	(5 cred.; all; prereq., 1-2, or 1 yr. high school)				
4f-5w	Adv. Norwegian (Survey)	III	MTThFS	206F	Mr. Bothne
	(10 cred.; soph., jr., sr.; prereq., 1-2-3 or 2 yrs. high school)				
7f-8w	Beginning Swedish	II	MWThFS	206F	Mr. Stomberg
	(10 cred.; all; no prereq.)				
9s	Intermediate Swedish	II	MWThFS	206F	Mr. Stomberg
	(5 cred.; all; prereq., 7-8 or 1 yr. high school)				
10f-11w	Adv. Swedish	I	TWThFS	110F	Mr. Stomberg
	(10 cred.; soph., jr., sr.; prereq., 7-8-9 or 2 yrs. high school)				
12s	Ancient and Medieval Scandinavian History	I	TWThFS	110F	Mr. Stomberg
	(5 cred.; soph., jr., sr.; prereq., 10-11, or 4-5, or Hist. 1-2)				
45s	Scandinavian Mythology	IV	MWF	206F	Mr. Stomberg
	(3 cred.; jr., sr., grad.*; prereq., none)				
101f-102w-103s	Modern Norwegian Lit.	II	TThS	110F	Mr. Bothne
	(9 cred.; jr., sr., grad.; prereq., 4-5)				
104f-105w	Mod. Scand. History	IV	MWF	206F	Mr. Stomberg
	(6 cred.; jr., sr., grad.; prereq., 10-11-12, or 4-5, or 15 cred. in hist.)				
107f-108w-109s	Modern Swedish Lit.	VI	MWF	206F	Mr. Stomberg
	(9 cred.; jr., sr., grad.; prereq., 10-11-12)				
110w	Ibsen	IV	T	206F	
	(3 cred.; sr., grad.; prereq., 101-102-103)	VI	TTh	206F	Mr. Bothne
111f-112w-113s	Old Norse (Icelandic)	VI	WF	217F	Mr. Bothne
	(6 cred.; sr., grad.; prereq., consent of instructor)				
114f	Strindberg	Ar	Ar	Ar	Mr. Stomberg
	(3 cred.; sr., grad.; prereq., 107-108-109)				

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
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 1923-24			
134-135	The Landsmaal Movement..... (6 cred.; sr., grad.; prereq., 101-102-103, or 130-131-132)	Not offered in 1923-24			
136	Björnson (3 cred.; sr., grad.; prereq., 101-102-103, or 130-131-132)	Not offered in 1923-24			

SOCIOLOGY AND SOCIAL WORK

Professors F. STUART CHAPIN, Chairman; LUTHER L. BERNARD; Associate Professor MANUEL C. ELMER; Assistant Professors ROSS L. FINNEY, GUSTAV A. LUNDQUIST, MILDRED D. MUDGETT; Lecturers FRANK J. BRUNO, ALMA C. HAAPT, WILLIAM HODSON, ELIZABETH MUENZINGER, EMIL G. STEGER; Instructors C. RUSSELL HOFFER, GEORGE A. LUNDBERG, JOHN F. MARKEY, HAROLD A. PHELPS, HARRY B. SELL; Scholars ELIZABETH C. HAYES, ERNEST J. MEILL.

No.	Title	Hour	Day	Bldg.	Instructor
if	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, 5	VI	MTWThF	9F	
	6	VII	MTWThF	5F	
	7 (Farm, 3 cred.)	IV	MWF	105En(F)	Mr. Lundquist
rw	Introd. to Sociology..... (See if)				
	Sec. 1	I	TWThFS	9F	Mr. Bernard
	2	III	MTThFS	5F	
	3	IV	MTWFS	9F	
	4, 5	VI	MTWThF	9F	
	6	VII	MTWThF	9F	
	7 (Farm, 3 cred.)	IV	MWF	105En(F)	Mr. Lundquist
rs	Introd. to Sociology..... (See if)				Mr. Bernard
	Sec. 1	I	TWThFS	9F	
	2	II	MWThFS	5F	
	3	III	MTThFS	9F	
	4	IV	MTWFS	9F	
	5, 6	VI	MTWThF	9F	
	7	VII	MTWThF	5F	
	8	VIII	MTWThF	9F	
	9 (Farm, 3 cred.)	IV	MWF	105En(F)	Mr. Lundquist

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
6f,w,s	Modern Social Reform Move- ments (3 cred.; soph., jr., sr.; pre- req., 1)				
	Sec. 1	II	TThS	5F(f,w) 113F(s)	Mr. Chapin
	2	IV	MWF	5F	
	3	VI	MWF	6F	
14f,w	Rural Sociology (3 cred.; soph., jr., sr.; pre- req., 1)				
	Sec. 1	III	TThS	9F	Mr. Hoffer
	2	V	MWF	9F	
	3	VI	MWF	114F	
	4 (Farm)	IV	TThS	105En(F)	Mr. Luncquist
14s	Rural Sociology (See 14f,w)				
	Sec. 1	III	TThS	25F	Mr. Hoffer
	2	V	MWF	9F	
	3	VI	MWF	114F	
45f	Social Statistics (5 cred.; soph., jr., sr.; pre- req., 1)	VII	MTWThF	9F	Mr. Chapin
51f,w,s	The Occurrence of the Socially Inadequate (3 cred.; jr., sr.; prereq., 10 cred. in soc.; or Soc. 1 and 10 cred. in soc. sci. or psy.)	I	MWF	5F	Mr. Bruno
52f,w,s	Elem. Case Work..... (3 cred.; jr., sr.; prereq., 51)	I	TThS	5F	Mr. Bruno
53f,w,s	Elem. of Criminology..... (3 cred.; jr., sr.; prereq., same as for 51)	III	MWF	209½F	Mr. Elmer
55w	Housing Problems (3 cred.; jr., sr.; prereq., same as for 51)	I	MWF	25F	Mr. Steger
60f,w	Child Welfare (3 cred.; jr., sr.; prereq., 51 and 52)	II	MWF	9F	Mr. Hodson
70s	Group Work in the Community.. (3 cred.; jr., sr.; prereq., 51 and 52)	VIII, IX	T	5F	Ar
90,91,92f	Elementary Field Work..... (2, 4, 6 cred.; jr., sr.; prereq., 51)				
	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		
90,91,92w	Elementary Field Work..... (See 90,91,92f)				
	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		

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Bldg.	Instructor
90,91,92s	Elementary Field Work..... (See 90,91,92f)				
	Sec. 1	VI, VII, VIII	MW		Mrs. Mudgett
	2	VI, VII, VIII	WF		
	3	II, III, IV	TTh		
	4	VI, VII, VIII	TTh		
97f-98w-99s	Adv. Field Work..... (3, 6, or 9 cred.; jr., sr.; prereq., 90 and 91)	Ar		Ar Ar	Mrs. Mudgett
100f	Social Psychology (3 cred.; primarily for sociology students; jr., sr., grad.; pre- req., Soc. 1, Psy. 1-2, and 11 cred. in soc. sci., educ., phil., and psy.)	II	TThS	9F	Mr. Bernard
101W	Social Organization (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. Bernard
102S	Social Control (3 cred.; jr., sr., grad.; prereq., same as for 101)	II	TThS	9F	Mr. Bernard
103	<i>Sociology of Conflict</i> (3 cred.; jr., sr., grad.; prereq., same as for 101)	<i>Not offered in 1923-24</i>			
110W	Community Organization and So- cial Work in Small Towns and Country (2 cred.; jr., sr., grad.; prereq., same as for 101)	VIII, IX	Th	5F	Mr. Bernard
112f	The Rural Social Survey..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	VIII	MWF	9F	Ar
114S	Rural Social Institutions..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	I	MWF	105En(F)	Mr. Lundquist
115f	The Rural Church as a Social Institution (3 cred.; jr., sr., grad.; prereq., same as for 101)	VII	MWF	2F	Ar
119f	The Family (3 cred.; jr., sr., grad.; prereq., same as for 101)	III	TThS	15F	Mr. Elmer
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	5F	Mr. Chapin
122W-123S	Methods of Social Investigation.. (6 cred.; jr., sr., grad.; prereq., same as for 101 but including 45 or its equivalent)	VIII	MWF	15F	Mr. Elmer

PROGRAM

No.	Title	Hour	Day	Bldg.	Instructor
126-127	<i>Settlement and Community Center Work</i>	<i>Not offered in 1923-24</i>			
	(4 cred.; sr., grad.; prereq., consent of director)				
128s	Principles of Administration Applied to Social Work.....	VIII, IX	Th	5F	Mr. Steger
	(2 cred.; jr., sr., grad.; prereq., same as for 101)				
130s	Advanced Case Work.....	VIII, IX	T	15F	Mr. Bruno
	(2 cred.; sr., grad.; prereq., same as for 101 incl. 51 and 52)				
132	<i>Juvenile Courts and Probation..</i>	<i>Not offered in 1923-24</i>			
	(2 cred.; jr., sr., grad.; prereq., 51, 52, 53)				
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	Th and Ar	9F	Mrs. Luening
140w	History of Social Theory..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	II	MWF	5F	Mr. Bernard
141s	Contemp. Social Theory..... (3 cred.; jr., sr., grad.; prereq., same as for 101)	II	MWF	9F	Mr. Bernard
152	<i>Seminar: Problems of Institutional Administration</i>	<i>Not offered in 1923-24</i>			
	(2 cred.; sr., grad.; prereq., consent of director)				
180f-181w-182s	Seminar in Educ. Sociology..... (6 cred.; jr., sr., grad.; prereq., 1, 6, 120)	IX, X	M	Ed	Mr. Finney

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