

The Bulletin of the
UNIVERSITY of MINNESOTA

The Graduate School
Announcement of Graduate Work in Dentistry,
Medicine, Pharmaceutical Chemistry, and
Public Health in the Medical School
and the Mayo Foundation
1940-1942



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UNIVERSITY CALENDAR

1940-41

1940

September	30	October 12	Registration of graduate students
September	30	Monday	Fall quarter classes begin, 8:30 a.m. ¹
October	10	Thursday	Examinations in German and French
November	7	Thursday	Last day for filing theses for the Ph.D. degree for the fall quarter
November	21	Thursday	Last day for filing Master's theses for the fall quarter
November	23	Saturday	Last day for filing title of Master's theses for the spring quarter
December	19	Thursday	Commencement Convocation Fall quarter ends, 6:00 p.m.

1941

January	6	Monday	Winter quarter classes begin, 8:30 a.m. ¹
January	16	Thursday	Examinations in German and French
February	6	Thursday	Last day for filing theses for the Ph.D. degree for the fall quarter
February	20	Thursday	Last day for filing Master's theses for the winter quarter
March	20	Thursday	Commencement Convocation Winter quarter ends, 6:00 p.m.
March	31	Monday	Spring quarter classes begin, 8:30 a.m. ¹
April	10	Thursday	Examinations in German and French
May	3	Saturday	Last day for filing theses for the Ph.D. degree for the spring quarter
May	17	Saturday	Last day for filing Master's theses for the spring quarter
June	13	Friday	Spring quarter closes, 6:00 p.m.
June	14	Saturday	Sixty-ninth annual commencement
June	18	Wednesday	First term Summer Session classes begin, 8:00 a.m.
July	3	Thursday	Last day for filing theses for first term of Summer Session
July	24	Thursday	Commencement Convocation
July	25	Friday	First term closes
July	28	Monday	Second term classes begin, 8:00 a.m.
August	29	Friday	Second term closes

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

GRADUATE WORK IN MEDICINE

ORGANIZATION

The graduate work in dentistry, medicine, pharmaceutical chemistry, and public health in the Medical School and the Mayo Foundation is a part of the work of the Graduate School of the University. Its management is entrusted by the Board of Regents to a committee composed as follows:

The President of the University, Guy Stanton Ford, Ph.D., Litt.D., LL.D., L.H.D.

The Dean of the Graduate School, Theodore C. Blegen, Ph.D., L.H.D.

The Dean of the Medical Sciences, Harold S. Diehl, M.A., M.D., D.Sc.

The Director Emeritus of the Mayo Foundation, Louis B. Wilson, M.D., D.Sc.

The Director of the Mayo Foundation, Donald C. Balfour, M.D., LL.D.

Clarence M. Jackson, M.S., M.D., LL.D., of the Medical School

Elexious T. Bell, B.S., M.D., of the Medical School

Irvine McQuarrie, M.D., Ph.D., of the Medical School

Owen H. Wangensteen, M.D., Ph.D., of the Medical School

William F. Braasch, B.S., M.D., of the Mayo Foundation

Melvin S. Henderson, M.D., of the Mayo Foundation

Russell M. Wilder, M.D., Ph.D., of the Mayo Foundation

Arlie R. Barnes, M.A., M.D., M.S. in Med., of the Mayo Foundation

Frank C. Mann, M.D., M.A., LL.D., of the Mayo Foundation

GENERAL INFORMATION

The graduate work in medicine here outlined is not intended for those seeking brief practitioners', review, or demonstration courses. Opportunities of this kind are to be found in the Bulletin of the Center for Continuation Study, and in special announcements from the Mayo Foundation.

Purpose.—The object of this graduate work in medicine is the training of fully equipped and properly certified specialists for medical practice, and of investigators and teachers in the various branches of medicine.

Standards.—In graduate work in medicine the University of Minnesota, in order to secure results and safeguard scientific standards, adopted those general policies and methods already indicated by the established graduate work in other sciences. The development of such work has depended upon the maintenance of real standards of admission; the supply of qualified advisers to graduate students; the provision of adequate laboratory, clinical, and library equipment; and the institution of rigid tests in courses and examinations in residence, with evidence of the power of productive research on the part of the graduate student as demonstrated in a thesis.

In clinical branches the degree of master of science is intended primarily to indicate scientific proficiency. To be recommended for this degree the candidate must have given evidence that he is competent to begin the practice of a clinical specialty in a scientific manner without the supervision of others. The doctorate of philosophy in clinical subjects will be given only to those men who have not only given evidence of proficiency at least equal to that required for the Master's degree, but who in addition present evidence of well-marked ability to advance medical science through original investigation.

Laboratory equipment.—The laboratory equipment for the prosecution of graduate work in medicine is located in Minneapolis, St. Paul, and Rochester. The laboratory branches are well housed in excellently equipped buildings on the campus at Minneapolis and at Rochester. The university museums of anatomy, pathology, and surgery contain a large number of specimens available for teaching purposes.

Clinical equipment.—The University owns and controls Elliot Memorial Hospital with its service building, the Memorial Cancer Institute, the Todd Memorial Hospital, the William Henry Eustis Hospital for Crippled Children, and the Students' Health Service.

The State Hospital for the Crippled and Deformed, located at Phalen Park, St. Paul, offers the University full participation in its clinical opportunities. The city hospitals of Minneapolis and the Ancker Hospital of St. Paul are available for graduate work.

In Rochester, Colonial, Curie, Kahler, St. Mary's, and Worrall hospitals and the Rochester Hospital for the Insane are available. All patients are examined clinically in the Mayo Clinic Building.

Services are so arranged that a fellow may find time in addition to his clinical responsibilities to carry forward consistently some research problem. The Institute of Experimental Medicine provides adequate facilities for experimental pathology, physiology, and surgery. Seminars and conferences in the several special groups, such as the group seminars, clinical-pathological conferences, Research Club, and others, are conducted to afford opportunities for fellows to present interesting

clinical and research material, correlating knowledge of the various phases of the subject. While the presentations may be clinical, the relationship of the fundamental fields to the clinical problem is always emphasized.

The working museum contains more than 500,000 pathological specimens.

Arrangements have been made whereby fellows or other graduate students in medicine may divide their time, part of their work being taken in the Mayo Foundation at Rochester and part in the Medical School at Minneapolis and St. Paul.

Libraries.—Besides the University Library and the departmental libraries, there are at the disposal of the student the general medical and biological libraries in the University Library, and the collections of the Hennepin County and Ramsey County Medical Societies. The medical library of the Mayo Foundation occupies one floor of the clinic building with ample provision for a general reading room and private rooms for special studies. Current issues and complete files of the most important medical periodicals are available in both Minneapolis and Rochester.

Methods of study.—Graduate work in medicine is maintained on a university basis. The graduate student is encouraged to study independently rather than to receive formal instruction by undergraduate methods. The student's work is graded quarterly by his immediate chief. Work which receives a grade below B will not be counted for graduate credit in the major field, nor if below C, in the minor. Students with unsatisfactory records will not be permitted to continue.

Admission.—All graduate students are admitted by the dean of the Graduate School. Entrance upon work for the advanced degrees of master of science (M.S.) or doctor of philosophy (Ph.D.) in the clinical departments of medicine is limited to those who have: (a) the Bachelor's degree in arts or science or its equivalent;* (b) the degree of doctor of medicine from an acceptable institution (i.e., one approved by the American Medical Association); and (c) one year's experience as an intern in an approved hospital or as an assistant in a laboratory of an acceptable medical school. In the fundamental laboratory sciences (anatomy, bacteriology, biochemistry, biophysics, pathology, pharmacology, and physiology) properly prepared students may be admitted without (b) and (c) as candidates for the Master's degree (M.A. or M.S.) or the Doctor's degree (Ph.D.).

In the selection of graduate medical students, and in making appointments to fellowships for medical graduate work, preference will be given, other things being equal, to candidates who have more extensive training in the fundamental medical sciences (i.e., anatomy, pathology, physiology, etc.) through which they approach the specialty which they wish to take as a major subject. Personal interviews with applicants are desirable.

Registration and number of students.—All graduate students entering upon graduate work in medicine will register with the dean of the Graduate School. Fellows who begin their residence in Rochester may fulfill the preliminary requirements by registering there with the director of the Mayo Foundation. The number of graduate students who will be registered for work is determined by the clinical opportunities and laboratory facilities available.

Tuition.—The tuition fee at the Medical School for the graduate work in clinical medicine for those not holders of fellowships or otherwise entitled to exemption is \$75 per quarter for residents of Minnesota and \$125 per quarter for nonresidents. For students in the fundamental laboratory branches, the tuition

* Students who have completed at least three years of premedical collegiate work and the medical course, making an equivalent of the seven years combined Arts-Medicine Course at the University of Minnesota, may be eligible for admission as graduate students.

fee is \$20 per quarter for residents of Minnesota and \$40 per quarter for non-residents. Extra fees may be charged to cover the cost of materials and supplies for exceptional laboratory experimentation. The special fees for graduate work in the Summer Session are stated in the separate Summer Session Bulletin. Fellows, scholars, and members of the teaching or scientific staff giving 25 per cent or more of full-time service are exempt from tuition.

Fellowships and assistantships.—Medical fellowships in the clinical departments of the Medical School are now established as follows: in anesthesiology, 4; in internal medicine (including nervous and mental diseases), 11; in obstetrics, 6; in ophthalmology and otolaryngology, 4; in orthopedic surgery, 1; in pediatrics, 4; in radiology, 3; and in surgery, 7. In addition, there are several clinical fellowships in the Minneapolis General Hospital. They include 4 in medicine, 2 in ophthalmology and otolaryngology, 1 in pediatrics, and 5 in surgery. They carry a stipend of \$600, \$600, and \$900, for the three successive years. These medical fellows are required to devote their entire time (excepting an annual vacation of three weeks) to graduate work, including a small amount of teaching. There are 3 research fellowships available in the Cancer Institute at the University Hospital, and 1 to 4 fellowships in dental research.

Similar medical fellowships and assistantships have been established in the fundamental laboratory departments of the Medical School as follows: in anatomy (including embryology and histology), 7; in bacteriology, 6; in pharmacology, 2; and in physiology and physiological chemistry, 8. These fellowships and assistantships carry a stipend of \$800 per year on a twelve-month basis. There are 4 fellowships in pathology which carry a stipend of \$700 the first year, \$900 the second, and \$1,100 the third year. In some cases the assistantships are for the school year only (September to June), with proportionately smaller stipend. They require a small amount of teaching, the remainder of the time being devoted to graduate work leading to advanced degrees.

In addition, there are at Minneapolis 5 fellowships without stipend, carrying free tuition with opportunity for graduate study in any of the clinical departments.

The attention of prospective medical graduate students is also called to the Shevlin Fellowship in Medicine yielding \$500 and tuition. This fellowship permits work in any department of medicine, preference being given to the laboratory sciences. Applications should be in the hands of the dean of the Graduate School before February 1.

The Mayo Foundation carries the following basic and clinical fellowships: in anesthesiology, 10; in bacteriology, 3; in biophysics, 2; in chemistry, 2; in dermatology, 7; in internal medicine, 90; in neurologic surgery, 6; in neurology and psychiatry, 10; in nutrition, 2; in obstetrics and gynecology, 10; in ophthalmology, 8; in orthopedic surgery, 14; in parasitology, 2; in pathology, 15; in pediatrics, 11; in physical medicine, 3; in physiology, 2; in plastic surgery, 3; in proctology, 4; in radiology, 11; in rhinology and otolaryngology, 8; in surgery, 100; and in urology, 12. The fellowships carry stipends of \$900 each year on a twelve-month basis with an annual vacation of two weeks.

Nominations for fellowships on the Mayo Foundation are made each quarter, beginning with October 1, for residence to begin six months later or as vacancies occur. Each applicant is notified of his nomination immediately after it is made and his acceptance or rejection thereof requested. In the Medical School appointments are made as vacancies occur.

Applicants for fellowships are expected to read and speak English fluently.

Fellows must pass a satisfactory physical examination including X ray of chest after nomination and before being finally accepted.

All appointments are made for one year and are renewable annually for a period of three years upon the basis of satisfactory progress in the work pursued. Requests for blanks for application for fellowships and assistantships should be addressed to the Dean of the Graduate School, University of Minnesota, Minneapolis, Minnesota, or for fellowships on the Mayo Foundation to the Director of the Mayo Foundation, Rochester, Minnesota.

Special assignments.—Special students, such as fellows from other universities or foundations, officers of the medical corps of the United States Army, Navy, or Public Health Service, and others, may be accepted at Rochester in laboratory and clinical branches for shorter periods. The number is necessarily limited in order not to interfere with the work of the resident fellows. Correspondence concerning this should be addressed to the Director of the Mayo Foundation, Rochester, Minnesota.

Fellows who have satisfactorily completed three years of residence in the Mayo Foundation may be awarded assistantships in the Mayo Clinic.

Several of the departments in the Medical School (including Anatomy, Pathology, and Physiology) have other paid assistantships which may furnish means of self-support while the holder is pursuing graduate work. For further information, address the Dean of the Medical School, University of Minnesota.

Clinical and class work for visiting or resident practitioners.—In order that there may be no misunderstanding it should be stated that the graduate work for a limited number, described above, in no way alters the arrangements offered in Minneapolis by the Medical School for practitioners who wish to attend such undergraduate medical classes as may be of profit to them without interfering with the regular work of the staff and students of the Medical School. Class visitors are charged the same fees as students regularly registered for credit. Inquiries concerning these opportunities should be addressed to the Dean of the Medical School, 127 Medical Sciences Building, University of Minnesota.

Nor do the fellowships in the Mayo Foundation change or modify the opportunities for observation extended visiting physicians and surgeons by the Mayo Clinic in Rochester. Inquiries concerning these should be addressed to the Director of the Mayo Foundation, Rochester, Minnesota.

REQUIREMENTS FOR ADVANCED DEGREES IN MEDICINE

1. **Licensure.**—Graduate students working in any field of clinical medicine must be licensed to practice in Minnesota within six months after beginning their work in either the Medical School or the Mayo Foundation.

2. **Residence.**—Upon entrance to the Graduate School, the candidate, with the approval of the dean, will select his adviser in the field of his major work. With the approval of his adviser and the dean, he will outline a study program for the year and if possible for the period of residence.

For the Master's degree (M.S.) in clinical subjects, two or three years are required. For the Master's degree without special designation in the laboratory sciences a minimum of one year (three quarters) of residence is required. For the Master's degree *with field named* (M.S. in Path. or Rad.) in pathology or radiology, three years are required. The longer term of three years is required in all cases where the Master's degree is granted in clinical subjects *with field named*. This implies clinical proficiency in the special field. For the ordinary Master's degree *without special designation*, the length of residence in clinical

fields may be reduced to two years. This rule should be noted also when the M.S. is taken in connection with the preliminary examination for the Ph.D. in clinical subjects. For the Doctor's degree (Ph.D.) at least three full years of successful graduate study are required, including certain special requirements noted below.

3. **Language requirements.**—A reading knowledge of French and German in the field of the candidate's major must be certified by the professors in charge of these languages at least one year before the Doctor's degree is conferred, and before admission to the preliminary examination. For the Master's degree in the laboratory sciences, a reading knowledge of only one foreign language is required, which must be certified before the end of the second quarter of the year in which the candidate expects to present himself for the degree. For the Master's degree (M.S.) in the clinical branches, the language certificate is optional. A repetition of this examination because of failure is considered a special examination for which a regular fee of \$5 is charged.

4. **Study program.**—The study program for the entire three years should be submitted at the beginning of the first year and must be submitted before beginning the second year. A blank for filing this three-year program may be obtained in the Graduate School office. This program requires approval by the student's adviser, by the dean, and by the Medical Group Committee. Sufficient research work to train the fellow properly in the principles and methods of scientific investigation and to form the basis of an acceptable thesis is required.

5. **Minor.**—With the approval of his adviser and the dean of the Graduate School, each student upon entrance selects a minor, which must be logically related to his major subject, and (for the Doctor's degree) must be completed by the end of the second year. The minor is preferably a laboratory subject in some other department, and should amount to not less than one sixth of the total work for the degree. *At least one sixth* of the work offered for the degree in a clinical subject should consist of graduate work in those fundamental laboratory branches, which will serve as a basis for the proposed clinical specialization. This fundamental work should be concentrated in the first part of the course so far as possible. The final examination in the minor for the Doctor's degree is included in the preliminary examination, as noted below. For the Master's degree no special examination is required in the minor, aside from the usual course examinations.

Familiarity with those phases of the medical sciences essential to proficiency in the major specialty will be required.

6. **Major.**—The major is that field in which the student desires to specialize. Together with the thesis, the major work should occupy *at least two thirds* of the total work for the degree.

7. **Certificate of proficiency.**—Each candidate must have a certificate of proficiency signed by all members of the faculty with whom he has served, stating that in their opinion he is competent to begin the practice of his major field in a scientific manner without the supervision of others.

8. **Admission to candidacy.**—For the Master's degree without major designation, students who have met the language requirement, whose daily work in residence as indicated by quarterly grades has been satisfactory, and whose thesis subject has been properly approved, are admitted to candidacy at the end of the second quarter. For the Doctor's degree, the student is required to pass a preliminary examination, as noted below, before admission to candidacy.

9. **Preliminary examination.**—At least seven months before the Doctor's degree is conferred, an oral preliminary examination (not to exceed three hours) is given by a committee of at least 6 members appointed by the dean. Certificates

of proficiency in French and German, completion of the minor work, and the recommendation of the major department shall be required before admission to this examination. The examination is in addition to the usual course examinations. It shall cover the graduate work previously taken by the student, *and may include any work fundamental thereto. The field of the candidate's specialization and the thesis are reserved for the final examination.* Only after the successful completion of this examination may the student be enrolled as a candidate for the Doctor's degree. To pass a candidate for the doctoral degree in the preliminary examination there must be a two-thirds affirmative vote of the examining committee which shall include a minimum of four affirmative votes. Students failing to pass this preliminary examination shall not be re-examined until at least one quarter has passed.

10. **Thesis.**—Each candidate for an advanced degree (Master's or Doctor's) must submit a thesis. For the Master's degree the title of the thesis should be filed with the dean of the Graduate School at least six months prior to candidacy. A blank for reporting thesis title may be obtained in the Graduate School office. The subject must be approved by the adviser and by the Medical Graduate Committee. The topic should be within the field of the major. The thesis must be written in acceptable English. It must reflect ability to work independently and must give evidence of power to think independently both in perceiving problems and in making satisfactory progress toward their solution. Familiarity with the bibliography of the special field and correct citation of authorities are expected.

No material which has been published prior to its approval by the thesis committee may be used to meet the thesis requirement. Candidates contemplating publication of any material which they expect to present for a thesis should therefore arrange through the Graduate School office to obtain such approval.

The Master's thesis must be typewritten in quadruplicate, two copies on a special form of linen stock, the other two as carbon copies. Samples of the paper required should be examined in the dean's office. The four copies of the thesis must be filed in the dean's office not later than four weeks before graduation. The thesis will be examined by a committee appointed by the dean on recommendation of the Medical Graduate Committee. Unanimous approval by the thesis committee is necessary for the acceptance of the thesis. If the thesis is accepted, the candidate must deposit with the registrar, at least two weeks before commencement, the sum of \$1.50 for binding two copies of the thesis, which will be cataloged and deposited in the University Library.

For the Doctor's degree, a more elaborate thesis is required. The thesis must give evidence of originality and power of independent investigation. It must embody results of research forming a real contribution to knowledge and must exhibit a mastery of the literature of the subject and a familiarity with the sources of knowledge. The matter must be presented with a fair degree of literary skill.

The thesis must be typewritten in quadruplicate, to facilitate reading by the thesis committee. The four copies, certified by the adviser as complete, must be registered in the dean's office and distributed to the thesis committee not later than six weeks before graduation. Unanimous approval by the thesis committee will be necessary for the acceptance of the thesis. Two copies are to be bound and deposited in the Graduate School office.

Each candidate for the Doctor's degree shall submit with his completed thesis a summary of about ten pages, acceptable to his adviser, embodying the principal

findings of the research, and pay to the Graduate School the sum of \$25 before the candidate be finally recommended for the degree. Such summaries will be published in appropriate volumes, and should therefore be carefully edited. If, prior to publication of the summaries, the candidate publishes his thesis and files 100 reprints, approved by his adviser, the deposit, less the cost of binding of the reprints, will be refunded.

The following directions for preparing the summary should be observed:

1. Original copy on good quality bond, double-spaced, student's name on each page.
2. Few references and those to be listed at the end of the summary.
3. Signature of the adviser.
4. No bibliography.
5. No acknowledgments.
6. Extra charges will be imposed for summaries exceeding ten pages in length and for summaries containing tables and plates.

11. **Final written examination.**—In addition to the usual course examinations in all subjects where such are given, the candidate for the Master's degree must pass a final written examination in the field of the major. (No *special* final examination is required in the minor.) The final written examination will be held not later than three weeks before commencement. It is given by the members of the graduate faculty in the major department, the adviser acting as chairman. This examination shall cover all the work done in the major, and may include any work fundamental thereto.

For the Doctor's degree there shall be a written examination in the major subject, to be given by the members of the graduate faculty in the major department prior to the preliminary or the final examination as the department may decide. This examination shall cover all the work done in the major, and *may include any work fundamental thereto.*

12. **Final oral examination.**—If all other requirements for the degree have been met, including the final written examination and the acceptance of the thesis, the final oral examination will be held not less than two weeks before commencement. All final examinations for the higher degrees in medicine will include questions on the history of medicine with special reference to the candidate's major field.

For the Master's degree the final oral examination will cover the work offered for the degree, and may include other work fundamental thereto, and shall not exceed two hours. At the close of the examination, the committee will vote upon the candidate, taking into account all of his work. A majority vote is required for approval.

For the Doctor's degree the final oral examination shall cover the special field of knowledge represented by the major work, including the thesis problem, and shall not exceed three hours. Upon completion of the examination a formal vote of the committee shall be taken and an affirmative vote of at least two thirds of the members shall be necessary for recommendation of the candidate for the degree.

13. **Recommendation by the faculty.**—The dean will report to the graduate faculty the names of those who have completed the requirements for the Master's and Doctor's degrees, and those duly approved will be recommended by the faculty to the Board of Regents of the University. Unless excused by the dean of the Graduate School and the president of the University, all candidates are required to be present at commencement when the degrees are conferred.

A TABULAR SUMMARY OF REQUIREMENTS FOR THE MASTER'S DEGREE

REQUIREMENTS	UNDER THE DIRECTION OF	DATE
Program, major and minor.....	Adviser and dean of the Graduate School or director of Mayo Foundation	On entrance
Approval of thesis subject.....	Adviser and group committee	Not less than seven months before graduation
Language requirement	Adviser and language department	Before close of second quarter
Licensure	State Board	Six months after beginning graduate work
Filing of thesis	Graduate School office.....	Four weeks before graduation (in June, five weeks)
Approval of thesis	Thesis committee	Before admission to final oral examination
Final written examination in major	Major department members of the graduate faculty.....	Not later than two weeks before commencement and before final oral
Final oral examination on all work	Committee. Date of examination fixed by Graduate School office	Not later than two weeks before commencement
Graduation fee and fee for binding thesis	Registrar's office	Two weeks before commencement

(For the Master's degree in clinical subjects, the dates refer to the last year.)

A TABULAR SUMMARY OF REQUIREMENTS FOR THE DOCTOR'S DEGREE

REQUIREMENTS	UNDER THE DIRECTION OF	DATE
FIRST YEAR		
Selection of major.....	Adviser and dean of the Graduate School	
Selection of minor.....		
SECOND YEAR		
Three-year program	Adviser, Medical Graduate Committee, and dean of Graduate School	Before beginning work of second year
Thesis title	Adviser, Medical Graduate Committee, and dean of Graduate School	Before admission to preliminary examination
Languages	Adviser and language departments	Before admission to preliminary examination
Recommendation	Major department	Before admission to preliminary examination
Written examination	Graduate faculty of the major department	At time of preliminary or before the final oral examination
Preliminary examination	Committee	At least seven months before degree is to be conferred
THIRD YEAR		
Filing of completed thesis certified by adviser.....	Graduate School office.....	Six weeks before graduation
Approval of thesis.....	Thesis committee	Before admission to final oral examination
Final oral examination.....	Committee. Date of examination fixed by Graduate School office	Not later than two weeks before commencement
Two bound copies, summary of thesis, and deposit of \$25	Graduate School office	Not later than two weeks before commencement
Graduation fee	Registrar's office	Not later than two weeks before commencement

DESCRIPTION OF COURSES AND OPPORTUNITIES

FOR GRADUATE TRAINING IN THE BASIC MEDICAL SCIENCES AND IN CLINICAL SPECIALTIES

It is deemed desirable that the graduate student in medicine be given the greatest possible freedom of choice in his plan of study. Rarely, if ever, have any two graduate students in medical fields in the University of Minnesota selected exactly the same type of work throughout their periods of residence.

The various divisions are grouped under the following departments:

1. Anatomy (including histology and embryology).
2. Bacteriology and Immunology.
3. Biophysics.
4. Biostatistics.
5. Dentistry.
6. History of Science.
7. Medical Social Work.
8. Medicine (including Divisions of General Medicine, Nutrition, Dermatology and Syphilology, Nervous and Mental Diseases, Neurology and Psychiatry, and Physical Medicine).
9. Obstetrics and Gynecology.
10. Ophthalmology, Otology, Rhinology, and Laryngology (including Plastic Surgery).
11. Pathology.
12. Pediatrics.
13. Pharmaceutical Chemistry.
14. Pharmacology and Therapeutics.
15. Physiology and Physiological Chemistry (Biochemistry).
16. Preventive Medicine and Public Health.
17. Radiology.
18. Surgery (including Divisions of General Surgery, Neurosurgery, Orthopedic Surgery, Urology, Proctology, and Anesthesia).

In most departments the work is described in two separate groups: A—that given in the Medical School, and B—that given in the Mayo Foundation. All courses are numbered for purposes of registration. The courses given in the Mayo Foundation are given the special prefix M. The suffixed f, w, s, and su indicate fall, winter, spring, and summer quarters, respectively. The hyphen denotes courses continuous through the quarters indicated. Suffixed letters separated by commas indicate the repetition of the course in the corresponding quarters. The courses numbered between 100 and 200 are less advanced in character, and in some cases are open as electives to properly qualified undergraduates. The courses numbered above 200 are primarily graduate in character, of the most advanced or research type.

ANATOMY

A. Courses Offered at the Medical School

Professors Clarence M. Jackson, M.S., M.D., LL.D., Head, Edward A. Boyden, Ph.D., Hal Downey, Ph.D., Andrew T. Rasmussen, Ph.D., Richard E. Scammon, Ph.D., LL.D.; Assistant Professors Raymond F. Blount, M.S., Ph.D., Edith Boyd, B.A., M.D.

The Department of Anatomy offers excellent facilities to students who wish to take advanced work or to pursue investigations in anatomy.

Prerequisites.—The prerequisite work for all students who desire a major or minor in the Department of Anatomy includes general zoology, 9 quarter hours, and advanced zoology or elementary courses in anatomy (including embryology, histology, and neurology), 9 quarter hours. In addition, each student who desires a major in anatomy must have had the elementary courses in that branch of anatomy in which he desires to specialize—embryology, gross anatomy, hematology, histology, or neurology. Students majoring in clinical subjects who desire a minor in anatomy must have had as prerequisites the courses in anatomy usually required of medical students (including Courses 103, 107, and 111). A reading knowledge of either French or German is required of students who desire a major in anatomy for the Master's degree, and a reading knowledge of both French and German is required of those who are candidates for the Doctor's degree.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 103s,su. Human Histology. Microscopic study of the various tissues and organs. Prerequisite: Anatomy 100-101, or equivalent. 9 credits. Dr. Downey.
- 107s. Human Embryology. Development of the human body. Prerequisite: Anatomy 100-101, or equivalent. 6 credits. Dr. Boyden.
- 111s,su. Human Neurology. A study of the gross and microscopic structure of the central nervous system and sense organs of man. Prerequisites: Anatomy 103 and 107, or Zoology 148-149-150. 6 credits. Dr. Rasmussen.
- 115f,w,s. History of Anatomy. Prerequisite: Anatomy 100-101. 2 credits each quarter. Dr. Miller.
- 120w,s. Experimental Embryology. Prerequisite: Anatomy 107. Hours and credits arranged. Dr. Blount.
- 129f-130w. Topographic Anatomy. Based upon a study of cross sections of the human body. Lectures and laboratory work. Prerequisite: Anatomy 100-101. 2 credits (or more) each quarter. Dr. Jackson.
- 134f,w. Anatomy of the Newborn. A detailed laboratory study of the anatomy of the newborn. Prerequisite: Anatomy 107, or equivalent. 3 credits each quarter. Dr. Boyden.
- 149w. Experimental Neurology. A study of the morphology of the central nervous system by experimental methods. Prerequisite: Anatomy 111. 3 credits (or more). Dr. Rasmussen.
- 150f,w. Special Topics in Neurology. Largely conferences upon assigned reading. Prerequisite: Anatomy 111. Hours and credits arranged. Dr. Rasmussen.
- 153f-154w-155s-156su. Advanced Anatomy. Individual topics for advanced work in embryology, gross anatomy, hematology, histology, or neurology will be assigned to students who have completed the elementary courses in the corresponding subjects. Special courses are arranged for clinical graduate stu-

- dents. Dr. Jackson, Dr. Boyden, Dr. Downey, Dr. Rasmussen, Dr. Blount, Dr. Boyd, Dr. Miller.
- 157s. Developmental Anatomy of the Head. Prerequisite: Anatomy 107. 3 credits. Dr. Boyden. (Offered in odd numbered years only.)
- 158s. Special Histology and Neurology of the Head Region. Prerequisites: Anatomy 103 and 111. 3 credits. Dr. Rasmussen. (Offered in even numbered years only.)
- 160w. Physical Growth. Lectures on the prenatal and postnatal growth of the external dimensions and organs of the human body. Same as Course 260 in Child Welfare. Prerequisite: Anatomy 107. 2 credits. Dr. Boyd.
- 161f-162w-163s. Statistical Work. Instruction given in methods of analyzing quantitatively the data collected by the student. Same as Course 261f-262w-263s in Child Welfare. Hours and credits arranged. Dr. Boyd.
- 165f-166w. Hematology. Normal and pathologic morphology of the blood and blood-forming organs, with special emphasis on the study of the blood from the standpoint of diagnosis and prognosis. 4 credits each quarter. Dr. Downey.
- 167s. Seminar in Hematology. Discussion of literature and research. Prerequisite: Anatomy 165-166. 1 credit. Dr. Downey.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201f-202w-203s-204su. Research in Anatomy. Qualified students may undertake the investigation of problems in anatomy, including embryology, histology, and neurology. Special facilities are offered to graduate students in the clinical departments for work upon problems in applied anatomy. Dr. Jackson, Dr. Boyden, Dr. Downey, Dr. Rasmussen, Dr. Scammon, Dr. Blount.
- 205f-206w-207s. Anatomical Seminar. Reviews of the current literature and discussion of research work being carried on in the department. Reading knowledge of French and German desirable. 1 credit. Dr. Jackson.

BACTERIOLOGY AND IMMUNOLOGY

A. Courses Offered at the Medical School

Professors Winford P. Larson, M.D., Head, Robert G. Green, M.A., M.D., H. Orin Halvorson, Ch.E., Ph.D., Arthur T. Henrici, M.D.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 102s. Medical Bacteriology. See Bulletin of the Medical School. Prerequisite: Bacteriology 101. 4 credits. Dr. Larson.
- 103w. Soil Microbiology. Studies of the microscopic inhabitants of the soil. Prerequisites: Bacteriology 53, and 15 credits in chemistry. 5 credits. Dr. Skinner.
- 104s. Sanitary Bacteriology. Standard and other methods for the bacteriological analysis of water, sewage, food, and dairy products. Preparation of standard culture media, technique, and evaluation of results. Primarily for majors in bacteriology. Limited to 15 students. Prerequisites: Bacteriology 53, and 15 credits in chemistry. 4 credits. Dr. Skinner.
- 114s. Molds, Yeasts, and Actinomycetes. Introduction to mycology: study of lower fungi important in medicine and industry. Prerequisite: Bacteriology 53 or 101. 4 credits. Dr. Henrici.

- 116w. Immunity. Laws of hemolysis. Quantitative relationship between antigen and antibody. Wassermann reaction. Opsonins. Vaccines. Toxin. Antitoxin. Precipitin reactions. Blood grouping. Atopy. Anaphylaxis. Prerequisite: Bacteriology 102. 3 credits. Dr. Larson.
- 120s. Diseases of Animals Transmissible to Man. Detailed studies of plague, tularemia, undulant fever, typhus fever, spotted fever, and other human diseases obtained from animal reservoirs. Prerequisite: Bacteriology 102. 3 credits. Dr. Green.
- 121f-122w.† Physiology of Bacteria. Effect of environment on growth. Enzymes. Food requirements. Carbohydrate, protein, and fat metabolism. Products of growth. Dormancy. Death. Prerequisites: Bacteriology 53, and 8 credits in organic chemistry or biochemistry. 6 credits. Dr. Halvorson.
- 123s. Applied Bacteriology. Industrial fermentations. Bacteriology of water and sewage. Interpretations of bacteriological data. Prerequisite: Bacteriology 121-122. 3 credits. Dr. Halvorson.
- 124f. Filterable Viruses. Characters of filterable viruses. Nature of virus infections. Transmission of viruses by insects. Important virus diseases of man and animals. Prerequisites: Bacteriology 102, Anatomy 103 or Zoology 149, and Pathology 101. 4 credits. Dr. Green.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201f,w,s. 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. Green, Dr. Henrici, Dr. Halvorson, Dr. Skinner.
- 203f,w,s. Seminar in Bacteriology. 1 credit. Staff.
- 204f-205w. Advanced Bacteriology. Special techniques in bacteriology: microscopy and photomicrography; methods for studying variation; quantitative methods. Cultivation and identification of anaerobes, etc. Methods of studying bacterial reactions catalyzed by enzymes. Prerequisite: Bacteriology 121-122, which may be taken concurrently. 6 credits. Dr. Henrici, Dr. Halvorson.

B. Courses Offered in the Mayo Foundation

Professors Thomas B. Magath, M.D., Ph.D., Edward C. Rosenow, M.D., D.Sc., LL.D., Arthur H. Sanford, M.D., M.A.; Assistant Professor Luther Thompson, Ph.D.; Instructors Dorothy H. Heilman, M.D., M.S. in Bact., Fordyce R. Heilman, M.D., Ph.D.

Prerequisites.—Opportunities for the graduate study of bacteriology and immunology are in connection with routine clinical examinations and in special research. They are open to graduates in medicine or holders of Master's degrees who have had work in both bacteriology and pathology equivalent to that given in the medical course in the University.

M251f,w,s,su. Clinical Bacteriology and Parasitology. Making and examination of cultures. Preparation and administration of autogenous vaccines. Wassermann tests; special laboratory methods in clinical bacteriology or parasitology. Research in bacteriology and parasitology. Dr. Magath, Dr. Sanford, Dr. Thompson, Dr. F. R. Heilman.

† To receive credit for either part of this course, a student must complete both parts.

M252f,w,s,su. Experimental Bacteriology. Research in the bacteriology of normal and diseased tissues, the blood, secretions, and exudates. Experimental inoculation of animals and immunological studies. So far as possible work limited to study of pathogenesis and to development of specific methods of prevention and treatment of various diseases presumably of infective origin. Dr. Rosenow.

In addition to the above, students majoring in bacteriology and immunology may take work in experimental physiology and biochemistry. For details, see these departments.

BIOPHYSICS

A. Courses Offered at the Medical School and in the Departments of Physics, Physiology, Radiology, and Zoology.

Professor K. Wilhelm Stenstrom, Ph.D.; Associate Professors Joseph Valasek, Ph.D., John H. Williams, Ph.D.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

170f,w,s,su. Problems in Biophysics. Investigations of the effects of Roentgen, radium, visible, and ultraviolet radiation may be undertaken. Instruments are available for spectrophotometric work in the visible and ultraviolet regions for temperature measurements by means of thermocouples, and to a certain extent for electrical measurements. Hours and credits arranged. Dr. Stenstrom.

110w‡-112s.‡ Modern Experimental Physics. Radioactivity. Dr. Williams.

134f.‡ Experimental Optics. Dr. Valasek.

152s. X Rays. Dr. Valasek.

Other courses listed under Physics may be considered for credit in biophysics.

104s. Roentgen and Radium Therapy. (See Radiology 104.)

106w. Physical Therapy. (See Radiology 106.)

155w. Physiology in Relation to Physics. (See Zoology 155w.) Application of the principles of physics to the investigation and interpretation of physiological phenomena. Lecture and demonstration. 3 credits. Mr. Schmitt.

The physiology courses below may be taken for credit in biophysics:

103f,su. Physiology of Circulation, Respiration, Digestion, Metabolism, Nutrition, and Excretion. (See Physiology 103f,su.) Several lectures on the medical aspects of genetics are included. Prerequisites: organic chemistry and zoology. 132 hours; 9 credits. Dr. Visscher, Dr. Scott, Dr. Hemingway, and others.

104w,su. Physiology of Endocrines and the Nervous System. (See Physiology 104w,su.) Prerequisite: Physiology 103, or organic chemistry and neurology. 88 hours; 6 credits. Dr. Visscher, Dr. Scott, Dr. King, and others.

105f. Roentgen Rays, Light, and Radium. (See Physiology 105.)

COURSES PRIMARILY FOR GRADUATE STUDENTS

204f,w,s,su. Research in Biophysics. Students who want to carry out more extensive and independent investigations should register for this course instead of for Course 170. Dr. Stenstrom.

B. Courses Offered in the Mayo Foundation

Professor Charles Sheard, Ph.D., D.Sc.; Associate Professor Edward J. Baldes, Ph.D.; Assistant Professor Marvin M. D. Williams, Ph.D.

‡ A fee of \$2 per quarter is charged for this course.

Graduate work of a research character is offered in biophysics. These researches are concerned chiefly with blood flow, blood pressure, osmotic pressure, bioelectric phenomena, electroencephalography, spectroscopy and spectrophotometry, energy exchanges between the body and its environment, biological effects of radiation.

Prerequisites.—Opportunities for research for theses for the degree of doctor of philosophy are offered to a limited number of qualified fellows majoring in biophysics. In general, the Master's degree or its equivalent is a prerequisite for admission to these advanced research courses. In addition, facilities for experimental work are available to fellows majoring in other departments of surgical, clinical, and experimental work.

Minor.—There are numerous problems suitable for a minor for fellows majoring in other departments of surgical, clinical, and experimental work.

M254f,w,s,su. Special Researches in Biophysics. Dr. Sheard, Dr. Baldes, Dr. Williams.

In addition to the above, students in biophysics may do research work in physiology in the Foundation or at the Medical School, and in biology in the University at Minneapolis. For details, see these departments.

BIOSTATISTICS

A. Courses Offered at the Medical School

Professor Richard E. Scammon, Ph.D., LL.D.; Associate Professor Alan E. Treloar, Ph.D.

Courses in mathematics, economic statistics, and those sciences deemed necessary to a broad understanding of biological measurement, may be required in individual cases at the discretion of the adviser as part of the major program.

Master's degree.—Offered in general under Plan A. In special cases Plan B may be accepted.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- P.M.&P.H.110f,s. Biometric Principles. An introduction to statistical analysis with emphasis on the basic principles of statistical reasoning. The description of univariate distributions, normal correlations, simple tests of significance, and goodness of fit. Course 111 to be taken concurrently. 3 credits. Dr. Treloar.
- P.M.&P.H.111f,s.‡ Biostatistics Laboratory. Practical training in machine calculation and statistical techniques discussed in Course 110, which is to be taken concurrently. 2 credits. Miss Martin.
- P.M.&P.H.120w. Correlation Analysis. Total, partial, and multiple correlation and regression; correlation ratio, contingency; biserial methods, tetrachoric correlation; rank-order correlation; the symmetrical table and intra-class correlation. Course 121 to be taken concurrently. Prerequisite: Course 110. 3 credits. Miss Martin.
- P.M.&P.H.121w.‡ Correlation Laboratory. Practical training in techniques of correlation analysis. Course 120 to be taken concurrently. 2 credits. Miss Martin.
- P.M.&P.H.130s. Statistical Inference. A discussion of the sampling distributions of the more familiar statistics, and analysis of the problems of interpretation of

‡ A fee of \$1 per credit is charged for this course.

differences, with special reference to small samples. Course 131 may be taken concurrently. Prerequisite: Course 110. 3 credits. Dr. Treloar.

P.M.&P.H.131s.‡ Sampling Laboratory. Study of the distributions of statistics derived from small samples by practical test. To be taken concurrently with Course 130. 2 credits. Miss Martin.

P.M.&P.H.140.*‡ Topics in Biostatistics. Individual studies in special topics for advanced students. Credits arranged. Dr. Treloar.

P.M.&P.H.150.*‡ Life Tables. Mortality rates and the construction of the life table. Laboratory course with discussions, offered when sufficient demand exists. Prerequisite: permission of instructor. 3 credits. Dr. Treloar.

COURSES PRIMARILY FOR GRADUATE STUDENTS

P.M.&P.H.200f,w,s.* Research Problems in Biostatistics. Credits as arranged. Dr. Treloar.

P.M.&P.H.210f,w,s.* Seminar in Biostatistics. 1 credit per quarter. Dr. Scammon, Dr. Treloar.

B. Courses Offered in the Mayo Foundation

Associate Professor Joseph Berkson, M.A., M.D., D.Sc.

Opportunities for graduate work in biometry and medical statistics in the Mayo Foundation are in connection with the Division of Biometry and Medical Statistics in the Mayo Clinic. These may include studies in clinical as well as laboratory fields.

M253f,w,s,su. Research Problems in Biometry. Dr. Berkson.

DENTISTRY

Graduate work for a limited number of properly prepared students is offered in certain fields of dental research and dental specialties. The work is under the direction of a joint committee in Dentistry and Medicine in the Graduate School. Candidates for admission must be graduates of an acceptable dental school with at least two years of preliminary general college work. They must also present or acquire sufficient training in the basic sciences, such as anatomy, bacteriology, pathology, physiological chemistry, and physiology, to enable them to apply these disciplines to research on some of the problems facing dentistry as one of the health sciences. The minimum training to meet this requirement at the University of Minnesota is in general the equivalent of that required of graduate students in the fields of clinical medicine. The basic science courses necessary as a foundation for advanced study are outlined under the departmental offerings in this bulletin. Altho a reading knowledge of German is recommended as highly desirable, candidates for the Master's degree in dentistry are exempted from the foreign language requirement. Qualified students who give full time to their studies and absolve the requirements including a satisfactory thesis will normally require three years for the degree of master of science in dentistry.

The fields of research and specialization in which work will be directed are: investigative dentistry, oral surgery, orthodontia, periodontia, restorative dentistry.

* With special outside work, these courses count toward the nine credits of independent work required for the Master's degree under Plan B.

‡ A fee of \$1 per credit is charged for this course.

A. Courses Offered at the School of Dentistry

COURSES PRIMARILY FOR GRADUATE STUDENTS

Professors Peter J. Brekhus, B.A., D.D.S., Carl W. Waldron, M.D., L.D.S., D.D.S.

- 204f,w,s,su. Fundamental Research in Dentistry. A fully equipped laboratory is available for the biochemical or other objective means of investigation of fundamental problems relating to the teeth and other calcified tissues. The co-operation of the several departments of the Medical School is also available. Hours and credits arranged. Dr. Brekhus, Dr. Armstrong, and staff.
- 207f-208w-209s. Oral Surgery. The work will consist of laboratory and clinical training in the fundamentals of surgical oral pathology, surgical diagnosis and treatment of injuries, infections, tumors, and abnormalities of the jaws and associated parts. The clinical work will be given at the School of Dentistry, the University Hospitals, and other hospitals. The major assignment will include a specific problem in oral surgery, for which the facilities of the research laboratories of the School of Dentistry, as well as those of the Medical School, will be available. 9 credits (or more). Dr. Waldron and staff.
- 210f-211w-212s. Orthodontia. A course of lectures, seminars, demonstrations, and clinical work in the diagnosis and treatment of malocclusion of the teeth. Its aim is to prepare graduate students for the specialty of orthodontia. 9 credits (or more). Dr. Rudolph and staff.
- 213f-214w-215s. Periodontia. Lectures, demonstrations, and clinical study of mouth infections, especially periodontoclasia. Methods of diagnosis, prevention as well as treatment, and the relationship of dietary deficiencies will be included. 9 credits (or more). Dr. R. E. Johnson and staff.
- 216f-217w-218s. Restorative Dentistry. The restoration of teeth to normal function and occlusion through operative procedures, and the replacement of missing teeth by fixed or removable bridge work and dentures. A study of the various materials and their manipulation as used in restorations. 9 credits (or more). Dr. Flagstad, Dr. Green, Dr. Wells, and staff.

B. Courses Offered in the Mayo Foundation

Associate Professors Louie T. Austin, D.D.S., Boyd S. Gardner, D.D.S.; Assistant Professor Edward C. Stafne, D.D.S.

In addition to the graduate work in dentistry offered in the School of Dentistry, the Mayo Foundation offers assistantships in dental diagnosis and dental surgery to a limited number of graduates of class A dental colleges. Those contemplating graduate study leading to an advanced degree should register in the School of Dentistry.

Laboratory facilities are available in anatomy, bacteriology, biochemistry, dental radiography, experimental surgery, and pathology.

HISTORY OF SCIENCE

(See page 49.)

MEDICAL SOCIAL WORK

For staff and courses of study offered, see the Graduate School Bulletin, Department of Sociology.

MEDICINE

(Including Divisions of General Medicine, Nutrition, Dermatology and Syphilology, Neurology and Psychiatry, and Physical Medicine)

The graduate work in the Department of Medicine is designed to offer opportunities for gifted men and women to prepare themselves for the practice of internal medicine or any of its subdivisions as a specialty. It also aims to guide its fellows in research in these fields and to give them a start in university teaching. Prospective fellows who have had no special orientation in addition to that of the ordinary undergraduate courses will profit greatly from some special work. While any of the preclinical subjects might be of value, bacteriology, biochemistry, pathology, pharmacology, and physiology at the present are of the greatest importance. Work in any of these subjects may be continued further during the major studies in medicine to meet the requirements for a minor subject.

GENERAL MEDICINE

A. Courses Offered at the Medical School

Professors Cecil J. Watson, M.D., Ph.D., Director, Moses Barron, B.S., M.D., George E. Fahr, B.S., M.D., J. Arthur Myers, M.D., Ph.D., S. Marx White, B.S., M.D.; Clinical Professor Henry L. Ulrich, B.S., M.D.; Assistant Professor Wesley W. Spink, B.A., M.D.; Clinical Assistant Professor Ernest S. Mariette, B.S., M.D.

For graduate work in internal medicine the University Hospital (officially, the University of Minnesota Hospitals) and the Minneapolis General Hospital afford a wide range of clinical material both in the wards and in the outpatient departments. For research work there are opportunities at the University Hospital in its laboratories for basal metabolism, biochemistry, cardiography, and experimental medicine. Similar opportunities may be made available at the Minneapolis General Hospital.

Anatomy, bacteriology, biochemistry, immunology, pathology, pharmacology, and physiology have their laboratories and teaching centers on the campus, and the pursuit of a minor subject to the extent required by the Graduate School may be carried on alongside of, and in intimate relation to, the more definitely clinical studies. The large autopsy service of the Department of Pathology gives experience in this field and provides control of clinical diagnosis.

The more intensive clinical studies of the fellow are carried on in one or both of the hospitals mentioned and the outpatient departments are utilized to the degree necessary for training the fellow in the type of work to be met with later in practice.

During a longer or shorter period of his fellowship the fellow will act as assistant resident physician or as resident physician in one of the hospitals. In this position he has to assume greater responsibilities in the care of the patients than during the internship.

It is required that a certain amount of time be given by the fellow to teaching.

Besides the clinical work a fellowship also includes research work toward the fulfillment of the requirements for an acceptable thesis. This work may be purely clinical, but a combined clinical and laboratory study is preferable.

The courses listed below are described in the broadest outlines for purposes of recording the character of the work done. No hard and fast program is contem-

plated, the individual capabilities, needs, and purposes of the fellow being given particular attention.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201f,w,s,su. Clinical Medicine. Study of general diagnosis and methods of investigation and of the recording of clinical data. Emphasis placed on methods of treatment. Dr. Watson, Dr. Barron, Dr. Fahr, Dr. White, Dr. Spink.
- 202f,w,s,su. Diseases of the Cardiovascular Apparatus. Special study of diseases of the heart and blood vessels, including technique and application of the polygraphs, electrocardiograph, and interpretation of outlines of the heart and great vessels obtained by means of radiograms and orthodiagram. Minneapolis General Hospital and University Dispensary. Dr. Fahr.
- 203f,w,s,su. Research in Medicine. Dr. Watson, Dr. Fahr, Dr. Spink.
- 205f,w,s,su. Tuberculosis. Opportunities in the study of problems relating to tuberculosis are offered. Problems may be studied, both from the clinical and laboratory standpoint. An outpatient department is also available. Dr. Myers.
- See Courses 136, 137, 138 under Medicine in the Medical School Bulletin.

B. Courses Offered in the Mayo Foundation

Professors Russell M. Wilder, M.D., Ph.D., Walter C. Alvarez, M.D., Arlie R. Barnes, M.D., M.A., M.S. in Med., Walter M. Boothby, M.D., M.A., George B. Eusterman, M.D., Herbert Z. Giffin, B.S., M.D., Norman M. Keith, B.A., M.D., Willis S. Lemon, M.D., Albert M. Snell, M.D., M.S. in Med.; Associate Professors Edgar V. Allen, M.D., M.A., M.S. in Med., J. Arnold Bargen, M.D., M.S. in Med., Nelson W. Barker, M.D., M.S. in Med., Della G. Drips, M.S., M.D., Fred W. Gaarde, B.S., M.D., Samuel F. Haines, M.D., M.S. in Med., Howard R. Hartman, B.S., M.D., Philip S. Hench, M.D., M.S. in Med., Bayard T. Horton, M.D., M.S. in Med., Edwin J. Kepler, M.D., M.S. in Med., Archibald H. Logan, M.D., M.S., D.Sc., Herman J. Moersch, M.D., M.S. in Med., William A. Plummer, M.D., Harry L. Smith, M.D., M.S. in Med., Charles H. Watkins, M.D., Ph.D., Frederick A. Willius, M.D., M.S. in Med.; Assistant Professors David M. Berkman, M.D., M.S. in Med., John M. Berkman, M.D., M.S. in Med., Melvin W. Binger, B.S., M.A., M.D., Alex E. Brown, M.D., M.S. in Med., Philip W. Brown, M.D., M.S. in Med., Mandred W. Comfort, M.D., M.S. in Neur., Austin C. Davis, B.A., M.D., Thomas J. Dry, Ch.B., M.B., M.A., M.S. in Med., Harold C. Habein, B.S., M.D., Byron E. Hall, M.D., Ph.D., Dorr F. Hallenbeck, M.D., Frank J. Heck, M.D., M.S. in Path., Edgar A. Hines, M.D., M.S. in Med., M.A., H. Corwin Hinshaw, M.D., Ph.D., Duncan M. Masson, B.A., M.D., Charles K. Maytum, M.D., Monte C. Piper, M.D., Lee W. Pollock, B.S., M.D., Louis E. Prickman, M.D., M.S. in Med., Andrew B. Rivers, M.D., M.S. in Med., M.A., Edward H. Rynearson, M.D., M.S. in Med., Charles H. Slocumb, M.D., M.S., Elmer G. Wakefield, B.S., M.D., James F. Weir, M.D., M.S. in Med., Harry G. Wood, M.D., C.M.; Instructors Mark J. Anderson, B.S., M.D., Hugh R. Butt, M.D., M.S. in Med., Malcolm McC. Hargraves, B.A., M.D., Wallace E. Herrell, M.D., M.S. in Med., Llewellyn P. Howell, M.S., M.D., M.S. in Med., Giles A. Koelsche, M.D., Ph.D. in Med., Walter F. Kvale, M.D., M.S. in Med., Carl G. Morlock, M.D., M.S. in Med., Howard M. Odel, M.D., M.S. in Med., Arthur M. Olsen, M.D., M.S. in Med., Robert L. Parker, M.D., M.S. in Med., Herbert W. Schmidt, M.D., M.S. in Med., J. Minott Stickney, Ph.B., M.D., M.S. in Med., Jan H. Tillisch, M.D., M.S. in Med.

The clinical work in internal medicine in Rochester consists of diagnostic work in the clinic or in the hospital medical services, includes history taking, physical examinations, the recommendation of patients for special examinations with correlation of the results thereof, and the formation of independent judgments concerning diagnoses and indications and recommendations for medical and surgical treatment. This work is under the immediate direction of the consulting physicians of the section in which the fellow is working.

Each service consists of six days each week for six months, except as noted, in a clinical section. There are sixteen general diagnostic sections in which the fellow may work in the clinic and twenty medical hospital services. Each diagnostic section contains three or more consulting physicians, and is referred to by the name of the physician who is the administrative head. Each of the general diagnostic sections is general in the sense that any patient may be referred to any one of them. Many of them, however, are special in that they have fields of intensive interest as follows: Sections headed by Dr. Haines, Dr. Plummer, Diseases of the Thyroid; by Dr. Wilder, Metabolic Diseases; by Dr. Berkman, Dr. Hallenbeck, Acute Abdominal Diseases; by Dr. Logan, Intestinal Diseases; by Dr. Gaarde, Allergic Diseases; by Dr. Moersch, Diseases of the Chest, and Bronchoscopy and Esophagoscopy; by Dr. Giffin, Diseases of the Blood; by Dr. Allen, Dr. Horton, Vascular Diseases; by Dr. Willius, Diseases of the Heart; by Dr. Barnes, Cardiovascular and Renal Diseases; by Dr. Snell, Dr. Hartman, Gastrohepatic Diseases; by Dr. Mussey, Dr. Randall, Gynecologic Diseases.

The satisfactory completion of at least four services of six months each in these sections is required for recommendation for an advanced degree. When he is sufficiently competent in clinical work the fellow may be appointed to a first assistantship in the Mayo Clinic for a period of one year.

The Medical Department has available between four and five hundred beds in the several hospitals.

Fellows lacking in autopsy experience may take a service of six months or more in the Section of Pathologic Anatomy. (Such a service gives good experience in autopsy technic and diagnosis.)

In graduate work in medicine the didactic lecture plays but a minor role. In the diagnostic clinic and hospitals much of the teaching is done in seminars, ward rounds, and by contact between the member of the faculty and the fellow in the handling of the patients, or in the carrying out of laboratory procedures. In both clinical and hospital sections the fellow assists in the actual work of these sections under the supervision of the head of the section and his associates.

In clinical seminars cases of unusual interest are discussed and presented. In the hospital services additional seminars are conducted on special phases of medicine, on laboratory methods, and on current medical literature. Clinico-pathologic conferences are conducted in cases coming to operation and necropsy. In these seminars the fellows themselves play an active role in presenting to the group cases or subjects which have been assigned to them.

In the laboratories fellows are given every opportunity to work out for themselves the problems of their choice or to participate in investigations being carried out by members of the staff.

As soon as he becomes oriented, each fellow is expected to find time, in addition to his routine work, to begin to carry forward consistently some research. While it may be purely clinical, in most instances it will be found to have relationships requiring detailed study in bacteriology, hematology, pathology, physiological chemistry, or physiology.

Tho the minimum time required for recommendation for the degree of master of science or doctor of philosophy for work done in these fields is three years, it is found that considerably more time is often desirable.

- M255f-w,w-s,su-f. General Medical and Surgical Diagnosis. Research. Seminar. Dr. Wilder, Dr. Barnes, Dr. Giffin, Dr. Mussey, Dr. Snell, Dr. Allen, Dr. Gaarde, Dr. Haines, Dr. Hartman, Dr. Hench, Dr. Logan, Dr. Moersch, Dr. Plummer, Dr. Randall, Dr. Willius, Dr. D. M. Berkman, Dr. Hallenbeck, Dr. Pollock, and associates.
- M256f,w,s,su. Medical Hospital Residence. Research. Seminar. Dr. Wilder, Dr. Barnes, Dr. Giffin, Dr. Snell, Dr. Allen, Dr. Gaarde, Dr. Haines, Dr. Hartman, Dr. Hench, Dr. Horton, Dr. Logan, Dr. Moersch, Dr. Plummer, Dr. Willius, Dr. D. M. Berkman, Dr. Hallenbeck, Dr. Pollock, and associates.
- M262f-w,w-s,s-su,su-f. Diagnosis in Neurology and Psychiatry. (See Division of Neurology and Psychiatry.)
- M281f,w,s,su. Clinical Pathology. (See Department of Pathology.)
- M283f-w,w-s,s-su,su-f. Necropsy Service. (See Department of Pathology.)
- M290f-w,w-s,s-su,su-f. Research Work on Selected Problems in Experimental Physiology. (See Department of Physiology and Physiological Biochemistry.)

In addition to the above, fellows majoring in internal medicine may take work in biochemistry, biophysics, dermatology, experimental physiology, neurology, ophthalmology, psychiatry, radium therapy, and Roentgen therapy. For details, see these departments.

NUTRITION

B. Courses Offered in the Mayo Foundation

Professor Russell M. Wilder, M.D., Ph.D.; Assistant Professor Mary A. Foley.

Opportunity is provided for a few fellows majoring in nutrition. This work is under the supervision of the Departments of Medicine and Biochemistry, Physiology and Physiological Biochemistry.

M257f,w,s,su. Nutrition. Dr. Wilder, Miss Foley.

DERMATOLOGY AND SYPHILOLOGY

A. Courses Offered at the Medical School

Professors Henry E. Michelson, B.S., M.D., Director, Samuel E. Sweitzer, M.D.; Clinical Associate Professor Francis W. Lynch, M.D., M.S.; Clinical Assistant Professor Carl W. Laymon, M.D., Ph.D.

Graduate instruction in dermatology and syphilology is offered at the University Hospital and the General Hospital in Minneapolis and at the Ancker Hospital in St. Paul, combined with attendance at the clinics at the three hospitals. The first year is spent as a resident at the General Hospital, the second and third years are outlined by arrangement. The student is required to devote full time and is not permitted to carry on any practice and is eligible to a master of science or a doctor of philosophy degree if the requirements are fulfilled. The following courses are offered to graduate students only.

There is a great opportunity for interdivisional and interdepartmental courses which may be duly accredited.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 267f,w,s,su. Dermatology and Syphilology. Dermatology and syphilology, clinic and hospital rounds. University Hospital, MWF 12:30-4:00 p.m. Dr. Michelson and staff.
- 268f,w,s,su. Histopathology. Normal and pathological anatomy of the skin and appendages. University Hospital, MW 4:00-5:00 p.m. Dr. Michelson and staff.
- 269f,w,s,su. Syphilis Therapy. Arsphenamine, bismuth, mercury, malaria therapy. Spinal punctures, lectures. University Hospital, TTh 12:30-4:00 p.m. S 8:30-10:30 a.m. Dr. Michelson and staff.
- 270f,w,s,su. Dermatology and Syphilology. Clinic and hospital rounds. General Hospital, TTh 12:30-4:00 p.m. S 7:30-9:30 a.m. Dr. Sweitzer and staff.
- 271f,w,s,su. Dermatology in Students' Health Service. Diagnosis and therapy of dermatological diseases in university students. University Hospital, TWTh 9:00-12:00 a.m. Dr. Michelson and staff.
- 272f,w,s,su. Allergy in Dermatology. University Hospital, MWF 12:30-4:00 p.m. Dr. Michelson and staff; General Hospital, MW 9:00-10:00 a.m. Dr. Sweitzer and staff.
- 273f,w,s,su. Dermatology and Syphilology. University Hospital, TTh 12:30-4:00 p.m. S 7:30-9:30 a.m. Dr. Michelson and staff.

It is especially recommended that students in dermatology and syphilology elect Surgery 205f-206w-207s with Dr. Peyton. Permission of department necessary. (See page 51.)

NOTE.—The student is required to carry on independent research under the direction of Dr. Michelson and the head of the department or division in which he wishes to do special research.

B. Courses Offered in the Mayo Foundation

Professor Paul A. O'Leary, M.D.; Associate Professor Hamilton Montgomery, M.D., M.S. in Derm.; Assistant Professor Louis A. Brunsting, M.D., M.S. in Derm.; Instructor Robert R. Kierland, M.D., M.S. in Derm. and Syph.

The Department of Dermatology of the Mayo Foundation offers excellent opportunities for the study of extensive clinical material in dermatology and syphilology in patients in the Mayo Clinic. At daily group meetings, current literature, unusual clinical conditions, and investigations are presented and discussed.

The department has special laboratories adapted to research. A dermatohistopathologic laboratory with a large collection of material is a part of the department's equipment. The general laboratories of the clinic and foundation are likewise available.

- M258f,w,s,su. Histopathology of the Skin. Laboratory and lectures. Dr. Montgomery.
- M259f,w,s,su. Diagnosis with Special Reference to Dermatology and Syphilology. Seminar. Dr. O'Leary, Dr. Montgomery, Dr. Brunsting, Dr. Kierland.
- M260f,w,s,su. Hospital Residence. Care of hospitalized patients. Seminar. Dr. O'Leary, Dr. Montgomery, Dr. Brunsting, Dr. Kierland.

In addition to the above, fellows majoring in dermatology and syphilology may receive instruction in allergy, hematology, mycology, Roentgen and radium therapy, and serology. Biochemistry, biophysics, and experimental physiology may be elected, if desired. For details see these departments.

NERVOUS AND MENTAL DISEASES

A. Courses Offered at the Medical School

Professors J. Charnley McKinley, M.D., Ph.D., Director, Eric K. Clarke, B.S., M.D.; Clinical Professor Ernest M. Hammes, M.D.; Assistant Professors A. B. Baker, M.D. Ph.D., Starke R. Hathaway, Ph.D.

For fellows in neuropsychiatry, excellent facilities are available for the study of the anatomy, pathology, and physiology of the nervous system. The minor may be elected in any of these fields. Course work in the Department of Psychology may be arranged; in fact, courses in any of the university departments fundamental to, or allied with, neuropsychiatry may be taken with the approval of the adviser.

In addition to the work in the University Hospital on the Neurologic Service, in the Psychopathic Unit, the Psychiatric Clinic for Children, and the Outpatient Department, the student has access to the Minneapolis General Hospital.

The fellow is given a clinical assignment in the Inpatient and the Outpatient services of the University Hospital with the responsibility to his service chief for the clinical study and therapy of his patients. He makes daily informal rounds with his superior staff, has weekly clinical conferences with the director of the division, prepares cases for presentation at formal weekly staff conferences and for the clinics given undergraduate medical students. He helps conduct the pedagogical work of the clerkship of senior medical students. He reports on the literature or on his special studies in staff conferences from time to time.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 207f,w,s. Pathology of the Nervous System. The preparation of gross and microscopic material from diseased nervous tissues; the relation of pathologic lesions to signs and symptoms; the chief neuron systems and principles underlying their degeneration. Dr. Baker.
- 208f,w,s,su. Clinical Neurology. Advanced diagnosis of the nervous system diseases. Practical experience in diagnostic and therapeutic procedures. Dr. McKinley, Dr. Baker.
- 208xf,w,s,su. Clinical Psychiatry. Advanced diagnosis and therapy of the major and minor psychoses. Psychopathology. The techniques of a psychopathic hospital. Dr. McKinley, Dr. Clarke, Dr. Hathaway.
- 209f,w,s,su. Research in Neurology and Psychiatry. Dr. McKinley, Dr. Baker, Dr. Hathaway.
- 210f. Advanced Neuropathology. Prerequisite: Pathology 101 and 102. 2 credits. Dr. Baker.
- 211w,s. Intracranial Neoplasm. Prerequisite: Pathology 101 and 102. 1 credit. Dr. Baker.
- 212f,w,s,su. Survey of Neuropathology. Examination of specimens from current autopsies. Prerequisite: Medicine 210. 1 credit. Dr. Baker.
- 213w,s. Psychoanalysis. A didactic conference. Dr. Lippman.
- 214f,w,s,su. Psychiatric Disorders of Childhood. Dr. Clarke.
- 215f,w,s. Seminar on the Application of Psychological Methods to the Study of Nervous and Mental Diseases. (Same as Psychology 260f-261w-262s.) Current experimental studies in personality measurement. 1 credit. Dr. Hathaway.

NEUROLOGY AND PSYCHIATRY

B. Courses Offered in the Mayo Foundation

Professor Henry W. Woltman, M.D., Ph.D. in Neur.; Associate Professors Frederick P. Moersch, B.S., M.D., Benjamin F. Smith, M.D.; Instructors Lealdes M. Eaton, M.D., M.S. in Neur., Philip H. Heersema, B.A., M.D., Alexander R. Maclean, M.D., M.S. in Neur., Maurice N. Walsh, M.D., M.S. in Neur. and Psychiatry.

A practical clinical course for fellows in neurology and psychiatry is conducted. Besides clinical work this includes a daily conference on cases of special diagnostic importance, a weekly conference for the review of current neurologic and psychiatric literature, and a weekly clinical pathological conference for the study of autopsy material. For fellows majoring in neurology special work in electroencephalography, neuropathology, neuroanatomy, and neuro-ophthalmology is offered.

Opportunities in psychiatry in the clinic are now supplemented by residencies in the Rochester State Hospital for the Insane. These residencies are granted only to fellows with adequate preparation in neurology and psychiatry. These are for a minimum period of six months. In addition to the usual fellowship stipends these fellowships provide maintenance during the period of residence.

This department is closely associated with the Department of Ophthalmology and Otolaryngology, and with various laboratories for the study of neurology as a specialty and its relationship to general medicine.

158s. Anatomy. Special Histology and Neurology of the Head Region. Dr. Rasmussen. (See Anatomy 158.)

M261f,w,s,su. Neuropathology. Open to fellows who are majoring in neurology and who have had adequate preparation in general pathology. Dr. Kernohan.

M262f,w,s,su. Neurophysiology, Electroencephalography. Dr. Baldes, Dr. Williams.

M263f-w,w-s,s-su,su-f. Diagnosis in Neurology and Psychiatry. Research. Seminar. Dr. Woltman, Dr. Moersch, Dr. Smith, Dr. Eaton, Dr. Maclean, Dr. Heersema, Dr. Walsh.

M264f,w,s,su. Neurologic Hospital Residence. Research. Seminar. Dr. Woltman, Dr. Moersch, Dr. Heersema, Dr. Maclean.

M265f,w,s,su. Special Psychiatry at the Rochester State Hospital for the Insane. Residence. Dr. Woltman, Dr. Moersch, Dr. Smith.

In addition to the above, fellows majoring in neurology may take work in experimental physiology, necropsy service, and neuro-ophthalmology. For details, see these departments.

PHYSICAL MEDICINE

B. Courses Offered in the Mayo Foundation

Associate Professor Frank H. Krusen, M.D.

At present there is great need for well-trained medical men in the field of physical medicine. Hospitals and teaching institutions have sent a number of requests to the foundation for men with such training.

Clinical training is provided in the three departments of physical therapy and the department of fever therapy. Ample opportunity for clinical research is available. Instruction in electrotherapy, fever therapy, hydrotherapy, light therapy, mechanotherapy, and thermotherapy is provided. The employment of physical

agents in the various fields of medicine, particularly in relation to the treatment of arthritis, orthopedic surgery, vascular diseases, and various other medical and surgical specialties, is stressed. The physician who completes this fellowship should be well prepared in all details of the conduct of the physical therapy department of a hospital and should be capable of teaching this subject in a medical school. Special seminars in didactic phases of physical medicine are offered. Opportunities in related fields may be arranged.

M266f,w,s,su. Physical Medicine. Dr. Krusen.

M267f,w,s,su. Special service in physical therapy as related to orthopedic surgery. Dr. Krusen.

M268f,w,s,su. Fever Therapy. Open to fellows majoring in gynecology, medicine, physical medicine, or urology. Dr. Krusen.

In addition to the above, fellows majoring in physical medicine may take work in biophysics, experimental physiology, radium, and roentgen therapy. For details, see these departments.

OBSTETRICS AND GYNECOLOGY

A. Courses Offered at the Medical School

Professor John L. McKelvey, B.A., M.D.C.M., Head; Clinical Assistant Professor Lee W. Barry, M.D., Ph.D.

Of the courses in other departments open to graduate medical students, the following are especially recommended for those desiring to specialize in obstetrics and gynecology.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

Anatomy 134f,w. Fetal Anatomy. Dissection of fetus and newborn.

Anatomy 153f-154w-155s-156su. Advanced Anatomy. Gross and histological, of the female generative organs and abdomen.

Pathology 118s. Gynecological Pathology.

Pharmacology 104, 109a,b. Experimental Pharmacology.

Physiological Chemistry 153f,w,s,su. Problems in Physiological Chemistry.

Other courses in fundamental or clinical subjects may be elected.

COURSES PRIMARILY FOR GRADUATE STUDENTS

201f-202w-203s-204su. Advanced Obstetrics and Gynecology. Includes service in the University Hospital or Minneapolis General Hospital, or Ancker Hospital, St. Paul, affording ample opportunity for experience in diagnosis, care, and treatment (operative and nonoperative) of patients. Special facilities are offered for study of problems and cases of unusual interest. Required of first year fellows. Dr. McKelvey and staff.

205f-206w-207s-208su. Similar to Course 201-204, but more advanced, both in clinical and research aspects of the subjects adapted to the increased training and experience. Required of second year fellows. Dr. McKelvey and staff.

209f-210w-211s-212su. Similar to Courses 201-204 and 205-208, but more advanced. Required of third year fellows. Dr. McKelvey and staff.

- 213f-214w-215s. Staff Conference Seminar. A conference, including the fellows and graduate students. Presentation and discussion of original work and reports upon the current literature in obstetrics and gynecology. Dr. McKelvey and staff.
- 216f-217w-218s-219su. 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. Elective for second year fellows or other properly qualified graduate students. Dr. McKelvey and staff.
- 221f-222w-223s-224su. Clinical Obstetrics and Gynecology. A course in diagnosis and treatment, with special study of selected cases. Clinic in the Outpatient Department of the University Hospital. Required of teaching fellows. Dr. McKelvey and staff.

B. Courses Offered in the Mayo Foundation

Professor Robert D. Mussey, M.D.; Associate Professors Della G. Drips, M.D., M.S., Lawrence M. Randall, M.D., M.S. in Obst. and Gyn.; Instructors Lois A. Day, M.S., M.D., M.S. in Obst. and Gyn., Arthur B. Hunt, B.A., M.D., M.S.

For fellows majoring in obstetrics and gynecology opportunity is available for extensive experience in diagnosis and treatment of gynecologic diseases and obstetrics, supplemented by studies in basic sciences underlying the specialty, and in operative surgery in sections concerned principally with gynecologic conditions. Weekly seminars are held regularly.

- M255f-w,w-s,s-su,su-f. General Medical and Surgical Diagnosis, principally in relation to obstetrics and gynecologic conditions. Research. Seminar. Dr. Mussey, Dr. Drips, Dr. Randall, Dr. Day, Dr. Hunt. (See Department of Medicine.)
- M269f-w,w-s,s-su,su-f. Clinical Obstetrics and Gynecology. Diagnosis and treatment with special study of selected obstetric and gynecologic cases. Residence. Seminar. Dr. Mussey, Dr. Randall, Dr. Day, Dr. Hunt.
- M284f-w,w-s,s-su,su-f. Surgical and Fresh Tissue Pathology. (See Department of Pathology.)
- M301f,w,s,su. Operative Surgery. Dr. Masson, Dr. Counsellor, Dr. Waugh. (See Department of Surgery.)

In addition to the above, students majoring in obstetrics and gynecology may take work in experimental physiology, radium therapy, and regional anesthesia. For details, see these departments.

OPHTHALMOLOGY, OTOLOGY, RHINOLOGY, AND LARYNGOLOGY (including Plastic Surgery)

The graduate courses in these subjects are designed to prepare selected men for advanced work in the various lines, to prepare them for practice in these specialties, and to develop research and productive work in these subjects.

Of elective courses in other departments, the following are highly desirable:

- Physics of Light and Acoustics
- Advanced Anatomy of the Head and Neck
- Topographic Anatomy of the Head and Neck
- Developmental Anatomy of the Head

Advanced Histology and Neurology of Eye, Ear, Nose, and Throat (Dr. Rasmussen)
 Physiologic Optics Seminar
 Immunity
 Advanced Neuropathology

OPHTHALMOLOGY

A. Courses Offered at the Medical School

Professor Frank E. Burch, M.D.; Associate Professor John S. Macnie, B.A., M.D.; Clinical Assistant Professors Paul D. Berrisford, B.S., M.D., John C. Brown, B.S., M.D., Walter E. Camp, M.A., M.D., Hendrie W. Grant, M.S., M.D., Erling W. Hansen, B.S., M.D., Charles Hymes, M.S., M.D.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 100f. Ophthalmology. Lectures and demonstrations. 20 hours. Dr. F. E. Burch.
 103f,w,s,su. Clinic in Diseases of the Eye. Diagnosis and treatment of cases. Part of the required section clinics, surgical clerkship period. 20 hours. University Dispensary. Dr. Macnie, Dr. Hansen, Dr. Hymes.
 106f,w,s. Operative Clinic in Eye. Limited to 6 students. 13 hours. University Hospital. Dr. F. E. Burch, Dr. Macnie, Dr. Hansen, Dr. Hymes.
 107f,w,s. Medical and Neurological Ophthalmology. Limited to 16 students. 2 sections, 22 hours credit. Todd Memorial Room.
 108f,w. Advanced Ophthalmoscopy. Limited to 6 students. Eye clinic. Prerequisite: 22 hours credit. University Dispensary.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 200f,w,s. Refraction. Dr. Tracht.
 201f,w,s. Advanced Refraction.
 202f,w,s. Clinical Ophthalmology. 132 hours per quarter. Dr. F. E. Burch, Dr. Macnie, Dr. Hansen.
 203f. Biomicroscopy. 22 hours.
 204w,f. Ocular Muscles. 22 hours.
 205w. Perimetry. 16 hours.
 206f,w,s. Surgery of the Eye. 32 hours per quarter. Dr. F. E. Burch, Dr. Macnie, Dr. Hansen.
 207w. Pathology of the Eye. 22 hours. Dr. Camp.
 208f. Ophthalmoscopy. 22 hours.
 209s. Neuro-Ophthalmoscopy. 12 hours.
 210s. Animal Surgery. 22 hours. Dr. F. E. Burch.
 211w,s. Physiology of Vision and Physiologic Optics.
 212w,s. Seminar in Ophthalmology. 16 hours. Dr. F. E. Burch and staff.
 213s. Review of Texts on External Diseases. Dr. Stanford.
 214f. Histology of the Eye. 22 hours.
 215w. Radiology of the Eye, Orbit, and of the Head. Dr. Rigler and staff.
 216s. Plastic Surgery of the Eye and Adnexa. Dr. H. P. Ritchie.
 217w. Allergy of the Eye. Dr. Hansen.
 218s. Ophthalmic Therapeutics.
 219s. History of Ophthalmology.

B. Courses Offered in the Mayo Foundation

Professor William L. Benedict, M.D.; Associate Professors Avery D. Prangen, B.S., M.D., Henry P. Wagener, M.D., M.S. in Oph.; Assistant Professor C. Wilbur Rucker, M.D., M.S. in Oph.; Instructors Hugo L. Bair, B.S., M.D., Paul L. Cusick, M.D., M.S. in Oph.

Practical experience in diagnosis and treatment of diseases of the eye is available to fellows majoring in ophthalmology. Included also are studies in the basic sciences underlying the field and the practical application of those principles to the clinical conditions.

M270f,w,s,su. Pathology of the Eye. Dr. Kernohan.

M271f,w,s,su. Refraction and Ophthalmic Myology. Theory of refraction, retinoscopy, diagnosis of refractive errors of the eye, prescribing of lenses, practical work on patients under supervision of instructor. Eye movements, disturbances of motility of the eyes. Dr. Prangen, Dr. Cusick.

M272f,w,s,su. Clinical Ophthalmology. External diseases of the eye, ophthalmoscopy, ophthalmic surgery. Dr. Benedict, Dr. Bair.

M273f,w,s,su. Medical Ophthalmoscopy. Ophthalmology in relation to general diseases. Dr. Wagener, Dr. Rucker, Dr. Bair.

M274f,w,s,su. Neuro-Ophthalmology. Ophthalmology in relation to diseases of the nervous system. Physiology of the eye, psychology of vision, functional eye disturbances. Dr. Wagener, Dr. Rucker, Dr. Bair.

In addition to the above, students majoring in ophthalmology may take work in biophysics, ophthalmic pathology, or physiologic optics. For details, see these departments.

OTOLOGY, RHINOLOGY, AND LARYNGOLOGY

A. Courses Offered at the Medical School

Professor Horace Newhart, B.A., M.D., Head; Clinical Associate Professor Lawrence R. Boies, M.A., M.D.; Clinical Assistant Professors Frank L. Bryant, B.S., M.D., Charles E. Connor, M.A., M.D., C. Alford Fjeldstad, M.S., M.D., Kenneth A. Phelps, B.S., M.D., Fred J. Pratt, M.D.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

101f. Laryngology and Rhinology. Lectures and demonstrations. Junior medical students. 15 hours. Dr. Phelps, Dr. Pratt.

102f. Otology. Lectures and demonstrations. Junior medical students. 15 hours. Dr. Phelps, Dr. Pratt.

104f,w,s,su. Clinic in Diseases of the Ear. Diagnosis and treatment of cases. Part of section clinics, surgical clerkship period. 18 hours. University Dispensary. Dr. Newhart, Dr. Bryant, Dr. Fjeldstad.

105f,w,s,su. Clinic in Diseases of the Nose and Throat. Diagnosis and treatment of cases. Part of section clinics, surgical clerkship period. 18 hours. University Dispensary. Dr. Newhart, Dr. Boies, Dr. Bryant, Dr. Fjeldstad.

115f,w,s,su. Clinics in Diseases of the Ear, Nose, and Throat. 50 hours. Wilder Dispensary, St. Paul. Dr. Connor.

116f,w,s,su. Operative Clinic in Ear, Nose, and Throat. Limited to six students. 13 hours. University Hospital. Dr. Newhart, Dr. Boies, Dr. Bryant, Dr. Fjeldstad, Dr. Phelps.

117w,s. Clinical Otorhinolaryngology. Demonstration of diagnosis and treatment of cases with special reference to the needs of the general practitioner. Classroom and bedside instruction. Minimum 6, maximum 12 students. Prerequisites: Courses 21 and 22. Dr. Newhart, Dr. Boies, Dr. Bryant, Dr. Fjeldstad.

COURSES PRIMARILY FOR GRADUATE STUDENTS

230f,w,s,su. Clinical Otolgy. 132 hours per quarter. Dr. Newhart, Dr. Bryant, Dr. Fjeldstad.

231f,w,s,su. Clinical Rhinology and Laryngology. 132 hours per quarter. Dr. Boies.

232f,w,s,su. Surgery of the Ear, Nose, and Throat. Operative Clinic in the University Hospital. 32 hours per quarter. Dr. Newhart, Dr. Boies, Dr. Bryant, Dr. Fjeldstad, Dr. Phelps.

233f,w. Operative Surgery of the Temporal Bone. 22 hours. Dr. Newhart, Dr. Fjeldstad.

234f,w. Operative Surgery of the Nose and Throat. 22 hours. Dr. Pratt.

235s. Roentgenology of the Head. 10 hours. Dr. Rigler.

236w. Functional Ear Tests. 11 hours. Dr. Newhart, Dr. Fjeldstad.

237f. Endoscopy. Lectures and demonstrations. 22 hours. Dr. Phelps.

238f. Pathology of the Ear, Nose, and Throat. 22 hours. Dr. Connor.

239s. Endocranial Complications of Ear Diseases. 10 hours. Dr. Newhart.

240s. Physiotherapy and Surgery of the Malignant Diseases of the Ear, Nose, and Throat. 6 hours. Dr. Stenstrom, Dr. Boies, Dr. Peyton.

241f,w,s. Seminar in Otolaryngology. Dr. Newhart, Dr. Boies, Dr. Fjeldstad, Dr. Pratt.

242f. Diseases of the Labyrinth. 6 hours. Dr. Fjeldstad.

243f. Ophthalmoscopic and Perimetric Findings in Endocranial Complications. 4 hours.

244s. Speech Pathology. 6 hours. Dr. Bryngelson.

245s. Allergy. 10 hours. Dr. Ellis.

246w. Practical Acoustics for Otologists. 6 hours. Dr. Hartig.

247w. Plastic Surgery of the Nose. Dr. Hochfilzer.

OTOLARYNGOLOGY AND RHINOLOGY

(Including Plastic Surgery)

B. Courses Offered in the Mayo Foundation

Professors Harold I. Lillie, B.A., M.D., Gordon B. New, D.D.S., M.D.; Associate Professors Fred A. Figi, M.D., Bert E. Hempstead, B.A., M.D.; Assistant Professors Fred Z. Havens, B.S., M.D., Henry L. Williams, M.D., M.S. in Otolaryngology; Instructors John B. Erich, M.D., D.D.S., M.S. in Oral Surg., Kinsey M. Simonton, M.D., M.S. in Otolaryngology.

Practical experience in diagnosis and treatment of diseases of the ear, nose, and throat is available to fellows majoring in otolaryngology and rhinology. Included also are studies in the basic sciences underlying the field and the practical application of those principles to the clinical conditions.

M275f,w,s,su. Diagnostic and Outpatient Service. Diagnosis of neoplasms of the nose, throat, mouth, and neck. Plastic surgery of face and neck (preoperative and postoperative treatment). Advanced laryngology as related to neurology and general medicine. Six months. Dr. New, Dr. Figi, Dr. Havens, Dr. Erich.

- M276f,w,s,su. Hospital Service. Hospital residence. Operative and other treatment of tumors of the nose, throat, and mouth. Plastic surgery of the face and neck (operative). Six months. Dr. New, Dr. Figi, Dr. Havens, Dr. Erich.
- M277f,w,s,su. Clinical Otolaryngology and Rhinology. Theory and practice with differential diagnosis of diseases of the ear, nose, accessory sinuses, pharynx, and larynx, and their relation to general diagnosis. Dr. Lillie, Dr. Hempstead, Dr. Williams, Dr. Simonton.
- M278f,w,s,su. Preoperative and Postoperative Care of Patients. Treatment of complications. Dr. Lillie, Dr. Hempstead, Dr. Anderson, Dr. Williams.
- M279f,w,s,su. Operative Otolaryngology and Rhinology. Hospital residence, second assistantship in operating service. Dr. Lillie, Dr. Hempstead, Dr. Williams, Dr. Simonton.
- M280f,w,s,su. Operative Otolaryngology and Rhinology. First assistantship in operative service. Dr. Lillie, Dr. Hempstead, Dr. Williams, Dr. Simonton.

In addition to the above, fellows majoring in otolaryngology and rhinology may take work in anatomy, bacteriology, biophysics, or surgical pathology. For details, see these departments.

PATHOLOGY

A. Courses Offered at the Medical School

Professors Elexious T. Bell, B.S., M.D., Head, Benjamin J. Clawson, M.D., Ph.D.; Associate Professors James S. McCartney, Jr., B.A., M.D., John F. Noble, M.D.

Prerequisites.—Graduate students who desire to take their major work in pathology must present credits for the equivalent of the first two years' work of the Medical School of this University. They must also have a reading knowledge of German.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 104f,w,s,su. Autopsies. The average number of post-mortems available is about 2,500 per year. Graduate students take part in post-mortems, prepare post-mortem records, and make microscopic examinations of various organs and tissues. The student may attend as many post-mortems as his other work allows.
- 107f. Surgical Pathology. Diagnosis of tumors.
- 107aw. Surgical Pathology.
- 107bw. Diseases of the Heart.
- 107as. Surgical Pathology.
- 107bs. Diseases of the Kidney.
- 109f,w,s,su. Clinical Pathologic Conference. The students are provided one week in advance with the clinical history of a case. The case is fully discussed clinically. The students are expected, in so far as possible, to predict the post-mortem findings from the clinical data. A full post-mortem report is then given. One hour per week. Dr. Bell.
- 110f,w,s. Seminar in Pathology. Prerequisite: Pathology 102. Dr. Bell.
- 111su,f,w,s. Conference on Autopsies. Prerequisite: Pathology 102. Dr. Bell and staff.

COURSES PRIMARILY FOR GRADUATE STUDENTS

201f,w,s,su. Research. Graduate students with the necessary preliminary training may elect research, either as majors or minors in pathology. Hours and credits arranged.

B. Courses Offered in the Mayo Foundation

Professors Albert C. Broders, M.D., M.S. in Path., D.Sc., James W. Kernohan, Ch.B., D.P.H., M.A., M.D., William C. MacCarty, M.D., M.S., Thomas B. Magath, M.D., Ph.D., Frank C. Mann, M.D., M.A., D.Sc., Harold E. Robertson, B.A., M.D., Arthur H. Sanford, M.D., M.A.; Associate Professors Jesse L. Bollman, B.A., M.D., M.S., William H. Feldman, D.V.M., M.S., Carl F. Schlotthauer, D.V.M.; Instructors Richard W. Cragg, M.D., M.S. in Path., John R. McDonald, M.D., M.S. in Path.

Opportunities for advanced work in pathology are offered in four different sections in the Mayo Foundation, as follows:

Clinical Pathology. Work in this section includes diagnostic work in the laboratories of gastrology, urinalysis, serology, bacteriology, parasitology, and clinical chemistry. Graduate students in these clinical laboratories may learn the technique of accepted diagnostic procedure. Special attention is called to the opportunity for experience and research in serology under the direction of Dr. Sanford, and for training and research in parasitology under the direction of Dr. Magath. This work may be taken either as a major or as fulfilling the conditions of a minor.

Pathologic Anatomy. Post-mortem examinations are made in sufficient numbers to permit approximately ten fellows being assigned to the section.

The service is designed to permit the laying of a thoro foundation in the general principles of pathologic anatomy. Each fellow serves as junior assistant three months and senior assistant three months, during which time he takes part in the routine or post-mortem examinations and studies the microscopic sections of these post-mortems, and engages in weekly conferences and seminars concerned with general and special subjects in pathologic anatomy. Each fellow is expected to take up some special line of work upon which he reports to the group. Microscopic and gross demonstrations are held at frequent intervals and the work throughout is intimately supervised. Collateral reading and study are encouraged and oftentimes the foundation may be laid for thesis studies or special lines of research. There is available for study a large collection of operative and post-mortem specimens, both gross and microscopic, cross-indexed as to organ and disease. In addition there are over 10,000 photographs of gross specimens illustrating various phases of pathologic anatomy.

Surgical Pathology. The laboratories of surgical pathology receive immediately all tissue removed at operation. It is studied both grossly and microscopically. The minimum residence in this service is six months, during which time opportunity is given to study a large amount of operative material in conjunction with clinical histories. Besides the routine diagnostic experience fellows are expected to begin to carry along in these laboratories some piece of pathologic research.

Experimental Pathology and Comparative Pathology. Work in this section consists of research in problems of pathology involving the use of experimental animals. Seminars arranged for fellows in pathology are held regularly.

- M280f,w,s,su. Clinical Pathology. Making and examining of cultures, preparation and administration of autogenous vaccines, Wassermann tests, special clinical and laboratory methods including hematology and serology and opportunity for research. Dr. Magath, Dr. Sanford.
- M281f,w,s,su. Parasitology. Routine clinical and special research in parasitology, examination of stools, study of internal parasites. Dr. Magath.
- M282f,w,s,su. Clinical Hematology. Dr. Sanford, Dr. Heck, Dr. Watkins.
- M283f-w,w-s,s-su,su-f. Necropsy Service. Junior assistant three months; senior assistant three months; demonstrations in clinico-pathologic conferences; microscopic examination of fixed tissues removed at necropsy. Bacteriology and necropsy material. Research problems. Weekly seminars. Dr. Kernohan, Dr. Robertson, Dr. Cragg.
- M284f-w,w-s,s-su,su-f. Surgical and Fresh Tissue Pathology. The diagnosis of surgical specimens (gross and microscopic) with immediate correlation with all clinical data. Bacteriology of surgical material. Research problems. Daily demonstrations and discussions. Dr. Broders, Dr. MacCarty, Dr. McDonald.
- M285f,w,s,su. Research Work on Selected Problems in Experimental Pathology. Dr. Mann, Dr. Bollman.
- M286f,w,s,su. Research Work on Selected Problems in Comparative Pathology. Dr. Feldman, Dr. Schlotthauer.

In addition to the above, students majoring in pathology may do research work in biophysics, physiological chemistry, experimental physiology, and bacteriology. For details, see these departments.

PEDIATRICS

The graduate work of the Department of Pediatrics is arranged with the intention (a) of preparing students to become competent pediatricists; (b) to put them in a position to attack original pediatric problems; and (c) to make them competent teachers in the subject.

A. Courses Offered at the Medical School

Professors Irvine McQuarrie, M.D., Ph.D., Head, Eric K. Clarke, B.S., M.D.; Clinical Professors Edgar J. Huenekens, M.D., M.A., Frederick C. Rodda, M.D., Max Seham, M.D., Chester A. Stewart, M.D., Ph.D.; Associate Professors Arild E. Hansen, M.D., Ph.D., Albert V. Stoesser, M.D., Ph.D.; Clinical Associate Professors Hyman S. Lippman, M.D., Ph.D., Erling S. Platou, B.S., M.D.; Assistant Professor Mildred R. Ziegler, Ph.D.

The work of the department is conducted in the pediatric research laboratories, the wards, and the Outpatient Department of the University Hospital and at the Minneapolis General Hospital. The child welfare organizations and the child guidance clinics of Minneapolis and St. Paul afford additional opportunities for all phases of preventive pediatrics.

The general library of the University with almost complete files of journals dealing with pediatrics furnishes adequate reference facilities.

Research laboratories attached to the Department of Pediatrics and the large general laboratories attached to the Departments of Anatomy, Bacteriology, Pathology, Pharmacology, and Physiology are at the disposal of the graduate students, and afford every possible opportunity for research.

As a prerequisite a general understanding of bacteriology, immunology, pathology, and physiological and analytical chemistry, and a reading knowledge of French and German are essential.

Students will be required to carry a minor in some of the fundamental branches or in allied fields. Courses leading to higher degrees can be arranged by consultation with members of the graduate teaching faculty.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS*

- 150f,w,s.† Physiology and Diseases of the Newborn. Dr. Rodda, Dr. Shannon.
 152f,w,s.† Fundamental Principles of Nutrition and Metabolism As Applied to Children. Seminar course. Dr. McQuarrie, Dr. Hansen, Dr. Ziegler.
 154f,w,s.† Endocrinology As Applied to Pediatrics. Seminar course. Dr. McQuarrie.
 156f,w,s.† Advanced Study of Noncontagious Diseases. Both clinical and experimental subject-matter included. Dr. McQuarrie, Dr. Hansen.
 158f,w,s.† Advanced Study of Contagious Diseases. Dr. Stoesser, Dr. Platou.
 160f,w,s. Allergic Disorders in Childhood. Dr. Stoesser.
 162f,w,s. Common Behavior Disturbances in Childhood—Their Recognition and Management. Dr. Clarke.
 164f,w,s.† Rare and Unusual Diseases of Infancy and Childhood. Seminar course. Dr. McQuarrie, Dr. C. A. Stewart.
 166f,w,s. Weekly Seminar for Detailed Discussion of Fundamental Subjects Related to Pediatrics. Dr. Ziegler.
 168f,w,s. Speech Disturbances in Childhood. Clinic course. Dr. Clarke, Dr. Bryngelson.
 170f,w,s. Rheumatic Infection and Heart Diseases in Childhood. Dr. Hansen.
 172f,w,s. Dental Disorders in Relation to General Health. Dr. Brekhus, Dr. Rudolph.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 200f,w,s,su. Amphitheater Clinic in Pediatrics. 11 hours credit per quarter. Dr. McQuarrie, Dr. Hansen, and senior staff.
 202f,w,s,su. Pediatric Clinic. Outpatient Department, University Hospital. Daily, 9:00-12:00. Dr. C. A. Stewart.
 204f,w,s,su. Course consisting of three to twelve months' residence in pediatrics at the University Hospital. Dr. McQuarrie, Dr. Clarke, Dr. Hansen, Dr. Ziegler.
 206f,w,s,su. Course consisting of three to twelve months' residence in pediatrics and contagious diseases at the Minneapolis General Hospital. Dr. Huenekens, Dr. Seham, Dr. Stoesser, Dr. Platou.
 208f,w,s,su. Pediatric Research. Special problems in various subdivisions of the pediatric field may be selected for study. Students may collaborate with members of the staff or with other students where suitable arrangements can be made. Dr. McQuarrie, Dr. Hansen, Dr. Ziegler, and staff.

B. Courses Offered in the Mayo Foundation

Professor Henry F. Helmholz, B.S., M.D.; Associate Professors Samuel Amberg, M.D., Roger L. J. Kennedy, M.D., M.S. in Ped.; Instructors Haddow M. Keith, M.B., George B. Logan, M.D., M.S. in Ped.

* Time and credit to be arranged with Dr. McQuarrie.

† Not offered to fewer than 10 students.

The opportunities offered in pediatrics in the Mayo Foundation are designed for the purpose of training a few selected physicians for the special practice of pediatrics. The courses are also valuable to fellows majoring in special clinical fields, for example, in internal medicine.

The work of the department comprises:

a. The care of the newborn. Immediately after the birth of the infant the Department of Pediatrics assumes charge.

b. The Department of Pediatrics is in charge of the work in preventive pediatrics in the city of Rochester and in Olmsted County, co-operating with the City Health Department and the Olmsted County Public Health Association. This work comprises infant welfare work as well as the care of the child of preschool and school age.

c. A special advantage lies in the large number of cases presenting unusual manifestations of common diseases, as well as those conditions which are not so frequently seen in the ordinary hospital and outpatient departments.

d. The work in the city affords a chance for routine practice in pediatrics, including the usual infectious diseases.

e. The department has a hospital service of its own. In addition it has the supervision of all children below the age of fourteen years in the other hospitals. The Department of Pediatrics co-operates with the surgical section in the pre-operative and postoperative management of the patient.

f. Six months is usually spent in Minneapolis, in the Department of Pathology of the Medical School, working in gross pathologic anatomy.

g. Research is regarded as an important feature of the graduate work, and there are ample laboratory and clinical facilities for investigative study.

104f,w,s,su. Pathology. Autopsies. Dr. Bell. (See Pathology 104.)

M286f-w,w-s,s-su,su-f. Preventive Pediatrics. Limited to two fellows. Dr. Helmholtz, Dr. Amberg, Dr. Keith, Dr. Logan.

M287f-w,w-s,s-su,su-f. Diagnosis of Medical and Surgical Diseases of Infancy and Childhood. Research. Seminar. Dr. Helmholtz, Dr. Amberg, Dr. Kennedy, Dr. Keith, Dr. Logan.

M288f-w,w-s,s-su,su-f. Pediatrics. Hospital residence. Research. Seminar. Dr. Helmholtz, Dr. Amberg, Dr. Kennedy, Dr. Keith, Dr. Logan.

In addition to the above, fellows in pediatrics may take work in physiological chemistry and experimental physiology. For details, see these departments.

PHARMACEUTICAL CHEMISTRY

Courses Offered in the College of Pharmacy

Professors Charles H. Rogers, D.Sc., Glenn L. Jenkins, Ph.D.; Assistant Professor Ole Gisvold, Ph.D.

Graduate work, leading to the M.S. and Ph.D. degrees, is offered to a limited number of students properly prepared for advanced work in pharmaceutical chemistry and pharmacognosy. The same standards of preparation are required as are set for other fields of specialization. Students interested in such work should submit their credentials for approval before presenting themselves for matriculation. In general, work leading to the master of science degree is offered under Plan A. In exceptional cases, Plan B may be offered by petition.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 161f-162w-163s. Organic Medicinal Products. This course treats of the sources, methods of production, classification, properties, reactions, and uses of the natural and synthetic organic compounds used as therapeutic agents. Prerequisite: Organic Chemistry 2. 9 credits. Dr. Jenkins.
- 164w-165s. Drug and Food Analysis. A study of the processes of manufacture and of the composition of drug and food products. This course includes a detailed consideration of the legal requirements of the Food, Drug, and Cosmetic Act, and of the official analytical methods of the United States Pharmacopoeia, National Formulary, and the Association of Official Agricultural Chemists. Registration in this course is limited to available instructional facilities. Prerequisite: Organic Chemistry 2, Pharmaceutical Chemistry 56f. 6 credits. Dr. Gisvold.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201f,w,s. Pharmaceutical Chemistry Seminar. Required of all students majoring in pharmaceutical chemistry. 1 credit per quarter. Dr. Jenkins.
- 202f-203w-204s. Advanced Food, Drug, and Cosmetic Analysis. The analyses of complex food, drug, and cosmetic products. Identification of colors, perfumes, flavoring agents, digestants, adulterants, etc. Special precision instruments. Prerequisite: Pharmaceutical Chemistry 165s. 3 to 5 credits per quarter. Dr. Rogers.
- 205f-206w-207s. Chemistry of Medicinal Products. A study of the chemistry and of the relationships between constitution and physiologic action of organic compounds. Isolation of active principles and syntheses of medicinal compounds. Prerequisites: Organic Chemistry 2 and Pharmaceutical Chemistry 163s or consent of instructor. 3 to 6 credits per quarter. (Not offered in 1941-42.) Dr. Jenkins.
- 208f. Carbohydrates and Glycosides. A consideration of the origin, isolation, characterization, and chemistry of the carbohydrates and glycosides. Prerequisite: Pharmaceutical Chemistry 163s, or consent of the instructor. 3 to 5 credits. Dr. Gisvold.
- 209f. Alkaloids. A discussion of the chemistry and experiments on the methods used to isolate, purify, and characterize the alkaloids. Prerequisite: Pharmaceutical Chemistry 163s, or consent of instructor. 3 to 5 credits. (Not offered in 1940-41.) Dr. Jenkins.
- 210f. History of Pharmaceutical Chemistry. 3 credits. Dr. Jenkins.
- 211w. Terpenes. A discussion of the chemistry and an experimental investigation of the methods of isolation and characterization of the volatile oils and their constituents. Prerequisite: Pharmaceutical Chemistry 163s, or permission of the instructor. 3 to 5 credits. (Not offered in 1940-41.) Dr. Jenkins.
- 212s. Sterols and Related Compounds. A consideration of the origin, isolation, characterization, and chemistry of the sterols and related compounds. Prerequisite: Pharmaceutical Chemistry 163s, or consent of the instructor. 3 to 5 credits. Dr. Gisvold.
- 213f,w,s,su. Special Problems. A study and experimental investigation of one or more topics, e.g., complex drug and cosmetic products, carotinoids, enzymes, fats, oleoresins, pigments, proteins, resins, vitamins, waxes, etc. Prerequisite: Pharmaceutical Chemistry 163s, or consent of instructor. Credits arranged. Dr. Rogers, Dr. Jenkins, Dr. Gisvold.

214f,w,s,su. Research in Pharmaceutical Chemistry. Credits arranged. Dr. Rogers, Dr. Jenkins, Dr. Gisvold.

PHARMACOGNOSY

Courses Offered in the College of Pharmacy

Professor Charles H. Rogers, D.Sc.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

162w-163s.‡ Biological Assay of Drugs. This course includes didactic and laboratory considerations of the biological assays of the vegetable and animal drugs of the U.S.P. and N.F. Important nonofficial assay methods are also studied. Registration in this course is limited to available instructional facilities. Prerequisites: Pharmacognosy 57s and Pharmaceutical Chemistry 56f. 6 credits. Dr. Fischer.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201f. Advanced Pharmacognosy. A study of the important constituents of vegetable and animal drugs. Laboratory work includes the microscopic study of cell contents as they occur in those drugs, and their isolation and identification by microscopical and microchemical means. Constituents studied include alkaloids, calcium carbonate, calcium oxalate, carbohydrates, fixed oils, glycosides, mucilages and gums, oleoresins, resins, silica, tannins, volatile oils, etc. Prerequisite: Pharmacognosy 55f, 56w, 57s. 3 to 5 credits. Dr. Fischer.
- 202w. Advanced Pharmacognosy. A lecture and laboratory course dealing with microscopic characteristics, structure, and function of the various cell forms found in vegetable and animal drugs and the tissues which they constitute. Important microscopical accessories such as the micropolariscope, microphotographic camera, staining reagents, etc., are used in this work. Prerequisites: Pharmacognosy 55f, 56w, 57s. 3 to 5 credits. Dr. Fischer.
- 203s. Advanced Pharmacognosy. A systematic study of the pharmacognosy and pharmacohistology of the official, and a few important nonofficial, vegetable and animal drugs. Information concerning the microscopic and microchemical properties of cell contents and cell forms and the arrangement of the latter in the plant is applied to the identification, determination of purity, evaluation, and detection of the adulteration of these drugs. The order of presentation is based upon the taxonomic classification of plant families. Prerequisites: Pharmacognosy 55f, 56w, 57s. 3 to 5 credits. Dr. Fischer.
- 204f,w,s,su. Research in Pharmacognosy. Credits arranged. Dr. Rogers, Dr. Fischer.

PHARMACOLOGY AND THERAPEUTICS

A. Courses Offered at the Medical School

Professors Arthur D. Hirschfelder, B.S., M.D., Head, Raymond N. Bieter, M.D., Ph.D.; Associate Professor Harold N. G. Wright, Ph.D.

The laboratories of the Department of Pharmacology are excellently equipped for the study of both the chemical properties of drugs and their actions upon the functions of the living organs and tissues. They are well equipped with chemical apparatus for the synthesis of new medicinal compounds, for studies upon the detection, isolation, and estimation of poisons in toxicology, for the isolation of

‡ A fee of \$5 per quarter is charged for this course.

medicinal plant constituents and for experimental chemotherapy. By the co-operation of the clinical departments, special studies may be made of the action of drugs, old and new, upon patients in the University Hospital and allied hospitals.

Opportunities are afforded for the special study of the actions of drugs which are used in each of the clinical specialties and the literature bearing upon them. As the needs of each graduate student are individual in this regard, these studies are taken up by conference, seminar, and experiments specially devised to meet each case.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 101w.† Introduction to Pharmacology. The principles underlying the structure, physiochemical properties, physiologic, therapeutic, and toxic action of substances, natural or synthetic, used as medicines. At least one quarter of physiology is prerequisite. 22 hours; 2 credits. Dr. Hirschfelder, Dr. Bieter, Dr. Wright.
- 102s.† General Pharmacology. A study of the most important drugs used in medicine with consideration of their chemical properties, actions on the normal and abnormal body, modes of administration, preparation, dosages, etc. 132 hours, 6 credits. Dr. Hirschfelder, Dr. Bieter, Dr. Wright.
- 103su,w. General Pharmacology, in continuation. Lectures on narcotic, soporific, analgesic, antipyretic drugs; remedies used for the treatment of arthritides, etc. Writing of prescriptions for the drugs used. 22 hours; 2 credits. Dr. Hirschfelder, Dr. Bieter, Dr. Wright.
- 104su,s. General Pharmacology, in continuation. Lectures on the salts of the metals, antiseptic, antisyphilitic drugs, chemotherapy, etc. 22 hours; 2 credits. Dr. Hirschfelder, Dr. Bieter, Dr. Wright.
- 108su,f. Prescription Writing. The principles of prescription writing. Fifth year. 11 hours; 1 credit. Dr. Wright.
- 109f,w,s,su. Pharmacological Problems. Special investigations and experimental study of one or more of the following topics: anesthetics; circulatory stimulants and depressants; drugs acting upon the kidneys; urinary antiseptics; poisons and antidotes; effects of common harmless drugs; internal secretions; action of drugs upon parasites, tumors, etc. Hours and credits by arrangement. Dr. Hirschfelder, Dr. Bieter, Dr. Wright.
- 110f,w,s. Poisons. Their detection, actions, and antidotes. 66 hours; 2 credits. Dr. Bieter, Dr. Wright.

Courses 101, 102, 103, 104 are not acceptable for the minor in the case of graduates of medical colleges who are candidates for the degree of master of science.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201f,w,s. Seminar in Physiology and Pharmacology. Reviews of recent literature. 11 hours; 1 credit. Staff.
- 203su,f,w,s. Research in Pharmacology. Hours and credits arranged. Dr. Hirschfelder, Dr. Bieter, Dr. Wright.
- 204f,w,s. Advanced Pharmacology. With collateral readings. Limited to six advanced students. 11 hours; 1 credit. Hours arranged. Staff.
- 205f,w. General Discussions in Pharmacology. With collateral readings. Hours and credits arranged. Dr. Hirschfelder, Dr. Bieter, Dr. Wright.

† In the Summer Session Courses 101 and 102 are combined and offered as 115su.

B. Courses Offered in the Mayo Foundation

All opportunities for advanced work in pharmacology and therapeutics offered in the Mayo Foundation are in connection with the Departments of Medicine, Pediatrics, and Surgery. See announcements of these departments.

PHYSIOLOGY AND PHYSIOLOGICAL CHEMISTRY
(BIOCHEMISTRY)

A. Courses Offered at the Medical School

The Department of Physiology is well equipped for the various types of physiological investigation. The library facilities are good.

For a major or minor in physiology, good courses in general zoology, general chemistry, organic chemistry, and college physics are prerequisites. Physical chemistry is desirable.

For a major or minor in physiological chemistry, general chemistry, organic chemistry, physical chemistry, and physics are prerequisite; physiology, quantitative chemistry, and zoology are desirable.

Students majoring in clinical subjects who desire a minor in physiology or physiological chemistry must have had the courses in these branches usually required of medical students.

A reading knowledge of German or French is required of candidates for the Master's degree in this department, and a reading knowledge of both French and German, of candidates for the Doctor's degree.

PHYSIOLOGY

Professors Maurice B. Visscher, M.D., Ph.D., Head, Ancel Keys, Ph.D., Frederick H. Scott, M.B., Ph.D., D.Sc., K. Wilhelm Stenstrom, Ph.D.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 103su.f. Physiology of Circulation, Respiration, Digestion, Metabolism, Nutrition, and Excretion. Prerequisites: organic chemistry and zoology. 132 hours; 9 credits. Dr. Visscher, Dr. Scott, Dr. Hemingway.
- 104w,su. Physiology of the Endocrines, Nervous System, and Special Senses. Prerequisite: Course 103 or organic chemistry and neurology. 88 hours; 6 credits. Dr. Visscher, Dr. Scott, Dr. King.
- 105f. Roentgen Rays, Light, and Radium. The physical and physiological basis of physical therapy. 11 hours; 1 credit. Dr. Stenstrom.
- 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. Prerequisites: Courses 103, 104, or equivalent. 66 hours; 3 credits each quarter or arranged. Dr. Visscher, Dr. Keys, Dr. Scott, Dr. King.
- 114w. Physiology of Muscular Activity. Prerequisites: Physiol. 51 with grade of A or B or Physiol. 103; reading knowledge of German recommended. 11 hours conference and term paper. 2 credits. Dr. Keys.
- 115w. Methods in Human Physiology. Prerequisite: Physiol. 114 (which may be taken concurrently). Limited to 8 students. 33 hours laboratory. 1 credit. Dr. Keys.

- 116f. Tissue Culture Theory. Two lectures. Hours arranged; 2 credits. Dr. King.
- 117w. Tissue Culture Laboratory. Limit 4 students. Prerequisite: Course 116f. Hours arranged; 3 credits. Dr. King.
- 135f,w,s. Conference on Physiology, with qualified students. 11 hours; 1 credit. Dr. Visscher, Dr. Keys, Dr. Scott.
- 163f,164w,165s. Physical Chemistry and Biophysics in Biology and Medicine. Prerequisite: Course 100-101 or Biochemistry 112. 3 credits per quarter. Dr. Hemingway.
- 166f,167w,168s. Laboratory Work Related to Courses 163, 164, 165. Credits arranged. Dr. Hemingway.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 201f,w,s,su. Seminar in Physiology and Pharmacology. For instructors and advanced students. 11 hours; credit arranged. Dr. Visscher, Dr. Hirschfelder, and staff.
- 202f,w,s,su. Readings in Physiology. Topics will be selected for each student and written reviews will be prepared and discussed. 1 to 3 credits arranged. Dr. Visscher, Dr. Keys, Dr. Scott, Dr. King.
- 203f,w,s,su. Research in Physiology. Hours and credits arranged. Dr. Visscher, Dr. Keys, Dr. Scott, Dr. King.
- 204f,w,s,su. Research in Physics and Physiology of Radiation. Hours and credits arranged. Dr. Stenstrom.
- 206s. Seminar in History of Physiology and Related Sciences. 11 hours; 1 credit. Dr. Visscher.

PHYSIOLOGICAL CHEMISTRY

Professors George O. Burr, Ph.D., Head, Herbert Freundlich, Ph.D.; Assistant Professors Wallace D. Armstrong, M.D., Ph.D., Leo T. Samuels, Ph.D.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 100f,su-101w,su. Physiological Chemistry. The components of the animal body; foods, digestion, excreta, and metabolism. Prerequisites: physics, organic chemistry. 222 hours; 13 credits. Dr. Burr, Dr. Armstrong, Dr. Hemingway, Dr. Samuels.
- 153f,w,s,su. Problems in Physiological Chemistry. Special work arranged with qualified students. May be taken one or more quarters. Prerequisites: Courses 100, 101. Hours and credits arranged. Dr. Burr, Dr. Armstrong, Dr. Samuels.
- 154f,w,s. Conference in Physiological Chemistry. 11 hours; 1 credit. Dr. Burr, Dr. Armstrong, Dr. Samuels.
- 155f,w,s. Seminar and Conference on Dental and Oral Biochemistry. Reports on assigned topics and discussions of current literature. Prerequisites: Physiology 100-101, Physiology 56-57 taken in 1939 or later, or registration for these courses. Hours and credits arranged. Dr. Armstrong.
- 180f. General Survey of Colloid Chemistry. Prerequisite: Physiological Chemistry 103. 3 credits. Dr. Freundlich.
- 182s. Colloids in Biology and Medicine. Prerequisite: Physiological Chemistry 180. 3 credits. Dr. Freundlich.

COURSES PRIMARILY FOR GRADUATE STUDENTS

200s. Seminar in Physiological Chemistry. Dr. Burr.

205f,w,s,su. Research in Physiological Chemistry. Hours and credits arranged.
Dr. Burr, Dr. Armstrong, Dr. Samuels.

EXPERIMENTAL PHYSIOLOGY

B. Courses Offered in the Mayo Foundation

Professor Frank C. Mann, M.A., M.D., D.Sc.; Associate Professors Jesse L. Bollman, B.A., M.D., M.S., Hiram E. Essex, Ph.D., George M. Higgins, Ph.D.; Assistant Professors Eunice V. Flock, Ph.D., Julia F. Herrick, Ph.D.

Many of the opportunities for graduate work in physiology in the Mayo Foundation are in connection with the Departments of Medicine and Surgery. In addition to these, advanced work is offered in the department to a limited number of well-prepared students majoring in physiology.

M290f,w,s,su. Research Work on Selected Problems in Experimental Physiology.
Dr. Mann, Dr. Bollman, Dr. Essex, Dr. Higgins, Dr. Flock, Dr. Herrick.

BIOCHEMISTRY

B. Courses Offered in the Mayo Foundation

Professors Edward C. Kendall, Ph.D., D.Sc., Walter M. Boothby, M.D., M.A.; Associate Professors Harold L. Mason, Ph.D., Arnold E. Osterberg, Ph.D., Marschelle H. Power, Ph.D.; Instructors Bernard F. McKenzie, B.S., Frank H. Stodola, Ph.D.

Many of the opportunities for graduate work in biochemistry in the Mayo Foundation are in connection with the Departments of Medicine, Pediatrics, and Clinical Pathology, for which see announcements under these several departments. In addition to these, advanced work is offered in the Department of Biochemistry to a limited number of well-prepared students majoring in biochemistry.

M257f,w,s,su. Nutrition. (See Department of Medicine.)

M290f,w,s,su. Biochemistry. Research work in problems related to metabolism and the chemistry of the blood; includes training in the use of methods of organic and inorganic analysis. Dr. Kendall, Dr. Boothby, Dr. Mason, Dr. Osterberg, Dr. Power, Mr. McKenzie, Dr. Stodola.

In addition to the above, students majoring in biochemistry may carry on research work in experimental physiology. For details, see that department.

PREVENTIVE MEDICINE AND PUBLIC HEALTH

A. Courses Offered at the Medical School

Professors Gaylord W. Anderson, B.A., M.D., Head, Frederic H. Bass, B.S., Ruth E. Boynton, M.D., M.S., Harold S. Diehl, M.A., M.D., D.Sc., Charles A. Mann, Ph.D., J. Arthur Myers, M.D., Ph.D.; Clinical Professor Albert J. Chesley, M.D.; Associate Professor Alan E. Treloar, Ph.D.; Clinical Associate Professors Orianna McDaniel, M.D., Harold A. Whittaker, M.A.; Clinical Assistant Professor Lucy S. Heathman, M.D., Ph.D.

Committee on Curriculum for Physicians: Gaylord W. Anderson, Albert J. Chesley, Harold S. Diehl.

Committee on Curriculum for Engineers: Gaylord W. Anderson, Frederic H. Bass, Harold A. Whittaker.

Committee on Curriculum for Nurses: Gaylord W. Anderson, Margaret G. Arnstein, Mellie Palmer.

Master's degree.—Offered under both Plan A and Plan B. All candidates for a Master's degree must take basic courses in (1) public health administration, (2) epidemiology, (3) statistics, (4) sanitation, and (5) public health nursing, unless specifically excused by the department.

Inquiries concerning other work in public health should be addressed to the director, Dr. G. W. Anderson, Millard Hall, University of Minnesota.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 102f. Environmental Sanitation—General. Public health supervision of water supplies; production, processing, and distribution of milk and other foods; treatment and disposal of sewage, excreta, garbage and other waste; bathing places; control of occupational health hazards and of animals and insects involved in the spread of disease. Lectures, field and laboratory demonstrations. Prerequisites: Bacteriology 53, Preventive Medicine and Public Health 53, 100, or equivalent or consent of instructor. 5 credits. Mr. Whittaker, Mr. Olson, Mr. Pierce, and associates.
- 103f,w,s.* Public Health Bacteriology. For graduates. Bacteriologic and serologic diagnosis; public health laboratory administration and methods. Prerequisites: Bacteriology 101-102, 116 and permission of instructor. By arrangement. Dr. Heathman.
- 104w.* Epidemiology I. For physicians, and others by permission. Factors underlying the spread of infectious diseases, with detailed discussion of selected diseases; statistical and epidemiologic methods in the study of diseases. Lectures, laboratory, and seminars. Credits arranged. Dr. Anderson, Dr. Diehl, Dr. Treloar.
- 105s. Epidemiology II—Special. For physicians. Epidemiology of certain diseases of public health importance; study of selected source material. Prerequisite: 104. Credits arranged. Dr. Anderson.
- 106f,w.* Public Health Administration—General. For physicians, engineers, nurses, social workers, and others by arrangement. Structure, basic functions, and activities of public health agencies; public health laws and regulations; administrative procedures in public health practice; relationship to other governmental and social activities. 3 credits. Dr. Anderson and guest lecturers.
- 107f. Child and Adult Hygiene. For physicians and graduate students in medical social work. Promotion of hygiene through public health and community effort, maternal, infant, preschool, school, college, industrial, and adult. Lectures and field trips. Prerequisite: Course 53 or 100. 4 credits. Dr. Boynton, Dr. Ellis, and staff.
- 108f. Care of the Handicapped Child. Extent of problems; history and development of program for care; types of physical defects, means of prevention and correction; medical social aspects; mental and emotional aspects; vocational training and placement. Prerequisite: Courses 53, 57, 58 or 100. 2 credits. Dr. Hilleboe and associates.
- 109w.* Environment and Disease. For engineers. Epidemiology of certain important diseases with special consideration of the conditions under which certain

* With special outside work, these courses count toward the nine credits of independent work required for the Master's degree under Plan B.

- diseases of man are transmitted by water, milk, and other foods, by air with especial reference to dusts, by insects, and by animals; their relationship to occupation and their administrative control. 3 credits. Dr. Anderson.
- 110f.s. Biometric Principles. See Biostatistics courses.
- 111f.s. Biostatistics Laboratory. See Biostatistics courses.
- 112w. Environmental Sanitation—Water Supplies. Sanitary problems associated with the location, construction, and operation of water supplies, purification works, and distribution systems including a consideration of plumbing installations and fixtures; methods of public health supervision. Lectures, field and laboratory demonstrations. Prerequisites: Courses 109 and 102 or Civil Engineering 165 or 162. 4 credits. Mr. Whittaker, Mr. Olson, Mr. Pierce, and associates.
- 113w. Environmental Sanitation—Pollution of Waters; Sewage, Excreta, and Waste Disposal. Methods for the study and control of stream and lake pollution; public health supervision of, and methods for, treatment and disposal of sewage, excreta, garbage, and other wastes. Lectures, field and laboratory demonstrations. Prerequisites: Courses 109 and 102 or Civil Engineering 165 or 163. 2 credits. Mr. Whittaker, Mr. Pierce, and associates.
- 115w. Environmental Sanitation—Milk and Other Foods. Sanitary problems associated with the production, processing, and distribution of milk and other foods; methods of public health supervision. Lectures, field and laboratory demonstrations. Prerequisites: Courses 109 and 102 or Dairy Husbandry 51. 2 credits. Mr. Whittaker, Dr. Carter, and associates.
- 116w.* Environmental Sanitation—Problems, Methods, and Organization. Sanitary problems of urban and rural communities; the control of occupational health hazards and of diseases involving insect vectors and animal hosts. Environmental sanitation in activities of federal, state, and local government. Lectures, seminars, field and laboratory demonstrations. Prerequisites: Courses 106, 112, 113, and 115. 3 credits. Mr. Whittaker, Mr. Pierce, associates, and guest lecturers.
- 120w. Correlation Analysis. See Biostatistics courses.
- 121w. Correlation Laboratory. See Biostatistics courses.
- 122w.* Public Health Administration Problems. Conference discussion of selected problems; relative values of different public health procedures and activities. Prerequisite: 106 or may be taken concurrently. 3 credits. Dr. Anderson or guest lecturer.
- 123f,w,s. Topics in Public Health. Selected readings in public health with discussion based on those readings. Credits arranged. Prerequisite: permission of instructor. Dr. Anderson and staff.
- 130s. Statistical Inference. See Biostatistics courses.
- 131s. Sampling Laboratory. See Biostatistics courses.
140. Topics in Biostatistics. See Biostatistics courses.
150. Life Tables. See Biostatistics courses.
- 170s. Supervision in Public Health Nursing. Nature of supervision, historical survey, classification of activities; methods of supervision, including field visitation, individual counseling, group conferences, staff education programs, administrative functions of supervisors, preparation and selection of supervisors. 3 credits. Prerequisites: 53, 61, 63, or by permission. Miss Arnstein.

* With special outside work, these courses count toward the nine credits of independent work required for the Master's degree under Plan B.

171w,s.* Advanced Problems in Public Health Nursing. For advanced students who wish to work on special problems in public health nursing. Prerequisite: 170 or permission of instructor. Credits arranged. Miss Arnstein and associates.

173f,w,s. Advanced Field Work in Public Health Nursing. For public health nurses only. Prerequisite: 170 or permission of instructor. Credits arranged Miss Arnstein.

COURSES PRIMARILY FOR GRADUATE STUDENTS

200f,w,s. Research. Opportunities will be offered by the University and by the various co-ordinated organizations for qualified students to pursue research work. Dr. Anderson, Dr. Diehl, and staff.

210f,w,s. Seminar in Preventive Medicine and Public Health. By arrangement. Staff.

ADDITIONAL COURSES

Other courses offered in this and the Graduate School Bulletin which contribute to work in public health:

Department	Course No.	Title	Instructor
Anatomy	160	Seminar in Human Growth	Dr. Boyd
Bacteriology	114	Higher Bacteria	Dr. Henrici
Bacteriology	116	Immunity	Dr. Larson
Bacteriology	120	Diseases of Animals Transmissible to Man	Dr. Green
Bacteriology	124	Filterable Viruses	Dr. Green
Child Welfare	130-131	Child Development	Dr. Anderson
Child Welfare	190	Mental Examination of Preschool Children	Dr. Goodenough
Hydraulic Engineering	161	Hydrology	Mr. Bass
Medicine	205	Tuberculosis	Dr. Myers
Municipal Engineering	162-163	Water Supply and Sewerage	Mr. Bass
Pediatrics	108	Contagious Diseases	Dr. Platou
Political Science	120	Municipal Functions	Dr. Ludwig
Political Science	121	Municipal Administration	Dr. Ludwig
Political Science	122	Municipal Problems	Dr. Ludwig
Psychology	144-145	Abnormal Psychology	Dr. Bird
Sanitary Engineering	261-262	Water and Sewage Purification	Mr. Bass
Zoology	107-108	Protozoology	Dr. Turner
Zoology	144-145- 146	Animal Parasites and Parasitism	Dr. Riley

RADIOLOGY

A. Courses Offered at the Medical School

Professors Leo G. Rigler, B.S., M.D., Head, K. Wilhelm Stenstrom, Ph.D. (Physicist to Cancer Institute); Clinical Assistant Professor Robert G. Allison, M.D.

Graduates of Class A schools who have completed at least one year's satisfactory internship in a recognized hospital are eligible for an appointment as fellow in radiology. The student must carry one major and one minor branch. The major shall be in radiology and the minor in physics, anatomy, or pathology. A minimum amount of all of these latter studies is required in any event. The course extends over a period of three years including at least one year spent at the University Hospital on physics of radiation, radiation therapy, and physical therapy. Co-operation with the Department of Physics and the Division of Biophysics offers the opportunity of thoro training in the fundamental physics of radiation. The

* With special outside work, these courses count toward the nine credits of independent work required for the Master's degree under Plan B.

fullest application of superficial and deep radiation therapy and of the various types of physical therapy is taught.

The remainder of the course is devoted to general Roentgen diagnosis—the study of the use of Roentgen rays as a diagnostic aid in medicine. These studies are conducted chiefly in the University Hospital but with appropriate time spent in the institutions listed below. The X-ray departments of these institutions are fully equipped with modern diagnostic and therapeutic installations and are all available to fellows in radiology.

Teaching fellows are expected to assist in the teaching of undergraduate students and will be given opportunity to teach independently in elective courses.

A limited number of graduate students, without fellowship appointments, will be accepted.

1. **University Hospital and Outpatient Department.**—Offers unusual clinical material of a chronic nature including especially gastrointestinal, chest, bone, and urological cases. Unique opportunity is afforded for preoperative study of individual cases with operative checks. Post-mortem comparisons are available in an unusually high percentage of cases.

a. **Cancer Institute.**—This division of the University Hospital with its Outpatient Department offers a wide variety of material for the study of all types of tumors both from the diagnostic and therapeutic standpoints. It is fully equipped with the newest type of deep therapy machines and has a radium emanation plant.

b. **The Eustis Hospital.**—This division of the University Hospital offers an excellent opportunity for the study of orthopedic and pediatric cases.

2. **Students' Health Service.**—The close connection of the University Hospital with the Students' Health Service gives opportunity for diagnostic study of a valuable group of cases presenting especially acute conditions in young adults. The opportunity for diagnosis of pulmonary tuberculosis, in its incipency, for the observation of routine roentgenographic examinations of the chest, and for the study of gastrointestinal lesions in their earliest stages is especially good.

3. **Minneapolis General Hospital.**—This institution offers an immense amount of material in both acute and chronic cases. An unusual opportunity for the study of fractures, acute pulmonary conditions, and cardiac diseases is presented.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

101f,w,s. Surgical-Roentgenologic Conference. Weekly meetings with the surgical staff at which all the important surgical cases which have had X-ray diagnostic procedures are reviewed from both the clinical and roentgenological viewpoints. Dr. Rigler, Dr. Wangenstein.

102f,w,s. X-Ray Conference. Weekly departmental meetings at the University and Minneapolis General Hospitals at which the important cases seen in these two hospitals during the previous period are reviewed. Dr. Rigler, Dr. Ude, Dr. Lipschultz.

103f,w,s,su. Physical Therapy. Clinic in which the students have opportunity to participate in the practical application of physical therapy to patients. Dr. Stenstrom.

104s. Roentgen and Radium Therapy. Lectures on theory and practice of radium therapy. Dr. Stenstrom.

105f. Roentgen Rays, Light, and Radium. (See Biophysics 105f.) Dr. Stenstrom.

106w. Physical Therapy. Lectures on the theory and practice of the application of diathermy, visible and infrared light, and ultraviolet light. Dr. Stenstrom, Dr. Knapp.

- 107f,w,s. Medical-Roentgenologic Conference. Weekly meetings with the medical staff at which all the important medical cases which have had X-ray diagnostic procedures are reviewed from both the clinical and roentgenological points of view. Dr. Rigler, Dr. Watson.
- 108f,w,s. Pediatric-Roentgenologic Conference. Weekly meetings with the pediatric staff at which all the important pediatric cases which have had X-ray diagnostic procedures are reviewed from both the clinical and roentgenological points of view. Dr. Rigler, Dr. McQuarrie.
- 170f,w,s. Problems in Biophysics. (See Biophysics 170.) Dr. Stenstrom.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 200f,w,s,su. Research in Roentgenology. Problems in Roentgen diagnosis. Dr. Rigler.
- 201f. Roentgen Diagnosis of Diseases of the Head and Upper Respiratory Tract. A special course covering the Roentgen diagnostic procedures and the Roentgen findings in the study of the head, including diseases of the skull, sinuses, mastoids, orbits, intracranial conditions, and in the study of the upper respiratory passages. Dr. Rigler.
- 202s. Roentgen Diagnosis in Pediatrics. A special course covering the Roentgen diagnostic procedures and the Roentgen findings in pediatric cases. Dr. Rigler.
- 205f,w,s,su. Research Related to Radiation Therapy. Dr. Stenstrom.
- 206f,w,s,su. Roentgenoscopy. The theory and practical application of roentgenoscopy particularly to diseases of the gastrointestinal tract, lungs, and heart. Dr. Rigler.
- 207f,w,s,su. Roentgen and Radium Therapy. Treatments of patients under supervision both with medium and high voltage machines and with radium. Problems in connection with these treatments will be thoroly discussed. Dr. Stenstrom.
- 208f,w,s. Radiology Seminar. Weekly presentations of research studies or reviews of the literature on subjects of importance in radiology. Dr. Rigler, Dr. Stenstrom.
- 209f,w,s,su. Roentgen Diagnosis. The theory and practical application of Roentgen diagnostic methods to medical cases in general. Dr. Rigler.
- 210f,w,s,su. Roentgen Technique. A consideration of the theory and practical application of the principles of Roentgen technique including the study of X-ray machines and X-ray tubes, exposure, technique, and darkroom work. Dr. Rigler.
- 211w. Roentgen Diagnosis of Diseases of Gastrointestinal Tract. Dr. Morse.
- 212s. Roentgen Diagnosis in Obstetrics and Gynecology. Dr. Ude.
- 213f. Roentgen Diagnosis of Pulmonary Diseases. Dr. Hanson.
- 214w. Roentgen Diagnosis of Diseases of Bones and Joints. Dr. Rigler.
- 215s. Roentgen Diagnosis of Diseases of Gallbladder and Urinary Tract. Dr. Aurelius.

B. Courses Offered in the Mayo Foundation

Professors Byrd R. Kirklin, B.S., M.D., Harry H. Bowing, B.S., M.D., Arthur U. Desjardins, M.D., M.S. in Rad.; Associate Professors John D. Camp, B.S., M.D., Eugene T. Leddy, B.A., M.D.; Assistant Professors Robert E. Fricke, B.A., M.D., Charles G. Sutherland, M.D.; Instructors Clarence A. Good, Jr., M.D., M.S. in Rad., Walter C. Popp, M.D., M.S. in Derm., Harry M. Weber, B.S., M.D.

All branches of work with the X ray and radium as applied to medicine are covered in the Mayo Foundation. The fundamental plan gives the graduate student an opportunity for an intimate observation of cases and practical experience in routine work. In addition, informal didactic instruction is given as occasion presents. Frequent seminars are held. The library of the clinic and that of the section are well supplied with texts and journals dealing with radiology. Free use of them is expected. Individual research is encouraged in any radiologic problem which especially interests the student.

M282f-w,w-s,s-su,su-f. Necropsy Service. (See Department of Pathology.)

M293f,w,s,su. At least three months in general roentgenologic technique. Practical experience in all varieties of roentgenologic apparatus including transformers, vacuum tubes, tables, films, intensifying screens, etc. This training in roentgenologic technique is intended to prepare the fellow to make roentgenograms in connection with his subsequent work. Unless the fellow proposes to take physics as his minor, he must also, during this period, become acquainted with the physics of the Roentgen ray. Dr. Kirklin, Dr. Camp, Dr. Sutherland, Dr. Good, Dr. Weber.

M294f,w,s,su. At least eighteen months in applied roentgenologic diagnosis. The student will be given opportunity to become familiar with the roentgenography of the osseous system, chest, heart, lungs, and urinary system, and with special techniques required in roentgenography of the accessory sinuses, mastoids, teeth, genitourinary tract, ventricles of the brain, and other special anatomical regions. Unusual facilities and material are at hand for the roentgenoscopy and roentgenography of the gastrointestinal tract. Thoro training is obtainable in the reading of films and screen images, the recognition of normal and abnormal conditions, the Roentgen signs of disease, both direct and indirect, roentgenologic diagnosis, the correlation of plate and screen findings, and the correlation of clinical and roentgenologic findings. Cholecystographic interpretation is given special attention. Seminar. During this period of eighteen months fellows have brief services in rotation with the Departments of Urology, Obstetrics and Gynecology, Neurology and Psychiatry, and Dentistry. Seminar. Dr. Kirklin, Dr. Camp, Dr. Sutherland, Dr. Good, Dr. Weber.

M295f,w,s,su. At least six months in Roentgen therapy. Fellows have the privilege of examining patients affected with the various benign and malignant diseases to which Roentgen treatment is applicable, and of observing its effects, both early and late. Techniques suitable for the various conditions are taught by practical demonstration. Instruction is given in radiation physics and in the prevention of untoward effects from therapeutic applications of the Roentgen ray and the avoidance of danger from high tension currents. Seminar. Dr. Desjardins, Dr. Leddy, Dr. Popp, Dr. Williams.

M296f,w,s,su. At least three months in radium therapy. Techniques are demonstrated in the preparation and application of radium tubes, needles, and plaques for therapeutic use, with methods of protection from injury. A large number of patients and an adequate supply of radium permit a practical exhibition of its application in general surgery, gynecology, ophthalmology, internal medicine, and diseases of the ductless glands, showing the dosage, biologic effects, and reactions. Seminar. Special instruction in radiation physics is given. Dr. Bowling, Dr. Fricke, Dr. Williams.

In addition to the above, students majoring in radiology may take work in biophysics and experimental physiology. For details, see these departments.

SCIENCE, HISTORY OF

Richard E. Scammon, Ph.D., LL.D., Distinguished Professor in the Graduate School.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

190f-191w-192s-193su. History of Science. Course in the social history of science, open to qualified graduate and Senior College students in any field of scientific or historical specialization. Conferences, readings, and occasional lectures. This course may count as major or minor on approval of the student's adviser in the Graduate School. Credits arranged. Consult Professor Scammon before registering.

SURGERY

(Including Divisions of General Surgery, Neurosurgery, Orthopedic Surgery, Urology, Proctology, and Anesthesia)

GENERAL SURGERY

A. Courses Offered at the Medical School

Professors Owen H. Wangenstein, M.D., Ph.D., Head, Wallace H. Cole, M.D., William T. Peyton, M.D., Ph.D., Arthur C. Strachauer, M.D., Arthur A. Zierold, D.D.S., M.D., Ph.D.; Clinical Professors J. Frank Corbett, M.D., Harry P. Ritchie, Ph.B., M.D.; Associate Professors Charles D. Creevy, M.D., Ph.D., Ralph T. Knight, B.A., M.D.; Clinical Associate Professors Orwood J. Campbell, M.D., Ph.D., Walter A. Fansler, M.A., M.D., Frederic E. B. Foley, Ph.B., M.D., Gilbert J. Thomas, M.D.; Assistant Professor Harry B. Zimmerman, M.D.

Graduate work in surgery in the Medical School is designed to offer superior training to a limited number of fellows in three or more years of residence. The practical and scientific aspects of a well-rounded surgical course are emphasized equally.

The prospective fellow must be able to qualify as a candidate for the Ph.D. degree so far as his preliminary education is concerned. (See Requirements for Advanced Degrees, page 7.)

The fundamental laboratories of the Medical School offer numerous graduate courses closely related to surgery. (See statements of Anatomy, Bacteriology, Pathology, Physiological Chemistry, and Physiology.) Opportunity for special investigative and research work is found in these departments. The minor subjects must be taken in one of the above departments. The proximity of the medical buildings and arrangement of courses afford opportunity for co-ordination of clinical and laboratory work which is highly desirable.

The courses offered by the Department of Surgery consist of animal, experimental, and cadaver surgery, together with work in the hospital and outpatient departments in surgical diagnosis, operative surgery, and some of the surgical specialties.

Unexcelled opportunities for technical and experimental work under aseptic conditions comparable to a first-class operating room are offered in the laboratories of animal and experimental surgery. In these laboratories the fellow conducts his investigative work for his thesis.

The University Hospital fellowship provides a house surgeonsip in the University Hospital, with or without residence. The fellow aids the surgical staff in diagnosis and in the preoperative and postoperative care of patients. He helps to direct and supervise the work of the interns, and after his first year assists in the bedside teaching of the surgical clerks. He acts as first assistant in operations performed by the general surgical staff. As soon as he proves himself capable, the more simple major operations are delegated to him to perform, with the surgeon acting as first assistant. Later he is permitted to operate under the supervision of the surgeon, and finally, when he has demonstrated his ability, he operates independently. Increasingly difficult cases are assigned as his ability warrants. Supervision is always given until the staff surgeon is satisfied of the fellow's ability to operate independently.

A Medical School surgical fellowship is also offered with assignment and residence at the Minneapolis General Hospital, which has a total of 846 beds.

The Memorial Cancer Institute (a gift from the Citizens' Aid Society of Minneapolis) provides special facilities for clinical instruction in malignancy. (For special work in this field see announcements in Radiology and Biophysics.)

The Eustis Hospital has made possible special graduate instruction in orthopedics and physiotherapy. Two fellowships maintained by the Hadyn S. and Mary M. Cole Fellowship Fund provide for a comprehensive training in orthopedic surgery. By arrangement special training in this field can be made available to the general surgical fellows.

Fellowships in neurosurgery and urology are available to a limited number of applicants. By arrangement such fellows may receive some training in the field of general surgery during their period of service.

A limited number of fellowships in anesthesia are available to selected applicants.

Regular graduate students who are not fellows are offered combination courses leading to qualification for advanced degrees. The University Hospital fellowships are limited to candidates for advanced degrees.

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

- 101f,w,s. Outpatient Clinic in Surgery. The student is required to assist in the outpatient surgical clinic, and in this connection makes a special study of the diagnosis and treatment of selected cases. University Hospital surgical staff.
- 101af,w,s. Outpatient Clinic in Surgery. The student is required to assist in the outpatient surgical clinic, and in this connection makes a special study of the diagnosis and treatment of selected cases. Minneapolis General Hospital surgical staff.
- 102f,w,s. Applied Surgical Anatomy on the Cadaver. Weekly exercises in which the student prepares anatomical dissections on the cadaver illustrating anatomic principles important to the surgeon.
- 105f,w,s. Proctoscopy and Sigmoidoscopy. The treatment and diagnosis of the pathological conditions found in the lower bowel, including minor surgical operations. University Hospital surgical staff.
- 105af,w,s. Proctoscopy and Sigmoidoscopy. The treatment and diagnosis of the pathological conditions found in the lower bowel, including minor surgical operations. Minneapolis General Hospital surgical staff.

- 134f,w,s. Tumor Clinic. A combined clinical and pathological consideration of tumors. In so far as available material permits, a systematic presentation of the manifestations and effects of malignant tumors which come in the province of general surgery and its divisions will be reviewed. University Hospital surgical staff.
- 135f,w,s. Surgical Ward Conference. A weekly exercise in which cases presenting interesting problems are presented by the student. University Hospital surgical staff.
- 137f,w,s. Roentgenological-Surgical Conference. A weekly exercise in which the films of all surgical patients presenting interesting Roentgen findings are reviewed. Staffs of the Departments of Radiology and Surgery.
- 138f,w,s. Medico-Surgical Pathological Conference. A weekly exercise in which the student prepares instructive cases for review by the medical, surgical, and pathological staffs.

COURSES PRIMARILY FOR GRADUATE STUDENTS

- 205f-206w-207s. Surgical Diagnosis. In this course the graduate student assists in the practical instruction of the clinical clerks and interns in the University Hospital, and makes a special study of problems in surgical diagnosis on patients in the Outpatient Department as well as in the wards. University Hospital. Dr. Wangensteen, Dr. Cole, Dr. Peyton, Dr. H. P. Ritchie, Dr. Creevy, Dr. Evans, Dr. Paine, Dr. Rea.
- 208f-209w-210s. Surgical Service. The graduate student acts as house surgeon and in connection with the service is required to make a special study of the patients, preparing them for clinics and observing them after operations. University Hospital. Dr. Wangensteen, Dr. Cole, Dr. Peyton, Dr. H. P. Ritchie, Dr. Creevy, Dr. Evans, Dr. Paine, Dr. Rea.
- 211f-212w-213s. Operative Surgery. In this course the surgical fellow acts as first assistant at all operations by the surgical staff in the University Hospital. When properly qualified, the fellow will be permitted to operate, beginning with simpler surgical procedures. University Hospital. Dr. Wangensteen, Dr. Cole, Dr. Peyton, Dr. H. P. Ritchie, Dr. Creevy, Dr. Evans, Dr. Paine, Dr. Rea.
- 216f,w,s. Surgical Research. Properly qualified students may undertake original investigation of problems in either experimental or clinical surgery. University Hospital surgical staff.
- 217f,w,s. Surgical Seminar. Conference for reports on surgical literature with presentation and discussion of especially interesting cases and problems as well as research work by members of the surgical staff. University Hospital surgical staff.
- 225f-226w-227s. Surgical Diagnosis. In this course the graduate student assists in the practical instruction of the clinical clerks and interns in the Minneapolis General Hospital, and makes a special study of problems in surgical diagnosis on patients in the Outpatient Department as well as in the wards. Minneapolis General Hospital. Dr. Zierold, Dr. Campbell, Dr. Fansler, Dr. Regnier.
- 228f-229w-230s. Surgical Service. The graduate student acts as house surgeon and, in connection with the service, is required to make a special study of the patients, preparing them for clinics and observing them after operation. Minneapolis General Hospital. Dr. Zierold, Dr. Campbell, Dr. Fansler, Dr. Regnier.

- 231f-232w-233s. Operative Surgery. In this course the surgical fellow acts as first assistant at all operations by the surgical staff in the Minneapolis General Hospital. When properly qualified, the fellow will be permitted to operate, beginning with simpler surgical procedures. Minneapolis General Hospital. Dr. Zierold, Dr. Campbell, Dr. Fansler, Dr. Regnier.
- 236f,w,s. Surgical Research. Properly qualified students may undertake original investigation of problems in either experimental or clinical surgery. Minneapolis General Hospital. Dr. Zierold, Dr. Campbell, Dr. Fansler, Dr. Regnier.
- 237f,w,s. Surgical Seminar. Conference for reports on surgical literature with presentation and discussion of especially interesting cases and problems as well as research work by members of the surgical staff. Minneapolis General Hospital surgical staff.

B. Courses Offered in the Mayo Foundation

Professors Donald C. Balfour, M.D., LL.D., Stuart W. Harrington, M.D., M.S. in Surg., John S. Lundy, B.A., M.D., Frank C. Mann, M.D., M.A., D.Sc., James C. Masson, M.D., John deJ. Pemberton, M.D., M.S. in Surg., LL.D., Waltman Walters, M.D., M.S. in Surg.; Associate Professors Virgil S. Counsellor, M.D., M.S. in Surg., Claude F. Dixon, M.D., M.S. in Surg., Howard K. Gray, M.D., M.S. in Surg., Charles W. Mayo, M.D., M.S. in Surg.; Assistant Professors James T. Priestley, M.D., M.S. in Exp. Surg., Ph.D. in Surg., Fred L. Smith, B.A., M.D., John M. Waugh, M.D., M.S. in Surg.; Instructor Oscar T. Clagett, M.D., M.S. in Surg.

The opportunities for preparation in surgery in the Mayo Foundation are principally in the field of surgical pathology, in general and surgical diagnosis, and in operative and experimental surgery.

Fellows majoring in surgery usually include in their work three months in postoperative care of ambulatory patients; six months in surgical pathology; and at least a year in general diagnosis. This general diagnostic work is divided into services of six months each. Fellows select the diagnostic sections in which they desire to work and their requests are followed so far as arrangements of the schedule will permit. The work in the minor field, pathology, pathologic anatomy, and physiology, and at least one year of diagnostic work should be completed before the fellow begins his operative service.

In their operative service fellows act as second assistants for a period of one year or longer. The service also includes postoperative care of all patients in the operative service in which the fellow is on duty. During this service, the fellow works in various rooms as second assistant and has occasional opportunity to act as first assistant. All second assistants are residents in the hospitals in which they are on operative service.

Fellows who are considered best qualified are appointed first assistants for a period of one or two years. This service may begin during the third year of residence. There are twenty such first assistantships available.

Operative service for fellows in general surgery is given at Colonial, Kahler, and St. Mary's hospitals.

The Colonial Hospital of 325 beds is utilized for general surgery, including emergency surgery, and a large part of the surgery of certain specialists: the thorax (Dr. Harrington, Dr. Gray), and urology (Dr. Walters, Dr. Counsellor, Dr. Priestley).

The Kahler Hospital contains 125 beds. Special surgical services in the thyroid (Dr. Pemberton, Dr. Dixon) and the colon (Dr. Pemberton, Dr. Dixon, Dr. Mayo) are provided.

St. Mary's Hospital contains over 600 beds, 400 of which are available for general surgery. An addition containing 250 beds will be completed during 1940. There is also a special service in gynecology (Dr. Masson, Dr. Counsellor, Dr. Waugh).

Group seminars are held regularly in the Department of Surgery.

- M255f-w,w-s,s-su,su-f. General Medical and Surgical Diagnosis. (See Department of Medicine.)
- M256f,w,s,su. Medical Hospital Residence. (See Department of Medicine.)
- M284f-w,w-s,s-su,su-f. Surgical and Fresh Tissue Pathology. (See Department of Pathology.)
- M297f,w,s,su. Postoperative Care of Patients. Treatment of complications, surgical and medical. Dr. Smith.
- M298f,w,s,su. Intravenous Medication. The work in intravenous therapy offers a large field for the study of problems related to blood physiology, the blood dyscrasias, and the causes and prevention of reactions following such therapy. Dr. Lundy.
- M299f,w,s,su. Regional Anesthesia. The technique of field block and nerve block procedures will first be practiced upon the cadaver while the student observes the performance of the work on patients. During the latter half of the term opportunity will be provided for the student himself to perform these anesthetic procedures as part of the preoperative preparation on patients. Dr. Lundy.
- M300f,w,s,su. Surgical Technique. The purpose of this course is to develop surgical technique on animals. The fellows are paired and one operates while the other assists in performing the classical operations adaptable to experimental surgery. Open only to fellows in surgery. Dr. Mann, Dr. Bollman.
- M301f,w,s,su. Operative Surgery. Second assistantship in operating rooms; substitute service as first assistant. Residence. Seminar. Dr. Balfour, Dr. Harrington, Dr. Masson, Dr. Pemberton, Dr. Walters, Dr. Counsellor, Dr. Dixon, Dr. Gray, Dr. Mayo, Dr. Priestley, Dr. Waugh, Dr. Clagett.
- M302f,w,s,su. Surgery of the Genitourinary Organs. Operative techniques; study of special problems involved. Residence. Seminar. Dr. Walters, Dr. Counsellor.

In addition to the above, fellows majoring in surgery may take work in experimental physiology, necropsy service, neurosurgery, orthopedic surgery, proctology, radium therapy, Roentgen therapy, and urology. For details, see these divisions.

NEUROSURGERY

A. Courses Offered at the Medical School

Professor William T. Peyton, M.D., Ph.D.

A three-year fellowship in neurosurgery is offered leading to a graduate degree in neurosurgery. Dr. Peyton and staff.

B. Courses Offered in the Mayo Foundation

Professors Alfred W. Adson, M.D., M.S. in Surg., M.A., Winchell McK. Craig, B.A., M.D., M.S. in Surg.; Assistant Professor J. Grafton Love, M.D., M.S. in Surg.; Instructor George S. Baker, M.A., M.D., M.S. in Surg.

Preparation for neurosurgery in the Mayo Foundation is made in the Departments of Pathology, Neurology and Psychiatry, and General Surgery.

111f,su. Human Neurology. Dr. Rasmussen. (See Anatomy 111.)

M261f,w,s,su. Neuropathology. (See Division of Neurology and Psychiatry.)

M262f-w,w-s,s-su,su-f. Diagnosis in Neurology and Psychiatry. (See Division of Neurology and Psychiatry.)

M283f-w,w-s,s-su,su-f. Necropsy Service. (See Department of Pathology.)

M303f,w,s,su. Surgery of the Nervous System. Operative technique and study of special problems involved. Residence. Seminar. Dr. Adson, Dr. Craig, Dr. Love, Dr. Baker.

In addition to the above, fellows in neurosurgery may take work in general pathology, experimental physiology, neuro-ophthalmology, and general surgery. For details, see these departments.

ORTHOPEDIC SURGERY

A. Courses Offered at the Medical School

Professor Wallace H. Cole, M.D.

Three-year fellowships are offered leading to a degree in orthopedic surgery. This work is carried on at the University Hospital, Gillette State Hospital for Crippled Children, Shriners Hospital for Crippled Children, etc., and there is an interchange with the Orthopedic Department of the Mayo Foundation. Dr. Cole and orthopedic staff.

B. Courses Offered in the Mayo Foundation

Professors Melvin S. Henderson, M.D., Ralph K. Ghormley, B.S., M.D., Henry W. Meyerding, B.S., M.D., M.S. in Orth. Surg.; Instructor Harry B. Macey, B.A., M.D.

Orthopedic surgery in the Mayo Foundation embraces not only the deformities of childhood but practically all deformities of the extremities and the spine in the adult. Fractures, recent and old; osteomyelitis, acute and chronic; bone tumors, etc., are taken care of in the orthopedic service. In addition all the usual congenital deformities such as clubfeet, dislocated hips, torticollis, etc., are seen on this service. The surgeon who is to cope successfully with such a broad field of surgery must have a sound general surgical training. Residences are available in St. Mary's Hospital and the Colonial Hospital. Here the hospital care of orthopedic patients is carried on. All emergency cases such as recent and compound fractures, acute osteomyelitis, etc., are also cared for. Services are confined to orthopedic diagnosis, treatment of nonoperative patients, manufacture and fitting of braces, and outpatient and postoperative service.

Fourteen three-year fellowships are available for fellows showing special adaptability for orthopedic surgery. Such fellows will have one year in orthopedic diagnosis, at least one year in orthopedic surgery, service in specialties closely allied to orthopedic surgery, and a minor either in pathology, anatomy, or neurology. Ample opportunity will be given the men majoring in orthopedic surgery for first assistantship in the operating room and in the office, and also for the study of the manufacture and use of orthopedic appliances. Seminars are held regularly.

A department of physical medicine is associated with the Department of Orthopedic Surgery, in which fellows majoring in orthopedic surgery have opportunity to work.

Through an arrangement of exchange, fellows in orthopedic surgery in the Mayo Foundation may spend six months at the Gillette State Hospital, St. Paul, working under the direction of Dr. W. H. Cole, where a wider experience in the care of orthopedic conditions in children may be secured.

M284f-w,w-s,s-su-f. Surgical and Fresh Tissue Pathology. (See Department of Pathology.)

M304f,w,s,su. Orthopedic Diagnosis. History taking and physical examination of orthopedic cases. Study of braces, material and construction, measurements and fitting; application and use of plaster of Paris; interpretation of radiograms of orthopedic cases; care of nonsurgical and postoperative cases. Seminar. Dr. Ghormley, Dr. Henderson, Dr. Meyerding, Dr. Macey.

M305f,w,s,su. Orthopedic Surgery. One year in service is offered to fellows majoring in orthopedic surgery. Seminar. Dr. Ghormley, Dr. Henderson, Dr. Meyerding, Dr. Macey.

In addition to the above, students majoring in orthopedic surgery may take work in necropsy service, experimental physiology, neurology, and physical medicine. For details, see these departments.

UROLOGY

A. Courses Offered at the Medical School

Associate Professor Charles D. Creevy, M.D., Ph.D.

A three-year fellowship, approved by the Council on Medical Education, leading to a graduate degree in urology. Dr. Creevy and staff.

B. Courses Offered in the Mayo Foundation

Professor William F. Braasch, B.S., M.D.; Associate Professors John L. Crenshaw, M.D., Gershom J. Thompson, M.D., M.S. in Urol.; Assistant Professor Louis G. Stuhler, M.D.; Instructors Edward N. Cook, B.A., B.S., M.D., M.S. in Urol., John L. Emmett, M.D., M.S. in Urol., T. Lloyd Pool, M.D., M.S. in Urol.

The major training in urology extends over a period of three years. This includes one and one-half years devoted to the diagnosis and treatment of diseases involving the urinary tract, six months to one year in operative surgery (including transurethral surgery), and at least six months in pathology. The work is designed to provide a thoro experience in the diagnosis and treatment of diseases involving the urinary tract.

The diagnostic experience is enlarged by experience as resident in the urologic service of the Colonial Hospital. In this service the resident has opportunity to study the preoperative and postoperative treatment of urologic conditions, as well as the clinical study and urologic diagnosis of patients under observation in the Colonial Hospital. He also acts as assistant in the field of transurethral surgery.

The surgical training consists of work as second assistant in general and urologic surgery. Opportunity is given to observe a large number of patients operated on for diseases involving the urinary tract and associated organs. Additional opportunity is offered to assist in operations for general surgical conditions, and particularly general abdominal surgery.

Urologic diagnosis and treatment, including cystoscopy, urethroscopy, pyeloscopy, urography (both retrograde and excretory), fulguration, diathermy, removal of foreign bodies from the bladder and urethra, lithotripsy, dilatation of strictures of the urethra and ureter, manipulation of ureteral stone, pelvic lavage, electrocoagulation and insertion of radium in neoplasms of the bladder and urethra, are conducted daily. There is also an extensive service in transurethral surgery. The fellow is given opportunity personally to examine patients and familiarize himself with the diagnosis of a wide range of diseases affecting the urinary tract. This service extends over a minimum of twelve months, which is divided into junior and senior services.

A urologic service, which involves the diagnosis and treatment of inflammatory infections of the urethra, prostate, seminal vesicles, and epididymis is available. Opportunity is given for the careful study and treatment of urethritis and infection in the adjacent genitourinary tract. Each fellow is expected to spend at least six months on this service.

Special attention is given to urography, including pyelography, ureterography, cystography, and urethrography.

Daily conferences for discussion of unusual clinical conditions, and weekly seminars are held regularly.

M283f-w,w-s,s-su,f. Necropsy Service. (See Department of Pathology.)

M302f,w,s,su. Surgery of the Genitourinary Organs. (See Department of Surgery.)

M306f,w,s,su. Urologic Diagnosis. Cystoscopic examination. Urography; both retrograde and intravenous uroscopy. History-taking in diseases of the genitourinary tract. Seminar. Dr. Braasch, Dr. Crenshaw, Dr. Thompson, Dr. Cook, Dr. Emmett.

M307f,w,s,su. Special Urologic Treatment. Including the study and treatment of acute and chronic infections of the genitourinary tract. Dr. Stuhler, Dr. Cook.

M308f,w,s,su. Transurethral Surgery. Including recent development in transurethral prostatic resection, manipulation of stones in the ureter, litholapaxy, sphincterotomy, intravesical diathermy, etc. Seminar. Dr. Thompson, Dr. Cook, Dr. Emmett.

In addition to the above, fellows majoring in urology may take work in biochemistry, surgical pathology, clinical pathology, experimental physiology, roentgenology, and dermatology. For details, see these departments.

PROCTOLOGY

B. Courses Offered in the Mayo Foundation

Professor Louis A. Buie, B.A., M.D.; Associate Professor Newton D. Smith, B.S., M.D.; Instructor Raymond J. Jackman, M.D., M.S. in Proc.

The section on proctology in the Mayo Foundation offers opportunities for the study of diseases of the lower intestinal tract. The patients come to the section by reference from other departments. They have usually been studied from other medical angles so that the opportunity to study the relationships and background of the special field, as well as the immediate diagnostic problems, is good. The major service in proctology extends over a period of three to four years, and includes a minimum of six months in a minor, usually pathology, approximately two to three quarters in general medical and surgical diagnosis with special reference to diseases of the intestines, three months in regional anesthesia with special

reference to sacral anesthesia, in diagnostic roentgenology, in radium treatment of malignant and other conditions, and six to eight quarters in the diagnosis and surgical and other treatment of diseases involving the lower intestinal tract.

M255f-w,w-s,s-su,su-f. General Medical and Surgical Diagnosis. (See Department of Medicine.)

M256f,w,s,su. Medical Hospital Residence. Dr. Bargaen, Dr. Logan, Dr. Brown, Dr. Wakefield. (See Department of Medicine.)

M284f-w,w-s,s-su,su-f. Surgical and Fresh Tissue Pathology. (See Department of Pathology.)

M309f,w,s,su. Proctology. Dr. Buie, Dr. Smith, Dr. Jackman.

In addition to the above, fellows majoring in proctology may take work in experimental physiology, roentgenology, and regional anesthesia. For details, see these departments.

ANESTHESIOLOGY

A. Courses Offered at the Medical School

Associate Professor Ralph T. Knight, B.A., M.D.

Graduate work in anesthesiology in the Medical School is designed to offer a superior training to a limited number of fellows. Opportunity is given for large clinical experience and investigative work in all types of general and regional anesthesia.

In addition, work in co-operation with other departments is available. The standards envisioned by the certifying specialty boards are fully met.

Satisfactory completion of clinical and investigative work and theses leads to the degree of M.S. or Ph.D. in anesthesia.

COURSE FOR UNDERGRADUATE OR GRADUATE STUDENTS

104f,w,s,su. Principles of Anesthesia. Lectures and conferences. 11 hours. 1 credit.

COURSES PRIMARILY FOR GRADUATE STUDENTS

207f,w,s,su. General Anesthesia. Observation and instruction in all types of clinical general anesthesia followed by administration under supervision, and finally by responsible administration and instruction of interns and clinical clerks.

208f,w,s,su. Regional Anesthesia. Observation and instruction in all types of clinical, local, regional, and spinal anesthesia, followed by administration under supervision, and finally by responsible administration and instruction of interns and clinical clerks.

209f,w,s,su. Pre- and Postoperative Evaluation. Observation of patients in the wards before and after operation with co-ordination of pathological conditions and risks with the selection and dosage of sedative and anesthetic drugs and methods. Also a statistical study of anesthesia case records in relation to pre- and postoperative complications and recovery.

210f,w,s,su. Research in Anesthesia. In addition to the following special courses in the fundamental laboratories of the medical school, specially qualified students may undertake investigation of anesthesia problems either in the laboratory of experimental surgery or in clinical anesthesia.

211f,w,s,su. Seminar in Anesthesia. Regular conferences for review of anesthesia literature and reports of specially interesting cases and problems as well as of research work being done by members of the Division of Anesthesia.

It is recommended that fellows in Anesthesiology also register for courses in other departments selected from the following offerings:

- 129f-130w. Topographic Anatomy. (See Anat. 129f-130w.)
 202f,w,s,su. Diseases of the Cardiovascular Apparatus. (See Med. 202f,w,s,su.)
 105su,w. General Pharmacology, in continuation. (See Pharm. 105su,w.)
 109f,w,s,su. Pharmacological Problems. (See Pharm. 109f,w,s,su.)
 203su,f,w,s. Research in Pharmacology. (See Pharm. 203su,f,w,s.)
 113su,f,w,s. Problems in Physiology. (See Physiol. 113su,f,w,s.)
 203f,w,s,su. Research in Physiology. (See Physiol. 203f,w,s,su.)
 205f,w,s,su. Research in Physiological Chemistry. (See Physiol. 205f,w,s,su.)
 137f,w,s. Roentgenological Surgical Conference. (See Surg. 137f,w,s.)
 217f,w,s. Surgical Seminar. (See Surg. 217f,w,s.)

B. Courses Offered in the Mayo Foundation

Professor John S. Lundy, B.A., M.D.; Assistant Professor Edward B. Tuohy, M.D., M.S. in Anes.; Instructors Richard C. Adams, M.D.C.M., M.S. in Anes., Lloyd H. Mousel, B.S., M.D., M.S. in Anes.

Fellows in anesthesiology in the Mayo Foundation have opportunity for the study of anesthesia as well as for study of numerous fields related to anesthesia. Seminars are held routinely. The following is a list of suggested studies:

Local, regional, and spinal anesthesia, including diagnostic and therapeutic nerve blocks, intravenous and rectal anesthesia, intravenous therapy and blood transfusion.

Inhalation anesthesia, including endotracheal anesthesia.

General diagnosis, particularly in relation to cardiac and respiratory conditions. Research in one or more of the basic sciences.

Special studies, including clinical topographic anatomy, biochemistry, biophysics, bronchoscopic aspiration, clinical pharmacology, serology and hematology, metabolism, and oxygen and other gas therapy.

When a fellow is particularly interested in study of a certain branch of anesthesia, arrangements may be made whereby he may stress that phase.

The following courses are recommended for fellows in anesthesia:

- 129f,130w. Intensive review of clinical topographic anatomy. Dr. Jackson. (See Anatomy 129-130.)
 M281f,w,s,su. Serology and Hematology. (See Department of Pathology.)
 M254f,w,s,su. Physics in Relation to Anesthesia. (See Department of Biophysics.)
 M290f-w,w-s,s-su,f. Research work on selected problems in experimental physiology. (See Department of Physiology and Physiological Chemistry.)
 M291f,w,s,su. Biochemistry and Metabolism. (See Department of Physiology and Physiological Chemistry.)
 M310f,w,s,su. Clinical Pharmacology As Related to Anesthesia (including intravenous therapy and blood transfusion, pre- and postoperative medication and sedation).
 M255f-w,w-s,s-su,f. General Medical and Surgical Diagnosis. (See Department of Medicine.)
 M311f-w,w-s,s-su,f. Regional Anesthesia. Intravenous and rectal anesthesia. Diagnostic and therapeutic nerve blocks. Dr. Lundy, Dr. Tuohy, Dr. Adams, Dr. Mousel.
 M312f-w,w-s,s-su,f. Inhalation and endotracheal anesthesia. Dr. Tuohy.
 M313f,w,s,su. Oxygen and Other Gas Therapy. Dr. Lundy.

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Learn for Living



The Bulletin of the
UNIVERSITY of MINNESOTA

EXTENSION CLASSES

1940-41

CALENDAR

1940

September	16	Monday	Registration, first semester, begins
September	30	Monday	Classes begin
October	5	Saturday	Last day for registration without extra fee
November	25	Monday	Midsemester grades due
December	21	Saturday	Christmas recess begins

1941

January	6	Monday	Classes resumed
January	27	Monday	Registration, second semester, begins
February	3 to 7		Examinations, first semester
February	8	Saturday	First semester closes
February	10	Monday	Second semester classes begin
February	15	Saturday	Last day for registration without extra fee
April	7	Monday	Midsemester grades due
June	2 to 6		Examinations, second semester
June	7	Saturday	Second semester closes
June	8	Sunday	Baccalaureate service
June	14	Saturday	Commencement exercises

WHERE TO REGISTER

Minneapolis: (Campus)	402 Administration Building, University of Minnesota, Main 8177, Richard R. Price, Director
Minneapolis: (Downtown)	690 Northwestern Bank Building, Marquette Ave. and Sixth St. South, Main 0624, A. H. Speer, Resident Manager
St. Paul:	500 Robert St., Extension Center, Cedar 6175, C. H. Dow, Resident Manager
Duluth:	504 Alworth Building, Melrose 7900, John L. Macleod, Resident Manager

The Administration Building on the University campus may be reached by going two blocks on Church Street from the Washington Avenue car line, or three blocks on 17th Avenue S.E., from the Oak-Harriet car line.

OFFICE HOURS

From September 23 to October 5, and from February 3 to 15, 8:30 a.m. to 8:30 p.m., including Saturdays.

At other times, 8:30 a.m. to 5:00 p.m.; Saturday, to 12:00 noon.

From September 16 to March 1 the campus office will be open from 8:30 a.m. to 8:30 p.m., except on Saturday.

REGISTRATION TIME

All registrations should be made and fees paid before the first week of each semester. Registrations made later than Saturday, October 5, for the first semester, and Saturday, February 15, for the second semester, are subject to a late registration fee.

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ANNOUNCEMENT AND PROGRAM
of
EXTENSION CLASSES

Minneapolis, Downtown
On the Campus

St. Paul, Downtown

UNIVERSITY OF MINNESOTA

1940-41

First Semester
September 30 to February 8

Second Semester
February 10 to June 7

THIS BOOK CONTAINS all information regarding extension classes, as well as the program for the current year. Classes are grouped in five units, as follows:

General College Classes, page 16.	
S.L.A. Classes, page 21.	Business Classes, page 54.
Education Classes, page 46.	Technology Classes, page 68.

FOREWORD

The General Extension Division presents to the public herewith its twenty-eighth annual program and schedule of extension classes as planned for the Twin City area. The program comprises the offerings for the academic year 1940-41. It is understood that additional classes may be offered on the signed petition of a fixed minimum of prospective students.

The idea back of these extension offerings is that we are living in a world in flux (whether rapid change also implies progress is still a moot question). Static education will not suffice in a changing world. An informed citizenry gifted with the power of intelligent discrimination and the sense of permanent values is the objective.

It follows that the thoughtful citizen in a democratic society will feel impelled to provide for himself a certain minimum mental equipment. He must be vocationally competent; if he cannot pull his own weight in the boat, he is a drag on society. He must have some knowledge of the world—the physical universe and the world of ideas. He must have adequate knowledge of the nature of society and of his own relations thereto. This implies a working conception of his duty as an individual toward the institutions of society—local, national, and international. An individual of normal capacity can equip himself thus through a carefully planned program of study. This bulletin is devised to further that program.

Richard R. Price
Director

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HOW TO STUDY

THE INSTITUTE

The General Extension Division takes pleasure in inviting registered students, and those who are about to register, to attend an institute on how to study expertly. The institute is offered in the belief that practically all students may find here and there suggestions that will help them to be more efficient in their study habits.

Charles Bird, professor of psychology, will be in charge of the institute. Meetings will be two hours in length, the first half for lectures by Professor Bird and the second for questions and discussion designed to clear up difficulties. The lectures will cover the following topics:

1. **ADULT LEARNING.** A brief survey of the relation between age and learning. The importance of proper motivation and effective incentives.

2. **BASIC FORMS OF SKILL.** Importance of reading and vocabulary. Problems of concentration. Need for equating ambitions and abilities. Suggestions for fostering these forms of skill.

3. **TEXTBOOK ASSIGNMENTS.** Self-recitation methods applied to various types of courses. Useful and useless outlines.

4. **NOTES AND EXAMINATIONS.** Taking lecture notes and preparing for various types of examinations.

5. **DISTRIBUTION OF STUDY.** Importance of avoiding fatigue. Cramming as a useful, supplementary aid versus cramming as a substitute for spaced learning.

THE TIME TABLE

	<i>First Semester</i>	<i>Second Semester</i>
Dates:	September 23-27	February 3-7
Evenings:	Monday to Friday	Monday to Friday
Hour:	7:00 to 9:00 p.m.	7:00 to 9:00 p.m.
Place:	Burton Auditorium, Campus	Room 1, Vincent Hall, Campus

DO YOU LIKE GOOD MUSIC?

The General Extension Division takes pleasure in announcing that this year the General College will open its Music Laboratory to evening students. This room is equipped with a large collection of records and a phonograph-radio designed and built here at the University to meet the special needs of the Music Laboratory. There are also many books and scores and current magazines. A large clipping file contains valuable newspaper and magazine articles where the student may find the most recent information and pictures about artists, concerts, composers, and other musical events. During the past year the laboratory has also begun a clipping file on the ballet and other dance forms.

On Tuesday evenings, beginning October 1, the Music Laboratory will be open from 8:05 to 9:45 to all students taking extension classes. An assistant will be present to play whatever records are requested and to help persons who wish to find reading or study material. There will be no formalities. The intention is to give evening students, without charge, an opportunity to listen to records of their own selection played under good conditions.

Time: Tuesdays, 8:05 to 9:45, beginning October 1

Place: Campus, Wesbrook Hall, Room 202

SEE MUSIC CLASSES, PAGES 17, 34, 35

INQUIRE ABOUT:

The Chanters—Extension students' musical group

The Players—Extension students' dramatic group

INFORMATION

Summarized Facts About Extension Classes

How To Read Class Descriptions.—Here is a typical class description:

B.A.152-153† Cost Accounting. 3 credits each semester. \$10.

Principles used to determine the profitableness of each branch of manufacturing, and basis for judging the relative efficiencies of operation; materials, labor, and burden, continuous process and production order costs; burden distribution methods, standard costs, etc. Prerequisite: Econ. 25L, or equivalent.

First Semester

152 W 8:05 St. P. Ext. Center 204,
Rotzel

Second Semester

153 W 8:05 St. P. Ext. Center, 204,
Rotzel

The numbers and titles of extension classes are usually the same as those of corresponding day classes. The letters **ex** affixed to a class number mean either that there is no corresponding day class or that the class is a material modification of the corresponding day class for extension purposes. Capital letters affixed to class numbers refer to university divisions and departments; B.A. means Business Administration, G.C. means General College, etc.

Classes marked with a dagger (†) are continuation classes and require the completion of two or three classes, as indicated, before any credit is given.

The title of the class is followed by the number of credits which the class carries. Unless these credits are stated to be valid only for a certificate, they are understood to be valid toward a university degree.

Then comes mention of the tuition fee and of any special fee which may be involved. All fees are for one semester unless otherwise indicated.

When a class runs through two semesters, the second semester is a continuation rather than a repetition of the first semester unless otherwise indicated. Students may enter either semester unless specifically prohibited from so doing.

Prerequisites refer to other classes which should precede the class in question. Extension students may ordinarily disregard these prerequisites but must make them up in order to become eligible for a degree.

The time and place of meeting of classes is indicated by abbreviations which in most cases will be obvious. The days of the week are indicated by the first letters, and the buildings in St. Paul and Minneapolis by the titles or abbreviations of them. For example, "W 8:05 St. P. Ext. Center 204" means that the class will meet on Wednesday at 8:05 in the St. Paul Extension Center, room 204. In some cases a number (here, 152 and 153) precedes the letter indicating the day of the week. This refers to the number of the class offered so that there may be no confusion as to which class is offered in either semester. The name of the instructor follows the room number.

Basis on Which Classes Are Scheduled.—Extension classes are ordinarily offered on the basis of a demand established over a series of years. Some classes are offered every year, a few every semester; others less frequently. Those described and scheduled in this bulletin are those for which a sufficient demand is anticipated. Extension classes will be conducted in any available subject on petition of a sufficient number of students. The exact number will depend on the subject and the conditions of offering, and will be determined on application. Such a petition may be made to any office of the division, and should be accompanied by the name and address of each petitioner so that notice may be given of the status of the class. When a class is organized in

this manner fees may be paid without the late registration fee any time during the week of the first class meeting, but no refund of fees will be made to students who cancel their registrations.

Basis on Which Classes Are Conducted.—The normal minimum enrolment of an extension class is 15 but the University reserves the right to cancel any class whose enrolment is insufficient to warrant its continuation.

The assignment of instructors announced in this bulletin is made in good faith and it is expected that the assignments will be met. In case a change of instructor is for any reason necessary it is expected that students will have registered because they wanted the subject taught, and the change in instructor will not be valid reason for dropping the class.

When Classes Meet.—The majority of classes meet once a week for seventeen weeks, the last meeting being devoted to the examination. This may be considered the standard class. Exceptions, such as classes meeting for fewer or more weeks or those meeting twice a week, are noted in the description of the class.

Most class meetings are two (academic) hours in length. The few which meet for only one hour are so indicated in their descriptions. Five-credit classes meet for an actual time of two hours and forty-five minutes, which, with an allowance for a recess, makes a session of approximately three hours.

Wherever possible, classes are scheduled either at 6:20 p.m., closing at 8:00; or 8:05 p.m., closing at 9:45. This enables a student to attend two classes in one evening. Classes meeting for more than two hours cannot conform to this schedule. The time of meeting for each class is stated in the program.

Extension classes meet regularly for the entire semester without regard to **holidays**, except for the Christmas recess. For this recess, classes will be suspended Saturday, December 21, and will resume on Monday, January 6. Classes whose meetings fall on any holiday may, by agreement between students and instructors, be dismissed, but such meetings must be made up by extra meetings before the close of the semester in which they occur.

Where Classes Meet.—Classes meet in designated buildings on the University campus, in Minneapolis, or in places chosen for convenience in downtown Minneapolis and St. Paul. The location of these places is printed on the outside back cover of this bulletin. A map of the Main campus, showing location of university buildings, will be found inside the back cover of this bulletin.

Admission to Extension Classes

In keeping with the philosophy of adult education, extension classes are open to all persons who can profitably pursue them. The only requirements, therefore, are sufficient maturity and ability to study successfully the work undertaken.

N.B.—*The only exception to this is in the case of classes in the College of Science, Literature, and the Arts numbered 100 or above, where every registrant must have completed the prerequisites.*

Those wishing to count extension class study toward any university degree must satisfy requirements for admission to the University as well as specific requirements for the degree concerned. These requirements are explained in paragraphs below (see page 8). Those who do not desire this credit need not meet any university entrance requirements, and may freely choose among the classes offered in terms of their needs and desires, ordinarily without regard to prerequisites.

Regularly Matriculated University Students.—No student regularly registered for the day class work of any unit of the University of Minnesota may

register concurrently for an extension class without the approval of the dean of his college. Such approval is not usually granted when the extension class would increase the student's work beyond the normal load.

Dropped Students.—A student who has been dropped by any unit of the University may not register for extension classes until such time as he has been accepted for readmission to his unit.

Extension Certificates

For the completion of specified amounts of work, in definite fields, the General Extension Division awards certificates. The basis for these awards is the completion of 90 credits, of which at least 25 must have been earned at the University of Minnesota. Credits earned in other accredited institutions, as well as in the various colleges of the University of Minnesota, will be accepted to the extent that they meet certificate requirements. Credits earned by correspondence study, in the University of Minnesota or in any institution approved by the National University Extension Association, will be accepted for not more than 45 of the 90 credits required. For detailed requirements, see Science, Literature, and the Arts Classes, page 21; Business Classes, page 54; and Technology Classes, page 68.

Credits

Most extension classes carry credit that may be applied toward a university degree whenever a student becomes properly registered in one of the colleges of the University, and has met the prerequisites for the classes involved. Students may accumulate credits toward a degree in advance of registration in a particular college, but are advised to secure the acceptance of their credentials for admission as early as possible.

In response to particular demands some classes are offered that are outside the field of regular university instruction. They may, however, carry credit toward an appropriate General Extension Division certificate. (Exception must be made of the Junior College certificate since that is part of the work for a degree and may include only courses which carry degree credit.) Such classes are indicated in the program of classes. Many classes are conducted on a noncredit basis.

Every student who successfully completes the work of an extension class, including the final examination, receives the credit stated in the announcement of the class. This credit is permanently recorded in the office of the university registrar and remains as extension credit until such time as the student may qualify for its transfer to some other college of the University.

Auditors.—Students who do not desire, or are unable, to do the entire work of a class may be accepted as auditors, upon petition for this privilege upon blanks provided. Those in this status will not be expected to participate in class work, nor take the final examination, and may never receive credit for the work. A registration may be changed to the status of auditor at any time during progress of a class up to the time for the final examination. Auditors pay the same fees as other students.

N.B.—Registration blanks make no provision for registration as an auditor. The filing of one of these blanks is necessary to procure this status.

An auditor may change to the credit status **not later than the eighth week** of a semester. Apply to any extension office.

Amount of Credit.—Classes meeting for two hours once a week for a semester normally carry 3 quarter credits. (Altho extension classes are on a semester basis, credits are computed in quarter hours in accordance with the regular university usage.) Classes meeting oftener than once a week, or for

more or less than the two-hour period, carry appropriate credit based upon their relation to the normal three-credit class. Such variations are indicated in connection with each class concerned.

Prerequisites for Credit.—For the benefit of students who expect to use their credits toward a degree each class announcement contains a statement of prerequisites. These consist of other classes that should precede the class to which they refer. Extension students who are not candidates for a degree may ordinarily disregard these prerequisites. **The only requirement for such students is that they be sufficiently mature and competent to do the work of the class for which they register.** Of this the instructor will be the judge; and only when the lack of previous classes results in inability to do the work of a class will a student be excluded.

Extension students who are candidates for a degree may also enter classes without prerequisites, provided they are otherwise competent, but they must ultimately meet the prerequisites in some way before the credit can be used toward a degree.

Residence Credit.—By action of the University Senate, attendance in extension classes in Minneapolis, St. Paul, and Duluth is interpreted as meeting the requirements of residence at the University; that is, such attendance may be counted in fulfilling the requirement of time spent in residence study, as prescribed for various degrees by the University or by the separate colleges. (This interpretation does not apply to extension classes outside the three cities named, nor to correspondence study.)

Credit Toward a University Degree

Students who wish to become candidates for a degree must meet the requirements for admission to the school or college granting the degree, and the requirements regarding the conversion of extension credits into credits toward a degree. Admission to the University is either by certificate or by examination, as defined below.

Admission by Certificate.—The applicant must present a certificate of graduation from an accredited preparatory school, or certificates showing that he has passed examinations given by the College Entrance Board, or by the regents of the University of the State of New York, or by a state board of education in a state where such examinations are recognized by the state university in that state, or examinations in preparatory courses offered by correspondence study by the University of Minnesota. Such certificates are to be filed for evaluation by the University Board of Admissions. (For specific subjects of units of each required, see the Bulletin of General Information of the University.)

Admission by Examination.—Applicants for admission to the University (this does not apply to admission to extension classes; see above under Admission to Extension Classes) who are high school graduates, or who are at least nineteen years of age, and are unable to meet the requirements for entrance by certificate will be admitted provisionally, and subject to one year of satisfactory work at the University, upon completing successfully the following tests:

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

Conversion of Extension Credit into University Credit.—Extension credit will become credit toward a university degree when the student has formally presented himself to the proper official of the college of his choice and has been accepted as having completed the required work for entrance into an

accepted curriculum at the time of his application. In the General College application will be made to the assistant director of the college. In the College of Science, Literature, and the Arts application will be made to the assistant dean for the Senior College, following the completion of the two years' work of the Junior College. In the School of Business Administration and the College of Education, application will be made to the Students' Work Committee of the college concerned. In the Institute of Technology the application will be made to the chairman of the Advanced Standing Committee of the particular unit to be entered—the College of Engineering and Architecture, the School of Chemistry, or the School of Mines and Metallurgy.

N.B.—Students accepted for a degree in the above manner should have each semester's registration for extension classes approved by an official of their college.

It is possible, as an increasingly large number of students are realizing, to complete a considerable portion of the requirements for a Bachelor's degree in extension classes. Theoretically all the work for a degree, including the curricular requirements and special demands, such as comprehensive final examinations, can be met through these classes. In practice, however, there are likely to be advanced course requirements in major subjects which cannot be offered in extension classes because of insufficient demand. In order that the student may make a practical program which will enable him to get the greatest benefit from his extension classes and reduce to a minimum the time that is spent in securing advanced courses in day classes, it is necessary that advice and assistance should be sought at the earliest possible moment.

Advanced Standing.—This University accepts credits earned at any accredited college, university, state teachers college, or junior college. Such credits are accepted as far as they represent courses equivalent to those offered in this University. They must be certified upon the official blank of the institution granting them and give specific information regarding the subject and its descriptive title, time spent, number of credits, the grade, the preparatory units presented for entrance, and a statement of honorable dismissal.

Work done at nonaccredited institutions will be accepted for advanced standing only upon satisfactory completion of a comprehensive examination for each course presented, and in limited amount. If such examinations are taken within six weeks after formal matriculation they are given without charge. Students desiring advanced standing should consult the Students' Work Committee through which arrangements will be made either for the evaluation of credentials or for special examinations.

Filing of Credentials.—Students who have previous records in other institutions are urged to file their credentials for admission with advanced standing as early as possible. This makes possible the determination of the student's present status and the giving of specific advice as to the work which should be taken.

Graduate Credit.—Under the regulation of the Graduate School, credits earned in extension classes may not regularly be counted toward a graduate degree.

N.B.—For adjustments possible in the Graduate Course in Social Work, consult the Department of Sociology and Social Work.

Registration

Registration may be either by mail or by personal application.

1. **Registration by Mail.**—Those desiring to register by mail should make application (by mail, telephone, or in person) to the campus office of the General Extension Division for registration blanks, program of classes, and other

necessary material. The completed registration blank, accompanied by the payment of fees, may then be mailed to the main office of the General Extension Division, 402 Administration Building, University of Minnesota, Minneapolis. The receipted fee statement, constituting formal acceptance of the registration, will be returned to the student by mail.

2. Registration in Person.—Those desiring to register in person will apply at any one of the offices during the office hours listed inside the front cover. Students registering for the first time are advised to register in person in order that they may be assisted or advised by those in attendance. A member of the Students' Work Committee is in attendance during the office hours at the main office, and resident managers in other offices endeavor to be available for most of the registration period.

3. The registration blank, consisting of several sections, **no one of which should be detached**, must be filled out completely according to instructions printed thereon.

4. Registration Dates.—First semester, September 16 to October 5; second semester, January 27 to February 15. Registrations will be accepted after these dates, on terms stated in the next paragraph.

5. Late Registration.—Students should register before the first meeting of their classes, but they are permitted to register up to and including Saturday of the third week of either semester. For this privilege a late registration fee is charged. For registrations made from Monday, October 7 to Saturday, October 12, for the first semester, and from Monday, February 17 to Saturday, February 22, for the second semester, the fee is one dollar (\$1). Dates are inclusive. Following these periods the fee is two dollars (\$2). The fee applies to each class for which registration is made.

N.B.—Registration sent by mail and postmarked later than midnight of October 5 for the first semester, and February 15, second semester, will be subject to the late registration fee and will be held up until the fee is paid.

Students desiring to register later than the third week of a semester must secure the approval of the Students' Work Committee. Registrations made later than the end of the fourth week carry no credit.

6. Completion of Registration.—A registration is completed when payment of fees is received; the receipted fee statement mailed to the student is his evidence of completion. Class cards are mailed to the instructor and become his evidence of the completion of the student's registration. The failure of an instructor to receive a class card usually indicates that the registration has failed of completion; the student should make sure of his responsibility in the matter. Matters of irregularity may be referred to the Students' Work Committee. No credit for a class will be granted unless registration is complete.

7. Change of Registration.—Students who desire to transfer from one class to another may do so by making application to the main office of the General Extension Division. There is no fee for transfers. After the third week of the semester such a change requires the approval of the instructor to whose class the change is made. If the change is made after the eighth week of the semester no credit can be allowed for either class involved. Failure to observe this regulation, so that proper record of transfer may be made, may result in loss of credit.

8. Cancellation.—Students who cease to attend a class should have their registration officially cancelled by application to the main office of the General Extension Division. Failure to do this leaves an incomplete record which may cause difficulties.

9. Advice on Registration.—The Students' Work Committee of the General Extension Division is ready to advise students regarding a number of matters. Students registering for the first time may learn what classes are

most appropriate for them, in view of their preparation. Those planning to earn a certificate, or a degree, may save themselves mistakes in choosing classes which do not count in their courses. Those who have accumulated a number of credits may be advised about what certificate or degree to work for, and what classes to choose. Credits may be submitted for evaluation and the determination of advanced standing. Consultations may be had any time either by telephone or by personal interview. Students who wish to make most effective use of their study should not neglect to check their work with the committee.

Extension students may avail themselves of the services of the University Testing Bureau. The charge of \$4 for these services includes both testing and counseling. This year, by special arrangement, a limited number of students will be offered these services without charge. Application should be made to the Students' Work Committee.

Fees

The usual fee for an extension class carrying 3 credits, meeting once a week for two hours, and continuing for one semester, is \$10. Wherever the fee is more or less than this standard the amount is stated in the description of the class. For classes meeting for two hours and forty-five minutes, and carrying 5 credits, the fee is \$17. Classes in chemistry and other sciences have fees varying with the amount of laboratory involved. These are tuition fees, do not include texts or materials, and are the same for auditors as for credit students. Laboratory and materials fees are indicated in class descriptions.

Laboratory Fees.—These charges for materials or service are made in connection with certain classes where necessary. In most cases they are payable with the tuition, but in classes in chemistry at the Chemistry Department.

Materials Fees.—In some classes materials are furnished, usually in place of textbooks, and a minimum charge is made, payable at time of registration.

Late Registration.—For the privilege of registration after the regular time a fee is charged, on a schedule set up in paragraph 5, under Registration.

Registration is not complete until fees have been paid. Checks should be drawn for the exact amount due, and made payable to the University of Minnesota.

Special Fees for Examinations.—For the removal of a grade of Condition, an examination is given, for which the fee is \$1. This fee should be paid before the examination; the grade cannot be recorded until it is paid. For special examinations for credit for work done elsewhere a fee of \$5 is charged, except under conditions specified on page 9 (Advanced Standing).

Refunds.—Students who cancel their registration before the ninth week of a semester may obtain a pro-rata refund of the tuition fee according to a scale established by the Board of Regents, provided written notice is given any office of the General Extension Division at the time of cancellation.

No refund will be made for cancellation from a class which is carried for less than the minimum number of students.

N.B.—Applications for refund because of cancellation must be made not later than November 23, for the first semester, or April 5, for the second semester. They will not be considered if made later.

Two dollars (\$2) of each fee is nonrefundable, being withheld to cover registration expense. Remittance of refunds by mail requires a period of time, but immediate refunds may be had by making application in person between 9:00 a.m. and 12:00 m. or 1:00 and 3:00 p.m. at the campus office of the General Extension Division.

N.B.—Refunds to students who have purchased Student Season Athletic books are subject to special provisions. For details, see page 15.

Loan Fund.—The General Extension Division has at its disposal a fund from which it can make loans for tuition to needy and worthy students. Prospective students who find it difficult or impossible to pay tuition fees should make application to the director for assistance. **Loans are open to students who have satisfactorily completed two semesters of study in this division.**

Students' Work Regulations

Admission.—Students are accepted in extension classes whenever they manifest the desire, the maturity, and the ability to profit by the work. No university entrance requirements need be met. The only provision is that students shall be of such ability that their presence in a class will not impair the work of the rest of the class. Instructors will be the judges of this ability. In some classes of an advanced nature admission will be conditional on experience or preparation. No regulation is intended to exclude any student who can profit by the work. (For details dealing with regularly matriculated students, dropped students, see page 6 under Admission to Extension Classes.)

Normal Load.—The maximum amount of extension work to be carried by students regularly employed in some vocation is 9 or 10 credit hours, the equivalent of 3 three-credit or 2 five-credit classes, per semester. Twelve credit hours may be allowed by permission of the Students' Work Committee, provided the students' record of a previous semester shows an average of 1½ honor points per credit hour. Permission for more than 12 credit hours may be granted under exceptional circumstances.

Correspondence Study.—Students may be enrolled for both extension classes and correspondence study courses only with the permission of the Students' Work Committee. The amount of work taken by such a combination may not exceed the permissible maximum stated in the paragraph above.

Attendance.—Attendance at every meeting of a class is expected; success in the work of a class is based on this attendance. Instructors are required to report continuous absences in order that the Students' Work Committee may inquire into the causes of absence and the student's intentions, may recommend what may be best for the student, and determine the student's status. Such inquiry and recommendation is entirely in the interest of the student and in no sense disciplinary; extension students are in classes for very definite purposes, are quite competent to govern their comings and goings, and may be trusted to give the attendance necessary to the accomplishment of their purposes.

Examinations.—Examinations in all classes are given during the last week of each semester. All students desiring credit must take these examinations.

Other examinations or quizzes are entirely at the option of the instructor.

Examinations for the removal of the grade of Condition (E) will be given on application at a time and place agreed upon by the student and the instructor. A fee of one dollar (\$1), payable at any office of the General Extension Division, is charged for a condition examination.

Special examinations for advanced standing or for credit for work done elsewhere will be given on application. (See page 9.)

Grades.—Four grades, A, B, C, and D are given for work of varying degrees of merit, D being the lowest passing grade. Work below passing is marked E, a condition, or F, a failure. Work which is of at least D grade, but for acceptable reasons not complete, may be marked I, incomplete, provided not more than one fourth remains incomplete.

A condition is a temporary grade representing a deficiency which may be made up without repeating the course. It may be removed by additional work, by an examination, or by both. If not removed within two semesters

following the resumption of the student's extension class work it becomes a failure. Pending such removal the student may register for a continuation class, indicated by a dagger (†), in a succeeding semester. The permanent grade resulting from the removal of a condition may not be higher than C.

A failure represents a deficiency so serious that the student must repeat the class in order to obtain credit in it. Following a failure the student will not be permitted to register for a continuation class.

Incomplete work may be completed in any way the instructor may prescribe and should have the student's earliest attention. If this is not done within two semesters following the resumption of the student's extension class work the grade becomes a condition or a failure, as the instructor may elect, subject to the rules applying to those grades.

Credits and Honor Points.—Credits are used to indicate the amount of work done, in terms of the time spent in classes and in preparation for them. It is expected that at least two hours will be spent in preparation for every hour spent in class. Quality of work is expressed in honor points assigned to the several grades. Each credit with a grade of C carries one honor point; of B, two; of A, three. The grade D carries no honor point, and the grade F one minus honor point per credit which cannot be cancelled by repeating the course with a passing grade.

Most of the colleges of the University make use of these honor points in determining student status, requiring an average grade of C (one honor point per credit) for graduation, and making concessions to students with higher ratings. Students in extension classes who are seeking degrees should consult an officer of the college in which a degree is sought regarding the status of honor points in that college. The General Extension Division requires a C average for all its certificates.

Grade Reports.—Reports of students' grades are sent to the office of the university registrar at the close of each semester. A report of each student's grades and credits is sent to the student by the registrar, and will not be furnished by the office of the General Extension Division.

Instructors are required to report at each mid-semester all grades below D on the work so far completed. On the basis of these reports students are advised and counseled by the Students' Work Committee.

The Students' Work Committee.—This committee of the General Extension Division has direct supervision of the work done by students of the division. It functions in an advisory capacity for those desiring information about the sequence of courses, certificates, relation of extension classes to the work of other colleges, credits presented from other colleges, the organization of a program of study, and other similar matters. For candidates for degrees it offers its services in securing the advice and direction of the proper officials of the college concerned, who alone can issue authoritative information.

Appointments with the committee may be made at any time by application at any office of the General Extension Division. Under ordinary circumstances these conferences should be held during usual business hours; during registration periods these hours are extended to the evening; at other times special appointments may be made as necessary.

The University Library

"Students registered in the Extension Division and attending classes in Minneapolis or St. Paul are entitled to draw books to be used in connection with their courses. They are subject to all library regulations including those in regard to return upon demand and to fines on overdue books" (Library Rules). Extension students are urged to make as extensive use of the library as possible, for the enrichment of their study, and at times even for the basic

matter of their classes. A copy of the *Library Handbook* which contains the rules applying to all students may be had at the loan desk.

Minneapolis Symphony Orchestra

The Orchestral Association makes a special rate for season tickets to the regular concert season, applying to students who are registered for five credits or more. Receipted fee statements will be considered evidence of registration and will be stamped when tickets are purchased.

The Minnesota Daily

Extension students may subscribe for the *Minnesota Daily*, student newspaper, at the regular mailing rates; these are \$3.50 for the school year, or \$1.25 per quarter, payable in advance. Application should be made to the business manager of the *Daily*, Murphy Hall.

Athletic Facilities—For Men

The university athletic facilities for men are open to extension students on the same basis as to full-time day students. The schedule of open hours, given below, should be quite convenient for extension students; they may take advantage of them either before or after classes. The use of these facilities, by any student, requires the payment of fees listed below.

Gymnasium.—Open daily from 8:30 a.m. to 5:30 p.m.; during season of indoor sports, to 10:00 p.m. Fees: equipment \$1, towel \$1, and locker 25 cents, per quarter (11 weeks). A gymnasium or athletic uniform, consisting of a number of items, exclusive of shoes, may be rented for a fee of \$1 per quarter. The student, of course, may provide his own uniform.

Swimming Pool.—Open daily, 11:30 a.m. to 10:00 p.m. Swimmers are asked to leave the pool between 9:30 and 9:45 in order to have time to dress before the building is closed. Fees: towel \$1 and locker 25 cents per quarter.

Fees are payable at the ticket office in the lobby of Cooke Hall—open daily until 5:30 p.m., except Saturday and Sunday. Students unable to reach this office before 5:30 may remit a check to the Athletic Department for the services they wish. Locker and towel cards will then be left in care of the man in charge of the locker rooms, who is present until 10:00 p.m.

Golf Course.—Students who are registered for extension classes for the second semester, or after April 1, may play golf at the University of Minnesota Recreation Field. Identification cards must be procured in advance; they will be issued on presentation of receipted fee statement at the clubhouse on the Recreation Field. This can be done by mail.

For Women

The facilities of the Women's Gymnasium are at the present time open only through the regularly scheduled extension classes which offer an extensive program for those who wish to avail themselves of it.

Student Season Athletic Books

The student season athletic book admits to all intercollegiate athletic events, except swimming, during the college year. It is a privilege book and consequently the privilege may be denied to any student who violates any of the conditions under which the book is issued.

Who May Purchase.—Any student enrolled in any department of the University, including Graduate, Extension, etc., whether regular or special, and carrying a minimum scholastic load of five quarter credits, or classes carrying

a corresponding fee, who presents a receipted fee statement at the time of sale, covering a course of study running concurrent with the time for which the book is issued, is entitled to purchase one book if single, or two if married. **Students in correspondence study courses are not eligible to this privilege.**

The privilege books must be exchanged the first week in January for new privilege books, covering the winter and spring sports schedule. This exchange will not be made unless a receipted fee statement for the winter quarter or second semester is presented, except that extension students may make this exchange without a fee statement by paying a \$2 transfer fee per ticket, and thus obtain the privilege books for the winter and spring schedules. **This transfer fee will be applied to the registration fee for the second semester if the extension student enrolls for the second semester.** If the student fails to enroll for the **second semester of the same academic year**, the exchange ticket may be used for all remaining winter and spring sports, but the transfer fee will be retained by the Department of Athletics.

The price of the student book is \$7. Checks are not accepted in payment.

Where Purchased.—Books may be purchased at the Minneapolis or St. Paul offices of the Extension Division during the week before the beginning of classes. Extension students are expected to make their purchases through the office where they register. They must appear in person with fee statement. If the student is buying an additional book for husband or wife, the husband or wife must also be present at the time for the purpose of photographic identification.

Seat Location.—At football games the seat location will be in the student section. The Ticket Committee of the university faculty has the following regulation regarding the allocation of this section:

"The assignment of seats to students shall begin with the line between sections 5 and 6 and run east. Students shall be seated by classes in the following order: (1) seniors and graduate students, (2) juniors, (3) sophomores, (4) freshmen, (5) extension students."

This section is not open to nonstudents nor may students sit outside this section. Nonstudents will not be admitted to the student section at basketball games. For all other events the book admits to unreserved sections.

Cancellation of Registration—Refunds.—The student season book is a privilege extended to students only and it becomes void the moment an individual ceases to be a student in the University whether by cancellation of registration, expulsion, or in any other manner. The book is not transferable and cannot be resold, nor will the purchase price be refunded after the book has been used for any event except in cases where the student is required, by the University, to cancel his registration.

When an extension student holding a book seeks a refund following cancellation, the book must be submitted with the application for refund. An adjustment of charges as between regular ticket rates and the season book rate will be made, and the balance of the season book charge refunded.

GENERAL COLLEGE CLASSES

The classes announced in this section are selected from the program of the General College. They are planned to furnish a background of understanding of the world we live in, to provide useful and interesting information, to encourage wholesome and enjoyable avocational interests, to promote informed and responsible citizenship. They are intended for persons who are not primarily interested in securing a college degree but care more for the advancement of personal growth and the satisfaction of intellectual curiosity.

Credit

Work done in the General College does not receive credit in the manner traditional with other colleges. Nor are credits added up to meet requirements in accordance with the customary formula. The formula by which the college does arrive at the point of certifying a student for its degree is by determining quality rather than quantity. In brief, the process is by examinations of a comprehensive nature.

Nevertheless credits can be determined for transfer purposes at any time, and may be so certified. Thus, when the description of a General College extension class reads "three credits in General College" it means that this is the equivalent amount which would be expected to be transferable to another college. Transfers can be made on the basis of the quality of work done at any time that a student's rating justifies. All General College credits may be applied toward an extension certificate.

Some work originating in, or referring to, other colleges of the University is referred to by title and page in this section of the bulletin.

ARTS STUDIES

G.C. 21A-21B General Arts. 3 credits each semester in General College. \$10.

Has it ever occurred to you that all the arts—painting, music, sculpture, the movies, architecture, the ballet, the graphic processes, the drama, literature, interior architecture, landscape architecture, industrial and commercial design—have a common basis in their purpose, a common basis in their solution of their formal problems, and differ only in the minor factor of their materials and processes?

General Arts is a course designed to introduce the student to all the arts; to orient him so that his further studies or experiences in any of the arts will be more sound, more vital, more enjoyable. It is hoped that the student will leave the course with the feeling that he has a basic and general footing in the arts which will serve in his everyday life. The material is presented by the lecture-laboratory method so that the important facts and principles are well illustrated. No prerequisite.

First Semester

21A T 6:20 Campus Westbrook 202,
Hill and assistants

Second Semester

21B T 6:20 Campus Westbrook 202,
Hill and assistants

G.C. 22A-22B Art Today. 3 credits each semester in General College. \$10.

Art is an expression of the spirit of the times. Realizing this truth, more and more people are turning to the study of art not as an escape but in an honest effort to understand the spirit of our times as manifested in public buildings, housing, furniture, fashion, sculpture, and so forth. To promote such an understanding is the object of this class. Much use will be made of

slides and actual art products. The course is so designed that either semester is valuable but both semesters are recommended for a fuller appreciation and understanding. No prerequisite.

First Semester

22A Th 6:20 Campus Wesbrook 306,
Fisher

Second Semester

22B Th 6:20 Campus Wesbrook 306,
Fisher

G.C. 25A-25B Film and Drama Today. 3 credits each semester in General College. \$10, plus \$2 laboratory fee.

The aim of this class is to increase the entertainment value of the film and the drama by developing a more aware, a more appreciative, and consequently a more demanding audience. To accomplish this, there will be shown to the class preselected films which offer examples of good photography, directorial techniques, the use of music, and some of the principles of pictorial design. In addition to these contemporary motion pictures, are shown films of the silent period beginning about 1895, and talkies of the 1920's; the development of the animated cartoon is traced. Features of the drama and other allied forms of the theater are presented through actual playgoing as a part of the course. Each semester's study will take up different aspects of film and drama using different films and plays. The laboratory fee covers admission at student rates to five showings of the university film series and to three productions of the University Theatre. No prerequisite.

First Semester

25A Th 8:05 Campus, Natural History
Museum 307, Hamilton

Second Semester

25B Th 8:05 Campus, Natural History
Museum 307, Hamilton

G.C. 24A-24B Music Today. 3 credits each semester in General College. \$10.

Music appreciation is a study entirely different from the study of music history, of musical theory, or of musical performance. It is an activity open to all who have an interest in music, whether or not they have had previous training in voice or instruments. Thus no prerequisites are necessary. Music Today is a class for those who wish to develop or increase their enjoyment and understanding of music as a means toward life enrichment.

The material is presented by the lecture-laboratory method; that is, the lecture is carefully and completely illustrated with recordings. The sequence of 24A and 24B is recommended in order to obtain a balanced and rounded appreciation.

First Semester

24A W 7:00-8:30 Campus Wesbrook 202,
Hill and assistants

Second Semester

24B W 7:00-8:30 Campus Wesbrook 202,
Hill and assistants

N.B.—Students registered in the above class are invited to use the General College Music Laboratory, Wesbrook 202, from 6:15 till class time and after class until 9:00. An assistant will be present to play requested recordings and to assist students in the use of musical scores and correlative readings. The laboratory will also be open to all evening students on Tuesdays, 8:05-9:45 p.m.

History of Music. See page 34.

Bach, Beethoven, Wagner, and Brahms. See page 34.

Wagner's Ring of the Nibelungen. See page 35.

G.C. 125 Piano Playing for Pleasure. 3 credits each semester in General College. \$10.

It is easy to play the piano. Within a semester's time enough of the art may be acquired to enable one to enjoy playing for one's own pleasure. The fundamentals (phrasing, rhythm, form) will be taught to individuals in small groups. The class is open to all, without previous musical training. Students may either begin or continue in the second semester.

First Semester

F 6:20 Campus Music 104, Twichell

Second Semester

F 6:20 Campus Music 104, Twichell

G.C. 56A Home Landscape Planning. 3 credits in General College. \$10.

This class is intended to provide a background for the pursuit of gardening as a hobby. Principles of landscape design and their use in making the home grounds more useful, livable, and attractive; good and bad examples of home landscaping; plant materials—trees, shrubs, and garden plants—with special reference to their artistic use; independent student projects furnishing opportunity for application of principles to personal needs. No prerequisite.

First Semester

T 7:30 Campus Botany 4, Phillips

G.C. 56B Home Landscape Planting and Materials. 3 credits in General College. \$10.

An opportunity for the garden lover to learn more about plants—who, when, where to grow them; planting arrangement and composition; problem of planting a typical home garden. To be conducted from a cultural and appreciation viewpoint, appealing to those not particularly interested in the practical aspects of home landscaping. No prerequisite.

Second Semester

T 7:30 Campus Botany 4, Phillips

G.C. 57A Home Gardening. 3 credits in General College. \$10.

The very practical aspects of growing for the very practical gardener. Attention given to soils and their improvement; plants and their reproduction from seeds and slips; preparation of flower beds; planting and transplanting; pruning; fertilizing; cultivating; control of insects and diseases; watering; weeding, etc. No prerequisite.

Second Semester

W 7:30 Campus Botany 4, Phillips

G.C. 57B Indoor and Home Gardening. 3 credits in General College. \$10.

Special autumn gardening activities; garden construction and maintenance; growing bulbs in the garden and in the house; plant propagation and culture; special attention to indoor gardening and house plant culture. Lectures, demonstrations, and student projects. No prerequisite.

First Semester

W 7:30 Campus Botany 4, Phillips

Art Metal Work and Handicrafts. See pages 47-48.

Birds of Minnesota and Minnesota Plant Life. See pages 45, 25.

Drawing and Painting. See pages 47, 71, 73.

Literature and Writing. See pages 26-29.

Physical Recreation. See pages 50-52.

Theater and Acting. See pages 43-44.

SCIENCE STUDIES

G.C. 10B The Human Body in Operation. 3 credits in General College. \$10.

Most of us would like to know more than we do about how the human body operates. How, for example, is the body constructed? What is the exact location and function of those mysterious organs about which we hear so much and know so little—the kidney, the gallbladder, the heart, the pancreas? What are the pituitary, thyroid, and other important glands and what do they do? How do we see and hear? What happens during digestion, during sleep? Through a discussion of normal physiology and of some common ab-

normalities, this class aims to bring the layman an understanding of the construction and operation of the human body. No prerequisite.

First Semester

Th 6:20 Campus Westbrook 206, Potthoff

G.C. 10C The Human Body in Health and Disease. 3 credits in General College. \$10.

This class undertakes to teach generally accepted ideas of right living habits. How much sleep is really necessary? Does exercise tend to prolong life? Are there any practical measures one may take to prevent high blood pressure, colds, insanity, worrying? What are the effects of common drugs and of the commonly used drug store remedies? Attention is also given to heredity, to mental hygiene, preventive medicine, and to community and national health problems. No prerequisite but it will be of advantage to have had G.C. 10B.

Second Semester

Th 6:20 Campus Westbrook 206, Potthoff

G.C. 37A Physics in Modern Life. 3 credits in General College. \$10.

Most of us have at some time or other been asked, or have ourselves wondered about many of the scientific facts with which we are continually associated. Why the sky is blue and sunset red, how the household refrigerator works, why some of us wear glasses, what causes dew, fog, clouds, and rain, what is sound and what promotes good acoustics, how the thermostat controls room temperature, what are X-rays, what does science know about atoms and molecules, and what is the relation between atoms and electrons, and our practical applications of science? The many practical applications of science which we now enjoy depend upon the natural laws of the physical world. This sequence of lectures and demonstrations aims to provide acquaintance with these laws and facts of nature together with a knowledge of scientific method and an appreciation of scientific philosophy. Lecture demonstrations will provide a large part of the instruction. No prerequisite.

First Semester

T 6:20 Campus Physics 133, Vaughan

G.C.37B Chemistry in Modern Life. 3 credits in General College. \$10.

Today we depend upon a host of man-made applications of the sciences. In this multitude of modern conveniences and synthetic products we recognize the prime importance of chemistry. This series of lectures and demonstrations has been arranged to present in nontechnical language and on the demonstration table in front of us the many ramifications of the field of chemistry. A few lectures and demonstrations at the first of the semester will acquaint us with the elementary principles of chemistry and the meaning of a chemical reaction. Approximately two thirds of the semester will be devoted to the discussion and demonstration of such interesting topics as: chemistry and health, chemical aspects of air conditioning, soilless growth of plants, clothing and paper, modern plastics, vitamins, hormones, anesthetics and drugs, artificial rubber, nylon, sulfanilamide, regeneration of depleted soils, petroleum products, and other subjects of interest in the field. The general objective of the course is to trace the effect of man's knowledge of chemistry upon our lives and upon our economic welfare as a nation. No prerequisite but it will be of advantage to have had G.C. 37A.

Second Semester

T 6:20 Campus Chemistry 215, Vaughan

MISCELLANEOUS STUDIES

G.C. 6A-6B Current History. 3 credits each semester in General College. \$10.

Do you find it increasingly difficult to follow the moves on the chessboard of world affairs? Is the tempo of your busy life driving you to depend more and more upon hasty sessions with the headlines and the news casts? How

can you acquire the background necessary to an intelligent interpretation of what you read and hear? How can you learn to detect propaganda and discern the facts? This class aims to help you do just these things. *Time* magazine will be the text, with the *New York Times*, *Current History*, and the whole field of contemporary journalism providing reference material. Pertinent motion pictures will be used to highlight and clarify the material under discussion in class. No prerequisite.

First Semester

6A W 6:20 Campus Westbrook 201,
Yivisaker
Th 8:05 St. P. Ext. Center 203,
Yivisaker

Second Semester

6B W 6:20 Campus Westbrook 201,
Yivisaker
Th 8:05 St. P. Ext. Center 203,
Yivisaker

American Political Parties. See page 38.

Europe in the Twentieth Century. See page 32.

Recent Social Trends. See page 41.

The Newspaper in a Democracy. See page 33.

G.C. 14A Food Selection and Purchase. Not offered 1940-41.

G.C. 15A Selecting and Maintaining a Home. 3 credits in General College. \$10.

The basis of this class will be the selection and care of a living place and its furnishings. House plans and design will be discussed from the standpoint of suggesting standards for living arrangements and standards of artistic judgment. The study of furnishing the home will include such questions as utilitarian needs to be met, securing attractiveness, purchase of furniture and furnishings, selection and hanging of pictures, and various cost problems. No prerequisite.

First Semester

M 6:20 Campus Westbrook 206, Jacobson

G.C. 16A Clothing Selection, Purchase, and Care. 3 credits in General College. \$10.

This class will take up problems which confront men and women in their efforts to be suitably and well dressed. It will include a study of clothes in general and of clothes in relation to oneself, of the individual ensemble, and of the wardrobe as a whole. The latter subject will be concerned with the basic principles for determining kinds and numbers of garments needed, the place of money in being well dressed, and color planning over a period of years. Some attention will be given to fiber identification, fabric construction, finishing processes, differences in workmanship in ready-to-wear garments and the problem of judging the value of labels and advertising as buying aids. No prerequisite.

Second Semester

M 6:20 Campus Westbrook 206, Jacobson

Interior Decorating. See page 47.

Textiles. See page 66.

SCIENCE, LITERATURE, AND THE ARTS CLASSES

The classes announced in this section are selected from the program of the College of Science, Literature, and the Arts, or from the programs of other colleges which give courses carrying credit in the College of Science, Literature, and the Arts. This selection makes available a portion, at least, of the university offerings in liberal arts to those who plan to work for a college degree, and also to those who are interested in exploring for their own satisfaction the various fields of human knowledge.

CANDIDATES FOR DEGREES.—All students who have any intention of working for a Bachelor's degree should consult the Students' Work Committee regarding the details of the completion of the work of the Junior College, the application for acceptance in the Senior College, and the appointment of a major adviser. Work done in extension classes in Minneapolis, St. Paul, and Duluth may yield credits acceptable toward a degree, and counts for residence study; but unless this work is done with the advice and consent of the college it may not be accepted. The college itself says:

"The college has always required for graduation a definite period of residence in the Senior College and a minimum number of hours of Senior College courses. Under the new regulations which go into effect for students entering after September 15, 1936, the normal period of residence in the Senior College is six quarters. The amount of Senior College work may not be decreased by extra credits earned in the Junior College except by special permission at the time of the transfer to the Senior College. It is imperative that students should register in the Senior College as soon as they have completed the requirements for admission."

Extension Certificates

Credits earned in this department may be applied towards either of two certificates which are offered by the General Extension Division for the completion of 90 credits of work, the equivalent of two years' full-time residence in the University. These certificates are as follows:

JUNIOR COLLEGE CERTIFICATE.—Requirements for this certificate correspond to the requirements for the first two years of the work of the College of Science, Literature, and the Arts. These represent one half of the work for a Bachelor's degree, and consequently, all of the credits must conform to degree standards as to the subjects and classes involved, prerequisites, and correspondence to similar courses offered in day classes. In addition, a candidate for this certificate must have met university entrance requirements. (See page 8.)

I. To obtain this certificate the student must earn 90 credits and must maintain a C average. (Honor points may not be counted to reduce the total of 90 credits, but they may be applied whenever these credits are employed in meeting the requirements for admission to the Senior College of Science, Literature, and the Arts.)

II. The following group requirements must be met:

1. English Composition 4-5-6 (9 credits) or English A-B-C (15 credits) or exemption from the requirement. All students desiring to register for these classes will take a placement test. (See page 26.)
2. Foreign Language. A total of 20 credits (18 if in 3-credit units) in one foreign language, in high school and college courses combined. For every full year of such language presented for entrance, the above requirements shall be reduced 5 credits. Students, for instance, who have had two years of a foreign language in high school

may complete by taking 10 credits in that same language in college courses.

3. 10 credits (9 if in 3-credit units) in one of the social studies: anthropology, economics, geography, history, political science, sociology.
4. 10 credits (9 if in 3-credit units) in one of the natural sciences: astronomy, botany, chemistry, geology (including laboratory), physics, psychology (including laboratory), zoology.

In addition to these specified studies the student will include studies of his own choosing (electives) to make up the number of credits required.

III. In order that the student may be prepared on entering the Senior College to devote his time to Senior College studies, he should examine the prerequisites for the Senior College studies in the fields in which he is interested. By the end of his sophomore year he is expected to be prepared for Senior College studies in at least five departments. (For a complete list of these departmental requirements, see the Bulletin of the College of Science, Literature, and the Arts, or consult the Students' Work Committee.)

N.B.—To be acceptable toward this certificate, credits must be earned in classes belonging to the Junior College—that is, numbered above 50.

IV. Students who have, previous to September, 1934, begun work on these requirements under the provisions existing at that time may complete under those provisions.

V. These requirements may be modified to conform to the requirements for admission to specific schools and colleges of the University, such as the prebusiness, premedical, pre dental, or other requirements. Specific information regarding this will be given by the Students' Work Committee.

VI. Credits earned in a foreign language in high school count only toward admission; no high school credits may be counted both for admission and for a degree. If a student continues the same foreign language in the University that was begun in high school he goes on in the class next succeeding his last high school class. If he changes to a different language he starts at the beginning.

LIBERAL EDUCATION CERTIFICATE.—In contrast to the Junior College certificate this represents work that may be done without regard to any degree requirements, any particular sequence of classes, or prerequisites, except ability of the student to do the work of the class. The requirements are reduced to a minimum, that minimum being quite flexible; they are a requirement in English, a breadth or spread requirement, and a concentration requirement. The details are as follows:

1. English—9 credits, in any classes for which student has preparation.
2. Spread—at least 6 credits, two classes, in each of the three following fields: natural sciences (astronomy, botany, chemistry, geology, physics, psychology, zoology, or mathematics); social science (anthropology, economics, geography, history, political science, sociology); arts or humanities (fine arts, languages, philosophy, speech). Total 18 credits.
3. Concentration—at least 18 credits in one subject, or in closely related subjects.
4. Electives—45 credits. To make a total of 90. All elections may be made regardless of college lines, as student interest dictates.

This certificate is recommended to those who are not interested in a college degree, but nevertheless wish to pursue their study with some sort of system and organization.

Extension classes are open to any person qualified to profit by the study. Ordinarily only those who expect to qualify for a university degree will be expected to meet the requirements of prerequisites. Prerequisites are stated for the information of such students.

Science, Literature, and the Arts classes numbered 100 and above are taught by regular members of the graduate faculty, require a large amount of outside reading, with term reports, and all registering for them, auditors as well as those working for credit, must have had all the prerequisites specified in the description of the class concerned.

AGRICULTURE

Farm Management. Not offered 1940-41.

Soil Microbiology. See page 24.

ANATOMY

5 General Human Anatomy. 4 credits. \$13.50.

A nontechnical class of general interest. Study of dissected specimens; no dissection. Zoology 1-2 is recommended for preliminary study.

First Semester

MW 7:30 Campus Anatomy 301, Grenell

6 Advanced Human Anatomy. 4 credits. \$13.50.

An elementary study of the developmental and microscopic aspects of human structure. Anatomy 5 is recommended for preliminary study.

Second Semester

MW 7:30 Campus Anatomy 301, Grenell

The Human Body in Operation. See page 18.

The Human Body in Health and Disease. See page 19.

ANTHROPOLOGY

106 Prehistory. 3 credits. \$10.

A general survey of the problems, methods and techniques of the science of archeology, with special reference to fossil man and cultural sequences in the Old World. No prerequisite.

First Semester

W 8:05 Campus Wesbrook 6, Wilford

107 American Archeology. 3 credits. \$10.

Early man in America and the sequence of archeological cultures in North America, with special reference to the Mississippi Valley and the state of Minnesota. No prerequisite.

Second Semester

W 8:05 Campus Wesbrook 6, Wilford

ARCHEOLOGY

(See above under Anthropology)

ART

(See Art Education, p. 47; Arts Studies, p. 16; Drawing, p. 71)

ASTRONOMY

11 Descriptive Astronomy. 3 credits. \$10.

The general principles and fundamental facts of astronomy; illustrated by lantern slides, simple problems, and naked eye and telescopic observations. Higher mathematics not necessary. No prerequisite.

First Semester

W 6:20 Campus Physics 133, Luyten

13 Practical and Stellar Astronomy. 3 credits. \$10.

Supplements Astronomy 11, which, however, is not prerequisite; higher mathematics not necessary. A detailed description of the constellations and individual stars, the structure of the sidereal universe, and such problems as the determination of time from the stars; extended opportunity for the use of the telescope and the observation of the heavenly bodies.

Second Semester

W 6:20 Campus Physics 133, Luyten

BACTERIOLOGY

41 General Bacteriology. 5 credits. \$17, plus \$2 laboratory fee.

Culture media; methods of staining and identification; principles of sterilization and disinfection; examination of air, water, milk; relation of bacteriology to the industries. Prerequisite: 10 credits in chemistry and 10 credits in biology.

First Semester

TTh 7:30 Campus Millard 214, Skinner

102 Special Bacteriology. 4 credits. \$13.50, plus \$2 laboratory fee.

The pathogenic bacteria, especially in relation to definite diseases; principles of infection and immunity. For technicians and others. Prerequisite: Bacteriology 53.

Second Semester

TTh 7:30 Campus Millard 214, Novak

103ex Soil Microbiology. 5 credits. \$17, plus \$2 laboratory fee.

Quantitative and qualitative study of the micropopulation of the soil, bacteria, algae, molds, protozoa, ecology, soil biochemical transformations, carbon and nitrogen cycle, cellulose decomposition, nitrification, denitrification, nitrogen fixation. Not to be offered again for some years. Prerequisite: General Bacteriology and 10 credits in chemistry.

First Semester

MW 7:30 Campus Millard 201, Skinner

114 Yeast, Molds, and Actinomycetes. Not offered 1940-41.

116 Immunity. 3 credits. \$10, plus \$2 laboratory fee. Meets for one quarter, 11 weeks.

General and special laboratory technique; immunological phenomena; preparation of vaccines; production and collection of immune sera; demonstrations of various immune substances; technique of forensic blood tests, the Wassermann test, modified Wassermann, and the Kahn test; allergy, anaphylaxis, atopy; blood grouping. Primarily for technicians; for prerequisite see instructor. Class limited to 25 students.

First Semester

MW 7:30 Campus Millard 214, Novak

152 Bacteriological Methods. 5 credits. \$17, plus \$2 laboratory fee.

A laboratory class in standard and approved methods for the bacteriological examination of water, milk, and foods; preparation and use of standard

culture media; methods for standardization of germicides. Prerequisite: Bacteriology 53.

Second Semester

MW 7:30 Campus Millard 201, Skinner

BOTANY**1 General Botany.** 4 credits. \$13.50.

A survey lecture course on plants and their human interests, contributing to liberal culture; characteristics of living matter; fundamental facts of structure, growth, and reproduction; relation of plants to their environment and to each other; principles underlying inheritance, variation, plant breeding, and organic evolution. No prerequisite.

First Semester

M 6:20-8:30 Campus Botany Aud., Huff

2 General Morphology of Plants. Not offered 1940-41.**7 Taxonomy of Flowering Plants.** 3 credits. \$10.

A general study of the classification and relationships of flowering plants. For prerequisite consult instructor.

Second Semester

W 6:20 Campus Botany 1, Moore

10ex Minnesota Plant Life. 3 credits. \$10.

A study of our native wild flowers, trees, shrubs, ferns, liverworts, mosses, lichens, and mushrooms. A class for teachers, camp and scout leaders, and all who would know more of our native plants and their habits. No prerequisite.

Second Semester

M 6:20 Campus Botany 4, Huff

21 Elementary Ecology. 3 credits. \$10.

An introduction to the study of plant communities and the adaptations of plants to environment. Field trips during October. Prerequisite: Botany 1.

First Semester

W 6:20 Campus Botany 1, Cooper

Home and Indoor Gardening and Landscaping. See page 18.

CHEMISTRY

(See pages 71-72)

CHILD WELFARE**40 Child Training.** 3 credits. \$10.

The physical and mental development of the child; the training of young children; behavior problems and their various aspects; techniques of good and bad management. Repeated second semester. Prerequisite: Psy. 1-2.

First Semester

M 8:05 St. P. Ext. Center 203, Cummings

Second Semester

T 4:40 Mpls. N. W. Bank Bldg. 690, Faegre

80 Child Psychology. 3 credits. \$10.

A survey of the psychology of the young child from the standpoint of development and learning. Prerequisite: Psy. 1-2.

Second Semester

M 8:05 St. P. Ext. Center 203, Maurer

82 Later Childhood and Adolescence. 3 credits. \$10.

The meaning of adolescence; growth and personality development; vocational guidance; sex education, social adjustment, and emancipation from the family. Prerequisite: Psy. 1-2.

Second Semester

T 6:20 St. P. Ext. Center 208, Cummings

84 Family Relations. 3 credits. \$10.

Adjustment within and outside the family circle; relation of adults and children within the family; the establishment of the home; discussion of family problems such as finance, discipline, recreation, etc. Prerequisite: Psy. 1-2.

First Semester

M 6:20 St. P. Ext. Center 200, Cummings

T 4:40 Mpls. N. W. Bank Bldg. 603, Faegre

140 Behavior Problems. 2 credits. \$7.

Nature and origin of behavior difficulties. Emphasis of the relation between early behavior trends and later maladjustments. Prerequisite: 12 credits in psy., ed. psy., or soc.

First Semester

M 8:05 St. P. Ext. Center 202, Maurer

(See also Sociology Classes, pages 40-42)

CLASSICS

47 Ancient Sources of the Modern World. Not offered 1940-41.

48 Classical Literary Tradition. Not offered 1940-41.

ECONOMICS

(See pages 56-67)

ENGLISH**Classes in Composition**

Preparatory Composition. No credit. \$7.50.

Intensive drill on grammatical forms, structure, and theme writing. Repeated second semester. Note Composition 4-5-6 below.

First Semester

M 6:20 Campus Folwell 209, Dworsky
Th 8:05 St. P. Ext. Center 202, Lefevre

Second Semester

T 8:05 Campus Folwell 209, Dworsky
W 6:20 St. P. Ext. Center 203, Lefevre

4-5-6 Freshman Composition. 3 credits each semester. \$10.

These classes satisfy the requirement in English for graduation and are prerequisites to other English classes. Must be taken in sequence. Admission based on satisfactory score in **English Placement Test**, or satisfactory completion of Preparatory Composition. The Placement Test is not a barrier to the student but is designed to determine as accurately as possible the student's probable success and thus prevent his attempting study for which he is inadequately prepared. As a result of the test, the student may be: (1) exempted from the requirement in English, (2) assigned to Composition 4, or (3) required to register for Preparatory Composition. Please note the following:

1. If you took the Placement Test in high school within the last four years, you must ask for assignment to the proper composition class a week before the first meeting of the class. (You need not take the test again.) Telephone, write, or call in person.

2. If you have not taken the test, report for it at the first date scheduled below:

First Semester

7:00 Thursday September 26
7:00 Thursday October 3
7:00 Thursday September 26

Room 110, Folwell Hall, Campus
Room 110, Folwell Hall, Campus
St. Paul, Extension Center 206

Second Semester

7:00 Thursday, February 6
7:00 Thursday February 13
7:00 Thursday, February 6

Room 110, Folwell Hall, Campus
Room 110, Folwell Hall, Campus
St. Paul, Extension Center 206

3. Tests will be given only as scheduled, and you cannot be admitted to a class for credit, without taking the test.

4. Normally no student will be admitted to a class in Composition 4, 5, or 6 unless he has attended the first or second meeting.

5. If these regulations are not clear, or present seemingly insurmountable obstacles, apply for information at any office of the General Extension Division.

First Semester

4 M 6:20 Campus Folwell 105, Grandy
T 6:20 Campus Folwell 204, Buckley
W 8:05 Campus Folwell 204, Scallon
Th 6:20 Campus Folwell 302, Christie
Th 6:20 St. Paul Ext. Center 202,
Conklin

5 T 6:20 Campus Folwell 212, Dworsky
Th 6:20 St. Paul Ext. Center 208,
Dworsky

6 Th 6:20 Campus Folwell 226

Second Semester

4 T 8:05 Campus Folwell 204, Buckley
Th 6:20 Campus Folwell 226
W 8:05 St. Paul Ext. Center 201, Sanford

5 M 6:20 Campus Folwell 105, Grandy
W 8:05 Campus Folwell 212, Dworsky
Th 6:20 Campus Folwell 302, Christie
Th 6:20 St. Paul Ext. Center 208,
Dworsky

6 T 6:20 Campus Folwell 204, Scallon
W 6:20 St. P. Ext. Center 204

27-28† Advanced Writing I and II. 3 credits each semester. \$10.

Continues the study of writing beyond Composition 4-5-6. Prepares for Short Story Writing and Essay Writing. Prerequisite: Comp. 4-5-6, exemption, or permission of instructor. Students may take either 27 and 28, or 27 and 29 for credit.

First Semester

27 T 6:20 Campus Folwell 203, Avery

Second Semester

28 T 6:20 Campus Folwell 203, Avery

29 Advanced Writing III. 3 credits. \$10.

For those who want still further experience and instruction in writing without limiting themselves to the specific technique of the short story. Personal criticism of whatever type of writing the student wishes to submit. Prerequisite: Comp. 27, or permission of the instructor.

First Semester

W 6:20 Campus Folwell 203, Avery

69-70† Short Story Writing I and II. 3 credits each semester. \$10.

The technique of the short story with constructive work in story writing. Prerequisite: average of B in two semesters of 27-28, 29 or 65.

First Semester

69 M 6:20 Campus Folwell 205, Briggs

Second Semester

70 M 6:20 Campus Folwell 205, Briggs

81-82-83 Essay Writing. Not offered 1940-41.**91-92 Seminar in Writing (Advanced Short Story). 3 credits each semester. \$10.**

For advanced students who write with facility and desire personal direction. Criticism of manuscript submitted. Prerequisite: senior standing and 9 credits in Senior College English courses.

First Semester

91 M 8:05 Campus Folwell 304, Phelan

Second Semester

92 M 8:05 Campus Folwell 304, Phelan

† Classes marked with a dagger (†) are continuation classes and require the completion of two or three classes, as indicated, before any credit is given.

Theory and Practice. No credit. \$10.

Reading and study in esthetic theories of creative writing. Personal criticism of manuscripts. The class is limited to twelve students, and admission is by consent of instructor only. Applications for admission must be made to the instructor at least one week before the first meeting of the class.

First Semester

W 8:05 Campus Folwell 203, Avery

Second Semester

W 6:20 Campus Folwell 203, Avery

Business English. See page 63.

Written Communication in Business. See page 63.

Radio Script Writing. See page 60.

Vocabulary Building. See page 44.

CLASSES IN LITERATURE

22-23† Introduction to Literature. 5 credits each semester. \$17. Meets for one period of 3 hours each week.

A study of English literature as to history and types of writing. 22, eighteenth century; 23, nineteenth century. Prerequisite to major in English; and required for teacher's certificate. Prerequisite: Comp. 4-5-6, or exemption.

First Semester

22 M 6:20 Campus Folwell 204, Dunn
W 6:20 St. P. Ext. Center 206, Hessler

Second Semester

23 M 6:20 Campus Folwell 204, Dunn
W 6:20 St. P. Ext. Center 206, Hessler

37-38 Contemporary Literature. 3 credits each semester. \$10.

Readings, lectures, and discussions of contemporary British and American literature exclusive of the novel. Designed to help students appreciate and understand the literature of today and its relationship with modern life. Prerequisite: Comp. 4-5-6, or exemption.

First Semester

38 T 6:20 Campus Folwell 105, Sanford

Second Semester

37 T 6:20 Campus Folwell 105, Conklin

52-53† The English Novel. 3 credits each semester. \$10.

An introduction to the study of the English novel. Readings, lectures, and discussions. Prerequisite: Comp. 4-5-6, or exemption; and 6 additional credits, or 10 credits in 21-22-23.

First Semester

52 M 6:20 Campus Folwell 226, McFadyen

Second Semester

53 M 6:20 Campus Folwell 226, McFadyen

55-56† Shakespeare. 3 credits each semester. \$10.

Shakespeare's development as a dramatist; a careful study of a selected list of plays. Prerequisite: Comp. 4-5-6, or exemption; and 6 additional credits, or 10 credits in 21-22-23.

First Semester

55 T 6:20 Campus Folwell 101, Nichols

Second Semester

56 T 6:20 Campus Folwell 101, Nichols

62 Milton. Not offered 1940-41.

76 American Literature Since 1885. 3 credits. \$10.

Lectures on American authors from Riley and Bellamy to Jeffers and Steinbeck, with extensive readings. For prerequisite consult instructor.

First Semester

W 6:20 Campus Folwell 105, McDowell

† Classes marked with a dagger (†) are continuation classes and require the completion of two or three classes, as indicated, before any credit is given.

93 American Short Story. 3 credits. \$10.

Lectures on and discussion of a hundred short stories from 1800 to the present day. No student will be given credit for both English 93 and 113. For prerequisite consult instructor.

Second Semester

W 6:20 Campus Folwell 105, McDowell

The Great Books. \$10 each semester.

This is a course for those who want the exciting experience of reading, informally with an instructor, the records left by the great minds of the past—the records which as books constitute the roots of modern literature and philosophy. The course is open to all who bring enthusiasm and the ability to read. It will appeal alike to intelligent persons with little formal education and to college graduates who have known the great books of the world only at second or third hand. The course is free of stereotyped procedure, formal prerequisites, and academic credit. The emphasis will be on class discussion, with occasional lectures. There will be no examinations.

First Semester

M 6:20 Campus Folwell 203, Avery
Th 6:20 St. P. Ext. Center 203, Avery

Second Semester

M 6:20 Campus Folwell 203, Avery
Th 6:20 St. P. Ext. Center 203, Avery

Book Reviews. No credit. Ten regular periods. \$6.

The most interesting books of the season—fiction, biography, travel—presented in a series of informal lectures. Second semester will include reviews of current New York plays. No prerequisite.

First Semester

M 6:20 Campus Folwell 113, Acker
T 8:05 St. P. Ext. Center 203, Acker

Second Semester

M 6:20 Campus Folwell 113, Acker
T 8:05 St. P. Ext. Center 203, Acker

Biography. No credit. Ten regular periods. \$6.

A series of lectures on outstanding men and women. Each discussion will present an interesting personality, something of his background, his achievement, and contribution to life. The characters chosen will represent a variety of fields of interest—stage, art, literature, science, and history. No prerequisite.

First Semester

M 8:05 Campus Folwell 113, Acker

GEOGRAPHY**11 (51) Human Geography.** 5 credits. \$17.

A study of the factors of the environment (space relationships, climate, soils, drainage, topography, mineral wealth, contact with the sea, fauna, and flora) with particular reference to their limiting effect on human activities. Projects of current interest, such as Boulder Dam, TVA, Soil Conservation, and Flood Control will be used as illustrative material. Basic for all geography classes. Counts toward either a major or a minor in geography. No prerequisite.

Second Semester

M 6:20 St. P. Ext. Center 204, Brown

41 Geography of Commercial Production. 5 credits. \$17.

A study of the geographic basis for the production of commodities entering into world trade. Counts toward major in geography but not toward a minor, in addition to Geog. 11. No prerequisite but Geog. 11 recommended.

First Semester

Th 6:20 St. P. Ext. Center 204, Dicken

71 Geography of North America. 3 credits. \$10.

A consideration of environmental conditions and their limiting effect on economic activities in the major geographic regions of the United States and Canada. A study of the basis for development of the major urban centers and

their supporting economic activities. Counts toward either a major or a minor in geography. Prerequisite: Geog. 11.

Second Semester

T 6:20 Campus Burton 103, Dicken

120 Geography of Asia. 3 credits. \$10.

Areal differentiation in the major geographic regions of Asia. Special consideration of Japan, China, and India, and the geographic basis for existing conditions in those areas. Counts toward a minor in geography. Prerequisite: 10 credits in geog.

First Semester

T 6:20 Campus Burton 103, Davis

GEOLOGY

1 General Geology (Dynamic). 3 credits. \$10.

A Dynamic Geology Laboratory. 2 credits. \$7.

These classes, 1 and A combined, constitute Geology 1 of the College of Science, Literature, and the Arts. They consist of an introductory treatment of the materials of the earth, and the geologic processes; principles of earth sculpture, glaciation, volcanic activity, mountain building, etc.; geologic occurrence of gems, ores, oil, and other economic mineral resources. No prerequisite.

N.B.—Registration may be made for the combined classes or for Geol. 1, but it is recommended that they be taken together. Students who have completed 3 credits in Geol. 1 or 8 may register for Geol. A.

First Semester

1 T 6:20 Campus Pillsbury 210, Thiel
A T 8:05 Campus Pillsbury 22, Gardiner

2 General Geology (Historical). 3 credits. \$10.

B Historical Geology Laboratory. 2 credits. \$7.

These classes, 2 and B combined, constitute Geology 2 of the College of Science, Literature, and the Arts. A study of the changing geology and life of the earth during the geologic past as interpreted from the rock records. Prerequisite: Geol. 1 or 8.

N.B.—Registration may be made for the combined classes, or for Geol. 2, but it is recommended that they be taken together. Students who have completed 3 credits in Geol. 2 may register for Geol. B.

Second Semester

2 T 6:20 Campus Pillsbury 210, Hanley
B T 8:05 Campus Pillsbury 22, Anderson

3 General Geology (Economic). Not offered 1940-41.

4 Geology of Minnesota. Not offered 1940-41.

19 Physiography of the United States. Not offered 1940-41.

20 Glacial Geology. 3 credits. \$10.

Nature and process of glacial action; land forms resulting from alpine and continental glaciers; character and distribution of Pleistocene and earlier glacial deposits; deposits of Minnesota; history of the Glacial Great Lakes and such glacial lakes of Minnesota as Lake Duluth and Lake Agassiz; development of Mississippi, Minnesota, and St. Croix valleys. Field inspection of typical glacial areas in Twin City region. Prerequisite: Geol. 1 or 8.

First Semester

Th 6:20 Campus Pillsbury 210, Hanley

23 Mineralogy. 3 credits. \$10.

A study of the physical and chemical characteristics of minerals; occurrence, genesis, and uses; determinative work and identification of rock and ore minerals by physical tests and blowpipe analysis. (May be used to satisfy day classes 23w and 24s.) No prerequisite.

First Semester

Th 6:20 Campus Pillsbury 110, Gruner

25 Elements of Rock Study. 3 credits. \$10.

A study of rock-forming minerals and of igneous, sedimentary, and metamorphic rocks, their occurrence and classification. For prerequisite consult instructor.

Second Semester

Th 6:20 Campus Pillsbury 110, Gruner

GERMAN**1-2 Beginning German A. B. 3 credits each semester. \$10.****First Semester**

1 M 6:20 Campus Folwell 207, Downs
Th 6:20 St. P. Ext. Center 200
Prottingeier

Second Semester

2 M 6:20 Campus Folwell 207, Downs
Th 6:20 St. P. Ext. Center 200
Prottingeier

3 Beginning German C. 5 credits. \$17.

Prerequisite: German 1-2.

First Semester

M 6:20 Campus Folwell 206, Wangsness

4 Intermediate German. 5 credits. \$17.

Modern narrative prose. Prerequisite: German 3.

Second Semester

M 6:20 Campus Folwell 206, Wangsness

17 German for Graduate Students. No credit. \$10.

This course presupposes no knowledge of German. It is chiefly designed to help graduate students acquire a reading knowledge of German as required of candidates for higher degrees. Special sections will be maintained for beginners and for more advanced students when possible. The work of the course includes the rapid reading of simple, graded material based on a vocabulary frequency count; the intensive reading of approximately 100 pages of more difficult material pertinent to the student's field of specialization; a study of functional, elementary grammar with stress solely on the recognition of forms encountered in reading; and frequent progress tests. Students wanting to begin in second semester should get instructor's approval at first class meeting.

First Semester

M 6:20 Campus Folwell 212, Klitzke and
Meessen

Second Semester

M 6:20 Campus Folwell 212, Klitzke and
Meessen

60 Narrative Prose. 3 credits. \$10.

Selections from the prose of modern authors. Stories by Arthur Schnitzler, Ricarda Huch, Paul Ernst, Thomas Mann, and others. Prerequisite: German 4, or four years of high school German.

First Semester

M 6:20 Campus Folwell 202, Wagman

65 Modern Drama. 3 credits. \$10.

Tendencies in the German drama from 1880 to 1933. Reading and discussion of plays by Hauptmann, Schnitzler, Hofmannsthal, Wedekind, Kaiser, Toller, and others. Prerequisite: German 60, or 3 credits above 60.

Second Semester

M 6:20 Campus Folwell 202, Wagman

HISTORY

1-2† European Civilization. 5 credits each semester. \$17.

Political, social, and economic factors. Course 1: 500-1799; Course 2: 1799 to the present. Meets 3 hours once a week. No prerequisite.

N.B.—History 2 is an excellent preparation for Philosophy 70, which please note.

First Semester**Second Semester**

1 M 6:20 Campus Folwell 104, Mudgett 2 M 6:20 Campus Folwell 104, Mudgett

20-21† American History. (Formerly Hist. 7-8.) 3 credits each semester. \$10.

Course 20: 1766-1840; 21: 1840-1877. No prerequisite.

First Semester**Second Semester**

20 M 6:20 St. P. Ext. Center 201, Kane 21 M 6:20 St. P. Ext. Center 201, Kane
T 6:20 Campus Folwell 104, Kane T 6:20 Campus Folwell 104, Kane

22 Recent American History (since 1877). Not offered 1940-41.**56-57-58† Early Modern European History.** 3 credits each semester. \$10.

History 56: 1684 to 1789; 57: French Revolution; 58 not offered 1940-41. Prerequisite: Senior College standing.

First Semester**Second Semester**

56 W 6:20 Campus Folwell 108, Kane 57 W 6:20 Campus Folwell 108, Kane

59-60-61† Later Modern European History. 3 credits each semester. \$10.

Europe in the nineteenth century after Waterloo. Special attention is paid to the growth of nationalism and the unification of Germany and of Italy, the effects of modern industrialism and the rise of Marxian socialism. Hist. 61 not offered 1940-41. Prerequisite: Senior College standing.

First Semester**Second Semester**

59 Th 6:20 Campus Folwell 108, Kane 60 Th 6:20 Campus Folwell 108, Kane

65-66† Europe in the Twentieth Century. 3 credits each semester. \$10.

Course 65: 1900-1918; 66: 1918 to present. The background and causes of the World War, the Versailles Conference and the peace treaties; the new governments in Europe, and conflicts between democracy, communism, and fascism, particularly in Russia, Germany, Italy, and France; the chief present-day menaces to world peace. Prerequisite: Senior College standing.

First Semester**Second Semester**

65 M 8:05 St. P. Ext. Center 201, Kane 66 M 8:05 St. P. Ext. Center 201, Kane
W 6:20 Campus Folwell 109, Deutsch W 6:20 Campus Folwell 109, Deutsch

80-81-82† Introduction to Economic History. 4½ credits each semester. \$15.

Survey of man's efforts to make a living from early times to the present. Emphasis upon European economic developments from which present-day society is derived. Prerequisite: Senior College standing.

First Semester**Second Semester**

80-81 T 6:20 St. P. Ext. Center 201, 81-82 T 6:20 St. P. Ext. Center 201,
Mudgett Mudgett
Th 6:20 Campus Folwell 104, Mudgett Th 6:20 Campus Folwell 104, Mudgett

83-84-85 American Economic History. Not offered 1940-41.**93a-94a-95a Survey of Latin-American History.** Not offered 1940-41.

† Classes marked with a dagger (†) are continuation classes and require the completion of two or three classes, as indicated, before any credit is given.

Backgrounds of Contemporary Affairs. Not offered 1940-41.

Current History. See page 19.

HOME ECONOMICS

35 Household Physics. Not offered 1940-41.

Clothing Selection, Purchase, and Care. See page 20.

Selecting and Maintaining a Home. See page 20.

Interior Decorating. See page 47.

Textiles. See page 66.

HOW TO STUDY

(See page 3)

JOURNALISM

5 The Newspaper in a Democracy. 3 credits. \$10.

A class for the general newspaper reader interested in the dissemination of news and information in the United States. Surveys the highly organized system whereby newspapers are able to present the most interesting and significant of the day's happenings; considers the place of the newspaper in a democracy; and discusses the influence which the newspaper may exert on the habits, tastes, and opinions of its readers. No prerequisite.

Second Semester

T 8:05 Campus Murphy 311, Ford

13 Introduction to Reporting. 3 credits. \$10.

A study of news, its sources, methods of finding and gathering; correct style of written presentation; brief survey of the place and purpose of the newspaper and the processes of newspaper production. Prerequisite: Eng. Comp. 4-5-6, or exemption.

First Semester

W 8:05 Campus Murphy Hall 311, Steward

69 Newspaper and Magazine Articles. 3 credits. \$10.

The special feature article; typical subjects and their preparation for magazines, trade papers, Sunday newspapers, syndicates, house organs, etc.; the qualities that make stories salable, use of pictures, and the market. Prerequisite: Jour. 13.

Second Semester

W 8:05 Campus Murphy Hall 311, Steward

76 Judging Modern Books and Plays. Not offered 1940-41.

78 Publicity and Public Relations. 3 credits. \$10.

A survey of the practices of workers in the fields of publicity. A study of the material for publicity campaigns, and practice in writing and production. Relation of publicity workers to the press. Public relations techniques and publicity for institutions, clubs, schools, libraries, churches, business organizations, for movements and campaigns. Members of the class taking the course for credit will be encouraged to undertake projects related to organizations or activities with which they are associated. Prerequisite: Jour. 13.

First Semester

T 8:05 Campus Murphy Hall 311, Ford

133ex Propaganda Analysis and Public Opinion. Not offered 1940-41.

B.A. 194ex Advanced Advertising Procedure. See page 60.

MATHEMATICS

(See pages 75-76)

MEDICINE

(See pages 52-53)

MUSIC

N.B.—Individual instruction in music, as well as study in the regular classes offered by the Department of Music, is open to registration through the General Extension Division by students who are not able to attend day classes full time. This includes instruction in piano, organ, voice, violin, cello, and all orchestral instruments, as well as classes in history and theory of music. Students will register as for extension classes but attend the regular day sessions. The courses offered, the time and place of meeting, and the fees for individual instruction will be found in the program of classes for the College of Science, Literature, and the Arts, in the Combined Class Schedule. For further information consult any office of the General Extension Division.

1-2-3 Ear Training and Sight Singing. Not offered 1940-41.

4-5-6 Harmony (First Year). 3 credits each semester. \$10.

Study of chords, their construction, relations, and progressions. Each semester corresponds to a quarter in day classes. No prerequisite.

First Semester

4 T 6:20 Campus Music 103, Malcolm
6 M 6:20 Campus Music 103, Malcolm

Second Semester

5 T 6:20 Campus Music 103, Malcolm

34-35-36† History of Music. 3 credits each semester. \$10.

A course in historical appreciation, designed to give an understanding of music as literature; a nontechnical account of the principal music forms, the historic origins and associations; the nature and scope of musical expression. Extensive musical illustrations. No prerequisite.

First Semester

34-35 Th 6:20 Campus Music 103,
Ferguson

Second Semester

35-36 Th 6:20 Campus Music 103,
Ferguson

40-41-42 Orchestra. 3 credits for the year, \$5 per semester; or 3 credits each semester, \$10 per semester.

N.B.—Students may enter either semester, and may elect one or two meetings per week, with corresponding credit and fee.

The University Symphony Orchestra is made available to extension students through the General Extension Division. Section 1 consists of the Symphony Orchestra, open to those qualified, both day and extension students; Section 2 will furnish opportunity for acquiring the skill and orchestral routine necessary for membership in the Symphony Orchestra. Tryouts to determine section membership, for both day and extension students. Open to players of orchestral instruments.

First Semester

Sec. 1 W 7:30 Campus Northrop Aud.,
Pepinsky
Sec. 2 T 7:30 Campus Music Aud.,
Pepinsky

Second Semester

Sec. 1 W 7:30 Campus Northrop Aud.,
Pepinsky
Sec. 2 T 7:30 Campus Music Aud.,
Pepinsky

56-57-58† Bach, Beethoven, Wagner, and Brahms. 3 credits each semester. \$10.

Critical study of selections from the master works of the four greatest composers; biographical readings, topics and analyses, giving historical and

† Classes marked with a dagger (†) are continuation classes and require the completion of two or three classes, as indicated, before any credit is given.

literary background to culminative periods in composition. Open to those who have been in extension classes in music appreciation. 56 and 57 not offered 1940-41. Prerequisite: 34-35-36, 56-57.

First Semester

58 W 6:20 Campus Music 104, Ferguson

58Aex Wagner's Ring of the Nibelungen. No credit. \$10.

Detailed study of the Ring, following the plan of Music 56-57-58, which is prerequisite.

Second Semester

W 6:20 Campus Music 104, Ferguson

93ex Psychology of Music. Not offered 1940-41.

Music Today. See page 17.

Piano Playing for Pleasure. See page 17.

NURSING

(See page 49)

ORIENTATION

1-2† Man in Nature and Society. 3 credits each semester. \$10.

A survey of certain aspects of contemporary thought concerning the specific physical and social sciences; nontechnical, designed for the layman. First semester, physical sciences; second semester, social sciences. No laboratory work and no knowledge of science required. No prerequisite.

First Semester

1 T 6:20 Campus Folwell 113, Shaw
Th 8:05 St. P. Ext. Center 208, Carlson

Second Semester

2 T 6:20 Campus Folwell 113, Shaw
Th 8:05 St. P. Ext. Center 208, Carlson

PHILOSOPHY

1 Problems of Philosophy (Introduction). 3 credits. \$10.

Introduction to the problems of philosophy; the main fields of investigation; permanent problems; principal methods and schools of philosophy; historical and contemporary views. No prerequisite.

First Semester

T 8:05 Campus Folwell 322, Conger
W 6:20 St. P. Ext. Center 203, Everett

2 Logic. 3 credits. \$10.

There is a difference between "straight" and "crooked" thinking. Logic is the study of these differences. What is a fallacy? How may pitfalls beset the attempt to think straight? When is a term properly defined? Why are sound definitions important? What is meant by a "syllogism"? What by a "dilemma"? What do you understand by proof? When is proof of a statement called for? When is it complete? What is a hypothesis? How many of these do you use in an average conversation? What is meant by "scientific thinking"? Do you do any of it? Logic is the *systematic analysis* of these and other related questions. The study of logic will show you what is involved in straight thinking. No prerequisite.

Second Semester

Th 6:20 Campus Folwell 205, Castell

3 Ethics. 3 credits. \$10.

Problems of life in terms of (1) contemporary social, political, and economic forces, and (2) the character of the individual; the psychological and

† Classes marked with a dagger (†) are continuation classes and require the completion of two or three classes, as indicated, before any credit is given.

philosophical foundations of morality; the reconstruction of morality; the history of morals and ethical thought. No prerequisite.

Second Semester

W 6:20 Campus Folwell 322, Everett

52 History of Modern Philosophy. 3 credits. \$10.

Movements and systems since the Renaissance. Descartes, Spinoza, and others in the seventeenth century. Hume, Kant, and others in the eighteenth century. Hegel, Schopenhauer, and others in the nineteenth century. James, Bergson, and others in the twentieth century. No prerequisite.

First Semester

Th 6:20 Campus Folwell 205, Castell

180 History of Religions. 3 credits. \$10.

A brief treatment of some important aspects of primitive religions and a more detailed study of the sacred literature and principal teachings of Hinduism, Buddhism, Taoism, Confucianism, Judaism, Christianity, and Islam. For prerequisite consult instructor.

Second Semester

T 8:05 Campus Folwell 322, Conger

10 Science and Religion. 3 credits. \$10.

An introductory survey of problems of the relations of religion and science, followed by an investigation of religious experience and scientific thinking. No prerequisite.

First Semester

T 8:05 Campus Folwell 303, Norborg

The Philosophy of History. 3 credits. \$10.

A survey of mythological, religious, naturalistic, totalitarian, and economic interpretations of history, and a critical analysis of the historical categories: time, succession, causality, continuity, freedom, revolution, and progress. Prerequisite: 6 credits in phil., or 10 credits in hist., or consent of instructor.

Second Semester

W 8:05 Campus Folwell 303, Norborg

PHYSICS**7-8-9† General Physics. 5 credits each semester. \$17.**

A general class for students majoring in physics, mathematics, chemistry, and in the Institute of Technology; includes mechanics, sound, heat, light, and electricity. Laboratory work an integral part of the class. Prerequisite: higher algebra and trigonometry. Phys. 7 (Mechanics and Heat) first semester; Phys. 8 (Electricity and Modern Physics) second semester; Phys. 9 (Acoustics and Optics) second semester of 1941-42.

First Semester

7 MW 6:20 Campus Physics 166, Culmer

Second Semester

8 MW 6:20 Campus Physics 166, Culmer

Physics in Modern Life. See page 19.

POLITICAL SCIENCE**1† American Government and Politics. Part I. 3 credits. \$10.**

Introductory study of the American system of government—national, state, and local. Constitutional basis; units and areas of government and their interrelations; forms of government and their historical development; citizenship and private right; participation in politics; parties and elections. 1 and 2 both required for credit. No prerequisite.

First Semester

M 6:20 Campus Burton 209, Kirkpatrick

† Classes marked with a dagger (†) are continuation classes and require the completion of two or three classes, as indicated, before any credit is given.

2† American Government and Politics, Part II. 3 credits. \$10.

A continuation of Pol. Sci. 1. The constitutional position of legislative bodies in the United States; their organization, powers, and procedures; the office of the American executive; administrative organization and problems of administrative reorganization; the civil service; the role and functions of the courts; problems of judicial review. No prerequisite.

Second Semester

M 6:20 Campus Burton 209, Christensen

3 Functions of Government (American Government and Politics, Part III). 3 credits. \$10.

A critical examination of the expansion of the functions of government with emphasis on the changing relations of government to the social and economic order; the constitutional, political, and administrative problems in the relations of government to business, social services and planning, national defense, foreign relations, agriculture, and labor. No prerequisite.

Second Semester

T 6:20 Campus Burton 209, Kirkpatrick

15 Elements of Political Science. Not offered 1940-41.**25 World Politics. 3 credits. \$10.**

The foreign policies of the Great Powers and how they have molded affairs in Europe since 1918; the policies and problems of Norway, Sweden, and the other neutral nations; why the League of Nations failed; the problems of the last peace conference and the next, for example, Poland, Czechoslovakia, and disarmament; the plans proposed for reconstruction and permanent peace in Europe such as the United States of Europe, Union Now, or permanent Anglo-French union; and the effects of European affairs upon American interests. For prerequisite consult instructor.

First Semester

Th 6:20 Campus Burton 209, Mills

61 Development of the American Constitution. Not offered 1940-41.**63 American Constitutional Development since 1876. Not offered 1940-41.****65 State and Local Government in Minnesota. Not offered 1940-41.****71 Recent Social Legislation. 3 credits. \$10.**

A survey of government activity in the field of social welfare; the theory and underlying principles of welfare legislation; the development of social insurance plans abroad and in the United States; constitutional and administrative problems of welfare and social security legislation; a survey of the Social Security Act, state law adopted pursuant thereto. Prerequisite: 9 credits in pol. sci. or consent of instructor.

First Semester

T 6:20 Campus Burton 209, Christensen

85 Problems of World Politics. 3 credits. \$10.

The present conflict between Japan, the United States, and the other Western powers in the Far East and the Western Pacific from the Philippines to Australia; the geographic, economic, and naval issues; and the connection between Japan's ambitions and the war in Europe. What adjustments can be made to meet reasonable claims of Japan in the hope of preserving peace in the Pacific. The conflict between Italy and the European powers in the Mediterranean area; the problems of the Dardanelles, Palestine, and Spain; and the contest between sea power and air power. Prerequisite: see instructor.

Second Semester

Th 6:20 Campus Burton 209, Mills

† Classes marked with a dagger (†) are continuation classes and require the completion of two or three classes, as indicated, before any credit is given.

144 American Political Parties. 3 credits. \$10.

The policies, composition, organization, activities, and functions of the political parties of today; suffrage, elections, and related subjects; evaluation of the party as a force in American government. Prerequisite: see instructor.

First Semester

W 6:20 Campus Burton 209, Starr

148 European Dictatorships. 3 credits. \$10.

Description and evaluation of contemporary absolute government, especially in Soviet Russia, Italy, and Germany; organization and policies of political parties. For prerequisite consult instructor.

Second Semester

W 6:20 Campus Burton 209, Starr

197 Imperialism. Not offered 1940-41.

Current History. See page 19.

PSYCHOLOGY**1-2 General Psychology. 3 credits each semester but see note below. \$10.**

The first semester of this class will consist of psychology for the layman. There will be a brief presentation of the general principles of psychology, followed by extensive application of those principles to typical interests and life problems of adults today. The second semester will consist entirely of technical groundwork for those who expect to do advanced work in psychology.

Note.—Students who satisfactorily complete *Psy. 1* will receive 3 credits toward an extension certificate. Only those who pass a special examination in *Psy. 1* will go on to *Psy. 2*, and will receive, upon satisfactory completion of *Psy. 2*, 6 credits toward a degree for *Psy. 1-2* combined.

First Semester

1 M 6:20 Campus Folwell 301, White
T 6:20 St. P. Ext. Center 208, White
W 4:20 Campus Folwell 110, White
W 8:05 Campus Folwell 301, White
F 6:20 Campus Folwell 110, White

Second Semester

2 M 6:20 Campus Folwell 301, White
T 6:20 St. P. Ext. Center 208, White
Th 4:20 Campus Folwell 110, White

3 Psychology Applied to Daily Life. 3 credits. \$10.

A course in the uses of psychological methods in solving such problems as come up in the treatment of ill health; in the courtroom, in business offices and factories; in advertising, in education, in social and political life, in artistic creation and esthetic enjoyment. Prerequisite: *Psy. 1-2*.

Second Semester

Th 6:20 St. P. Ext. Center 204, Longstaff
F 6:20 Campus Folwell 110, White

4-5 Introductory Laboratory Psychology. 2 credits each semester. \$10.

Simple experiments illustrating the subject-matter of contemporary psychology. Included are human and animal learning, visual experience, differences in musical, artistic, and other kinds of abilities, measurement of each student's personality traits, and reactions to advertisements. Supplies the laboratory experience which is necessary for psychology to be used to satisfy the natural science requirement in the Junior College. May be taken with or after *Psy. 1-2*.

First Semester

4 W 6:20 Campus Psychology 211, Baxter

Second Semester

5 W 6:20 Campus Psychology 211, Baxter

56 Psychology of Advertising. 3 credits. \$10.

Analysis of advertising, national and local, from the standpoint of attention, memory, desire, and action; experimental techniques for investigating

advertising problems. Of fundamental value to all advertisers. Prerequisite: Psy. 1-2 and Econ. 6-7.

First Semester

T 6:20 Campus Psychology 115, Longstaff

140-141 Social and Political Psychology. 3 credits each semester. \$10.

A psychological approach is made to such problems as the following: competition, co-operation, racial and political attitudes, the measurement of attitudes, techniques of persuasion and of political oratory, public opinion polls, propaganda, suggestion and stereotypes, leadership, and social significance of age. Political, economic, and social institutions, as such, are not systematically treated, nor is any specialized background in these fields required. Prerequisite: Psy. 1-2.

First Semester

140 T 8:05 Campus Psychology 115, Cook

Second Semester

141 T 8:05 Campus Psychology 115, Cook

144-145† Abnormal Psychology. 3 credits each semester. \$10.

Normal and abnormal behavior contrasted; varieties of maladjustment as illustrated in criminality, deficiency, fanaticism, and insanity; the inadequacies of personality as shown in everyday life. For prerequisite consult instructor.

First Semester

144 M 8:05 Campus Psychology 115, Bird

Second Semester

145 M 8:05 Campus Psychology 115, Bird

ROMANCE LANGUAGES**French**

1-2† Beginning French. 3 credits each semester. \$10.

Grammar, pronunciation, reading, and practice in speaking. No prerequisite.

First Semester

1 T 6:20 St. P. Ext. Center 200, Wilson
W 6:20 Campus Folwell 227, Embry

Second Semester

2 T 6:20 St. P. Ext. Center 200, Wilson
W 6:20 Campus Folwell 227, Embry

3-4 Intermediate French. 3 credits each semester. \$10.

Grammar review, composition, readings from modern authors. Prerequisite: French 1-2, or 2 years of preparatory French.

First Semester

3 T 6:20 Campus Folwell 227, Clefton

Second Semester

4 T 6:20 Campus Folwell 227, Clefton

5 French for Graduate Students. No credit. \$10.

Fundamentals of grammar; reading of appropriate prose. Prepares for examinations in French. Students may enter or continue in second semester. No prerequisite.

First Semester

W 6:20 Campus Folwell 201, Brackney

Second Semester

W 6:20 Campus Folwell 201, Brackney

54-55 French Conversation. 3 credits each semester. \$10.

Based on French civilization. Prerequisite: French 4.

First Semester

54 T 6:20 Campus Folwell 202, Minault

Second Semester

55 T 6:20 Campus Folwell 202, Minault

Spanish

1-2† Beginning Spanish. 3 credits each semester. \$10.

Grammar, pronunciation, reading, and practice in speaking. No prerequisite.

First Semester

1 M 6:20 Campus Folwell 102, Grismer
T 6:20 St. P. Ext. Center 204, Le Fort

Second Semester

2 M 6:20 Campus Folwell 102, Grismer
T 6:20 St. P. Ext. Center 204, Le Fort

† Classes marked with a dagger (†) are continuation classes and require the completion of two or three classes, as indicated, before any credit is given.

3-4 Intermediate Spanish. 3 credits each semester. \$10.

Review, composition, readings from modern authors. Attention to correspondence and commercial practice if desired. Prerequisite: Spanish 1-2, or 2 years of preparatory Spanish.

First Semester

3 T 6:20 Campus Folwell 201, Spiegel

Second Semester

4 T 6:20 Campus Folwell 201, Spiegel

53-54 Spanish Composition and Conversation. 3 credits each semester. \$10.

Practical composition, including correspondence and conversation. Prerequisite: Spanish 3-4.

First Semester

53 T 6:20 Campus Folwell 209, Henry

Second Semester

54 T 6:20 Campus Folwell 209, Henry

SCANDINAVIAN**1-2 Beginning Norwegian.** 3 credits each semester. \$10.

Elements of grammar; conversation; simple composition; select readings of easy prose and poetry; a simple Björnson classic in second semester. No prerequisite.

First Semester

1 Th 6:20 Campus Folwell 206, Farseth

Second Semester

2 Th 6:20 Campus Folwell 206, Farseth

4 Advanced Norwegian. 3 credits. \$10.

Based on one or more representative short stories. Reading, conversation, simple composition. Prerequisite: Scandinavian 1-2 or equivalent.

First Semester

Th 8:05 Campus Folwell 206, Farseth

5 Introduction to Norwegian Literature. 3 credits. \$10.

Brief view of the whole field of Norwegian-Danish literature. Reading of representative plays or stories; conversation. Prerequisite: Scandinavian 4 or equivalent.

Second Semester

Th 8:05 Campus Folwell 206, Farseth

9-10 Second Year Swedish. 3 credits each semester. \$10.

Composition, conversation, readings. Prerequisite: Scandinavian 7-8 or equivalent.

First Semester

9 T 6:20 Campus Folwell 206, Gustafson

Second Semester

10 F 6:20 Campus Folwell 206, Gustafson

71 The Modern Scandinavian Drama. 3 credits. \$10.

Lectures on the general background of the Scandinavian drama and the development of characteristic dramatic forms and tendencies as represented in Ibsen, Björnson, Strindberg, and others. Required reading available in English translation. No prerequisite.

Second Semester

F 6:20 Campus Folwell 206, Gustafson

SOCIOLOGY AND SOCIAL WORK**CLASSES IN SOCIOLOGY**

(Prerequisite to technical social work classes)

I Introduction to Sociology. 3 credits. \$10.

A study of the culture of human society and the effect upon it of such influences as location, sex, race, custom, invention; culture patterns, processes, and social interactions; social change and means of control. No prerequisite.

First Semester

T 6:20 Campus Jones 109, Monachesi
T 6:20 St. P. Ext. Center 203, Schneider
Th 6:20 Campus Jones 109, Schneider

Second Semester

T 6:20 Campus Jones 104, Monachesi

6 Social Interaction. 3 credits. \$10.

The basis and forms of social interaction and social relationships with detailed attention to some of the fundamental behavior patterns of contemporary society. Prerequisite: Soc. 1.

Second Semester

M 6:20 Campus Jones 109, Kirkpatrick
T 8:05 St. P. Ext. Center 204

14 Rural Sociology. 3 credits. \$10.

A study of rural and urban relationships; the principles of sociology applied to the position of an agricultural class in an industrial society; the contributions and obligations of farmers to the larger society, and vice versa. Prerequisite: Soc. 1.

First Semester

M 6:20 Campus Folwell 3

49 Social Pathology. 3 credits. \$10.

A survey course in contemporary social problems with especial emphasis on the conditions and processes in personal demoralization and social disorganization. The scientific approach to the study of poverty, physical diseases and defectiveness, feeble-mindedness, insanity, vagrancy, etc. Prerequisite: 10 credits in soc., or Soc. 1 and 10 credits in soc. sci. or psy.

First Semester

W 6:20 Campus Jones 109, Sletto

60 Social Protection of the Child. 3 credits. \$10.

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. Prerequisite: Soc. 1 and Soc. 49.

First Semester

T 6:20 Campus Jones 2, Quinlan

64 Human Behavior Mechanisms. 3 credits. \$10.

A discussion of normal and abnormal behavior emphasizing the latter, especially its relation to problems met by the social worker. Application of psychoanalysis in understanding abnormal behavior. Prerequisite: 6 credits in soc. and 6 credits in psy.

First Semester

M 6:20 St. P. Wilder Disp., Lippman

96 Recent Social Trends. 3 credits. \$10.

Social changes in the United States since 1890 with special emphasis upon their relationships to problems of human welfare, social control, and the problem of social reorganization. No prerequisite.

Second Semester

Th 6:20 Campus Jones 109, Schneider

110 Rural Organization. 3 credits. \$10.

Social organization as it affects living conditions in small towns and rural districts. Especially designed for rural as well as other social workers and specialists in rural sociology or agricultural economics. Prerequisite: same as for 119, below.

Second Semester

M 6:20 Campus Folwell 3

119 The Family. 3 credits. \$10.

The evolution of the family; development of family unity or disunity; the roles of the several members of the family; methods of investigation of the family. Prerequisite: 4 courses in soc. or Soc. 1 and 15 credits in soc. sci., ed., phil., or psy.

First Semester

W 8:05 Campus Jones 109, Kirkpatrick

120 Cultural Change. Not offered 1940-41.

See also **Child Welfare Classes**, page 25.

CLASSES IN SOCIAL WORK

N.B.—These classes are open to persons employed in social work positions who are recommended by the executive of the agency in which they are employed and approved by an adviser in the Graduate Course in Social Work. In satisfaction of requirements for membership in professional social work organizations, the courses listed are accounted as "technical social work" courses.

65 Psychiatric Aspects of Social Case Work. 3 credits. \$10.

A detailed discussion of cases that have been under intensive treatment; analysis of methods and philosophy of treatment. Limited to twenty students. Prerequisite: Soc. 64.

Second Semester

M 6:20 St. P. Wilder Disp., Lippman

84-85† Principles of Case Work. 3 credits each semester. \$10.

Social case work practices as applied to selected problems. Prerequisite: Soc. 1 and 49.

First Semester

84 Th 6:20 Campus Jones 2, Fisk

Second Semester

85 Th 6:20 Campus Jones 2, Fisk

94 Supervision in Social Case Work. 3 credits. \$10.

Principles and methods in the supervision of social case work practice. Prerequisite: principles of case work, and field training or experience.

Second Semester

Th 6:20 Campus Jones 104, Quinlan

95 Social Work Agencies. Not offered 1940-41.

125 Principles of Group Work. Not offered 1940-41.

126 Problems of Supervision in Group Work. Not offered 1940-41.

127 Legal Aspects of Social Work. 3 credits. \$10.

A selected group of legal problems treated from the viewpoint of the social worker; the court system; legal process; protection and enforcement of legal rights of indigent persons; problems of the small wage earner—garnishment, small loans, eviction; problems in domestic relations. Not designed to teach technical law, but to furnish a background for understanding social problems having legal implications. Prerequisite: Soc. 1 and 49.

First Semester

T 6:20 Campus Folwell 109, Bachelder

151-152† Public Welfare. 3 credits each semester. \$10.

First semester deals with the history and functions of public welfare administration, with special emphasis on public assistance; second semester, with special problems of state and county administration of public welfare activities. Prerequisite: Soc. 1 and 49.

First Semester

151 T 6:20 Campus Jones 2, Hayden

Second Semester

152 T 6:20 Campus Jones 2, Hayden

SPEECH (PUBLIC SPEAKING)

1-2-3† Fundamentals of Speech. 3 credits each semester. \$10.

Speech as a means of social adaptation and control; techniques of body and voice; organization of speech material and study of types of speeches; practice for correctness and effectiveness in presentation. Voice recordings

† Classes marked with a dagger (†) are continuation classes and require the completion of two or three classes, as indicated, before any credit is given.

may be arranged through the instructor for a small fee. Prerequisite: Eng. Comp. 4-5-6, or exemption.

First Semester				Second Semester			
1	M	8:05	Campus Folwell 308, Hurd	1	M	8:05	Campus Folwell 5, Fulton
	T	8:05	St. P. Ext. Center 206, Gilkinson		T	6:20	St. P. Ext. Center 206, Gilkinson
	W	6:20	Campus Folwell 305, Hurd				
2	T	6:20	St. P. Ext. Center 206, Gilkinson	2	T	6:20	Campus Folwell 5, Fulton
	W	8:05	Campus Folwell 308, Fulton		T	8:05	St. P. Ext. Center 206, Gilkinson
					W	6:20	Campus Folwell 305, Hurd
3	T	6:20	St. P. Ext. Center 206, Gilkinson	3	T	6:20	Campus Folwell 5, Fulton
	W	8:05	Campus Folwell 308, Fulton		T	8:05	St. P. Ext. Center 206, Gilkinson
					W	6:20	Campus Folwell 305, Hurd

Practical Speech Making. No credit. \$10.

Designed as a beginning course for business and professional people who are desirous of learning to speak extemporaneously so that their ideas may be presented in an organized way and expressed with confidence and effectiveness; individual attention to cases of nervousness or embarrassment. Each student speaks before the class each meeting. Beginning classes each semester; students may continue in Extempore Speaking. No prerequisite.

First Semester		Second Semester			
M	6:20	Campus Folwell 5, Fulton	W	6:20	Campus Folwell 5, Fulton
T	6:20	St. P. Ext. Center 203, Fulton			
W	6:20	Campus Folwell 5, Fulton			

Extempore Speaking. No credit. \$10.

Designed as an advanced course for business and professional people who are desirous of developing specific skill in extemporaneous speaking dealing with life problems and public questions; individual attention to special problems. Each student speaks before the class each meeting. Beginning classes each semester. Open only to students who have completed Practical Speech Making, except by special permission of instructor.

First Semester		Second Semester			
M	8:05	Campus Folwell 5, Fulton	M	6:20	Campus Folwell 5, Fulton
			T	6:20	St. P. Ext. Center 203, Fulton

51-52 Advanced Public Speaking I-II. 3 credits each semester. \$10.

Speeches on public questions; analysis and outlining; methods of reasoning; adaptation of material to audience. Conducted on discussion plan with free, extemporaneous rebuttal to speeches. Prerequisite: Speech 1-2-3.

First Semester		Second Semester					
51	Th	6:20	St. P. Ext. Center 206, Rarig	52	Th	6:20	St. P. Ext. Center 206, Rarig

*31 Introduction to the Theater. 3 credits. \$10.

This class is a prerequisite for students majoring in speech sequence B. It is designed to acquaint students with the theater of today. Demonstrations, projects, and excursions to Twin City theaters. A survey of modern theater practices to develop a keen appreciation of the theater. Individual and group exercises for the student. Prerequisite: Speech 1-2-3 or 5-6, or concurrent registration.

First Semester		
Th	6:20	Campus Music 19, Whiting

*32-33† Beginning Acting. 3 credits each semester. \$10, plus \$1 laboratory fee.

Creative and technical approaches. Designed particularly for the student interested in gaining skill in self-expression. A study of the art of pantomime based upon observation and memory recall. Underlying principles of stage

* Students registered in starred classes are eligible for tryout in construction and acting phases of University Theatre activities.

† Classes marked with a dagger (†) are continuation classes and require the completion of two or three classes, as indicated, before any credit is given.

technique and voice. Exercises and projects in characterization and work in University Theatre. Prerequisite: Speech 1-2-3 (or 4-5) or concurrent registration, and Speech 31.

N.B.—Students may register for 32 or 33 either semester.

First Semester

32 T 6:20 Campus Music 19, Lees

Second Semester

33 T 6:20 Campus Music 19, Lees

***34 Stagecraft (Construction and Painting).** 3 credits. \$10, plus \$1 laboratory fee.

A practical course for the theater technician, teacher, and leader of community dramatics. Demonstrations and practice in making and painting scenery for the little theater or school. Work offered in adapting scenery meet the needs of the theater and the play. Prerequisite: Speech 1-2-3 (or 4-5) or concurrent registration, and Speech 31.

Second Semester

Th 6:20 Campus Music 19, Whiting

65 Radio Speech. 3 credits. \$10.

Speech art and psychology of the radio; announcing and broadcasting; radio speech; radio drama; interpretative reading, voice, diction, articulation, and pronunciation. Practice, exercises, projects, and reports on problems of appeal and audience response. Repeated second semester. Prerequisite: Speech 1-2-3.

First Semester

Th 6:20 Campus Murphy 302, Ziebarth

Second Semester

Th 6:20 Campus Murphy 302, Ziebarth

66 Radio Drama. Not offered 1940-41.

***71-72 Fundamentals of Direction.** No credit. \$10, plus \$1 laboratory fee.

A practical course for teachers or those engaged in producing plays. The processes of play production as controlled by the director are followed through their logical sequence from the selection of the play to its actual presentation. Demonstrations and projects in actual production procedures. Special attention to the problems of play selection, blocking, motivation, organization, and polishing. No prerequisite.

First Semester

71 T 8:05 Campus Music 19, Lees

Second Semester

72 T 8:05 Campus Music 19, Lees

78-79 Advanced Acting (Characterization and make-up). Not offered 1940-41.

Vocabulary Building I. No credit. Meets weekly for one hour. \$5, plus \$1 materials fee.

A practical course designed to increase students' speaking and reading vocabularies; presentation and discussion of words; exercises; reading lists. Mimeographed matter, in lieu of text, issued each meeting. Home study suggested but not required. Not a recitation course. No prerequisite.

First Semester

M 6:00 Campus Folwell 322, Thorvilson
7:00 Campus Folwell 322, Thorvilson
W 6:00 St. P. Ext. Center 201, Thorvilson
7:00 St. P. Ext. Center 201, Thorvilson

Second Semester

M 6:00 Campus Folwell 322, Thorvilson
W 7:00 St. P. Ext. Center 201, Thorvilson

* Students registered in starred classes are eligible for tryout in construction and acting phases of University Theatre activities.

Vocabulary Building II. No credit. Meets weekly for one hour. \$5, plus \$1 materials fee.

A more advanced and detailed study of words. Includes written composition, exercises, reports, tests; not a recitation class; home study recommended. May be taken as a continuation of Course 1, or together with it.

Second Semester

M 7:00 Campus Folwell 322, Thorvilson
W 6:00 St. P. Ext. Center 201, Thorvilson

Speech Hygiene I-II. No credit. \$10.

A study of: behavior as indicated through speech; why and how a man talks; basic elements in the development of unsocial and inadequate emotional patterns; speech symptoms evaluated from cause and effect relations; psychological and social factors in speech, analysis of individual problems of self-consciousness, stage fright, and general ineffective conversational speech; speech as a means of self and social control in daily living. I is prerequisite to II.

First Semester

I T 6:20 Campus Folwell 308, Bryngelson

Second Semester

II T 6:20 Campus Folwell 308, Bryngelson

Speech Correction: Stuttering. No credit. \$10.

Individual and group work on the correction of stuttering. Treatment of neurological, psychological, and emotional aspects of the difficulties of each class member. Enrolment limited to adults. Permission of instructor required.

First Semester

M 6:20 Campus Folwell 404, Brown

ZOOLOGY

1-2ext† General Zoology. 5 credits each semester. \$17.

Structure, physiology, embryology, classification, genetics, and evolution of animals. Equivalent to Zool. 1-2-3 in day class. No prerequisite.

First Semester

1 MW 6:20 Campus Zool. 211,
Wodsedalek

Second Semester

2 MW 6:20 Campus Zool. 211,
Wodsedalek

21 Histology. 5 credits. \$17.

The structure of the cell, tissues, and organs; special emphasis on blood-forming organs and blood structure. Prerequisite: Zool. 1-2-3 or equivalent. (One lecture, two hours laboratory, two meetings each week.)

First Semester

MW 6:20 Campus Zool. 201, Turner

51 Parasitology. Not offered 1940-41.

Birds of Minnesota. No credit. \$10.

A laboratory and field class in identifying and enjoying the birds of this region. Early meetings will make use of collections of the Museum of Natural History, but as soon as weather permits the class will meet in field locations. Study will be based on the manual of Dr. T. S. Roberts, who will be responsible for the class. No prerequisite.

Second Semester

T 6:20 Campus Museum of Natl. Hist.,
Roberts and others

† Classes marked with a dagger (†) are continuation classes and require the completion of two or three classes, as indicated, before any credit is given.

EDUCATION CLASSES

Classes offered under this head are primarily for teachers in service who are unable to attend regular day classes or late afternoon or Saturday morning classes on the University campus. Only those classes have been listed that are primarily for credit in the College of Education. Many other classes are offered, especially in the academic classes of the College of Science, Literature, and the Arts, which are accepted for credit toward a degree in the College of Education. All classes are open not only to teachers but also to other students who may have an interest in any phase of formal education and its methods of instruction and supervision.

N.B.—Classes in Education, unless otherwise stated, carry credit only in the College of Education. They may, however, be acceptable toward General Extension Division certificates when properly approved.

CANDIDATES FOR DEGREES

Credit in the College of Education is dependent upon the qualifications of the student, who must have completed the two years' work required for admission to the College of Education. This work may be completed either by graduation from a teachers college or normal school, a two-year course in the Junior College of the University or any accredited college, or in extension classes.

Students expecting to qualify for a degree should secure a copy of the College of Education Bulletin, which contains a statement of general requirements for graduation, of required courses in majors and minors, and of the specialized curricula, and should consult a major adviser as early in their course as possible. Failure to do so often delays graduation and makes extra work necessary.

Students should study the requirements for Qualifying Examinations. Active teachers who have been enrolled for courses toward a degree previous to September 1, 1933, may possibly be excused from them. This is done by petition only, as the result of a conference with C. W. Boardman, 218 Burton Hall.

The Students' Work Committee of the General Extension Division will be glad to assist students by explaining the various curricula and printed requirements for each; by advising what credits may be secured through extension classes; by assisting in securing the necessary official advice from the proper persons in the College of Education.

Extension classes are open to any person qualified by maturity and ability to profit by the study. In practically all cases only those who expect to qualify for a university degree will be expected to meet the requirements of prerequisites. PREREQUISITES ARE STATED FOR INFORMATION, NOT AS OBSTACLES.

ADMINISTRATION AND SUPERVISION

Classes formerly listed under this heading are now included under Curriculum and Instruction.

ART EDUCATION

1 Fundamental Experiences in Design. 3 credits. \$10.

The fundamental principles applied to a series of interesting and practical problems using a variety of techniques. A basic course that is useful in other fields of art and of value to teachers. No prerequisite.

First Semester

M 4:20 Campus Folwell 203, Lewis

15 Interior Decorating. 3 credits. \$10, plus 50 cents laboratory fee.

This class will give special attention to the identification of period and modern styles of furniture and to the problem of successfully combining several styles in one room. Additional subjects included are: wall treatment, floor coverings, color schemes, window treatment, lighting. Interesting optional field trips are planned. Drawing is not emphasized. Repeated second semester. No prerequisite.

First Semester

M 6:20 Campus Jones 207B, Lewis
 T 7:00 Campus Westbrook 206, Lewis
 W 6:20 St. P. Ext. Center 208, Lewis

Second Semester

M 6:20 Campus Jones 207B, Lewis

22 Advanced Interior Decorating. 3 credits. \$10.

A continuation of Art Ed. 15. Color, history, and identification of decorative fabrics; study of china, glassware, and accessories. Discussion of materials used in building and styles of architecture. Students are required to do some elevation drawings in color. Auditing not advised. Prerequisite: Art Ed. 15.

Second Semester

T 7:00 Campus Jones 207B, Lewis
 W 6:20 St. P. Ext. Center 208, Lewis

4-5-6 Drawing from Still Life and Pose. 3 credits each semester. \$10, plus \$1 model fee, payable to instructor.

Drawing from objects and models, with emphasis on developing ability to do quick sketches. Especially planned to meet the needs of public school teachers. Includes Art Ed. 4-5-6, 7-8-9, 24-25-26; students may register for any three of these in any semester provided they are taken in sequence. No prerequisite.

First Semester

T 4:20 Campus Jones 203, Lewis

Second Semester

T 4:20 Campus Jones 203, Lewis

61-62-63 Figure Drawing and Painting. 3 credits each semester. \$10, plus \$1 model fee, payable to instructor.

A general course devoted to drawing and sketching from the figure, and to portrait painting. Various media, such as chalk, ink, gouache, and oil paint. The course is planned to interest those who draw for a hobby, as well as for students of painting, and to this end is conducted on the basis of special attention to individual interests and needs. No prerequisite.

First Semester

Th 7:00 Campus Jones 203, Torbert

Second Semester

Th 7:00 Campus Jones 203, Torbert

Art Metal Work. 3 credits each semester. \$10.

Designed for teachers of handicrafts and others interested in them. First semester: soft soldering; wooden hammer making; working on mild steel, copper, brass, pewter, and aluminum; making trays, plates, bowls, candlesticks, etc.; wax and lacquer finishes. Second semester: silver soldering; use of jeweler's saw in pierced work; etching; coloring; copper and silver spoons; problems in pewter, brass, and copper (sugar and creamer, desk sets, door knocker, lantern, etc.). Students may enter or continue in second semester. No prerequisite.

First Semester

T 6:20 Univ. Farm, Ag. Eng. 106, 20, Dent

Second Semester

T 6:20 Univ. Farm, Ag. Eng. 106, 20, Dent

Orientation in Simple Handicrafts. 3 credits each semester. \$10.

Experience in simple handicrafts selected with reference to their recreational value, for those interested in camps, playgrounds, clubs, and adult education. First semester: pottery (hand building), metal and simple jewelry, bookbinding and portfolio making, basketry; second semester: pottery (pouring and wheel building), weaving (hand), woodblock and linoleum printing, stenciling (fabrics and paper), crayonnex, batik, woodcarving, leather tooling, and pressing and dyeing. Students may enter or continue in second semester. No prerequisite.

First Semester

W 6:20 Campus Jones 10, Ross

Second Semester

W 6:20 Campus Jones 10, Ross

Art Today. See page 16.**Freehand and Commercial Drawing.** See page 71.**General Arts.** See page 16.**Life Drawing and Painting.** See page 71.**CURRICULUM AND ADMINISTRATION****181 Foundations of Elementary School Methods.** 3 credits. \$10.

A survey of the current philosophy and research which form the bases for improvement of elementary school instruction. Prerequisite: 10 quarter hours in education.

First Semester

M 5:00 St. P. Ext. Center 204, Archer

EDUCATIONAL PHILOSOPHY**76 Philosophy and American Education.** 3 credits. \$10.

An introduction to the basic controversies in current educational philosophy. The effects on educational practice of progressive, essentialist, and radical viewpoints. Not open to students who have taken Ed. 176. Prerequisite: 6 credits in psy.

First Semester

M 7:00 Campus Folwell 109, Brameld

EDUCATIONAL PSYCHOLOGY

For other psychology classes, see pages 38-39.

120 Basic Principles of Measurement. 3 credits. \$10.

Principles applied to the construction and use of tests and to the interpretation and evaluation of scores. Illustrations from mental and other aptitude tests, education, personality, and character tests. Repeated second semester. Prerequisite: Ed. 51A or equivalent.

First SemesterTh 5:00 Mpls. N. W. Bank Bldg. 603,
Van Wagenen**Second Semester**

M 5:00 St. P. Ext. Center 203, Van Wagenen

140 Construction and Use of Educational Tests and Examinations. 3 credits. \$10.

Replaces Ed. Psy. 111, Educational Measurements. A study of tests for elementary and secondary school pupils. Each student will have opportunity to construct examinations and evaluate published tests in the field of his major interest. Prerequisite: Ed. Psy. 120 or equivalent.

First Semester

M 5:00 St. P. Ext. Center 203, Van Wagenen

141 Construction and Use of Group Aptitude Tests. 3 credits. \$10.

Replaces Ed. Psy. 134, Mental Tests. A study of group aptitude tests for all school levels with special emphasis on reliability and validity as instruments for educational and vocational guidance. Prerequisite: Ed. Psy. 120 or equivalent.

Second Semester

Th 5:00 Mpls. N. W. Bank Bldg. 603,
Van Wagenen

158 Psychology of Adolescence. 3 credits. \$10.

A study of changes characterizing the transition from childhood to adult life. Implications for guidance during the period of secondary education. Prerequisite: Ed. 51A or equivalent.

Second Semester

M 5:00 Campus Folwell 201, Archer

NURSING EDUCATION**60 Ward Administration.** 3 credits. \$10.

Principles of administration, their application to ward management; opportunities for clinical teaching through efficient ward administration. Open to graduate nurses.

First Semester

M 8:05 Campus Med. Sci. 113, Hodgkins

61 Personnel Work in Schools of Nursing. 3 credits. \$10.

Investigation of the problems of selection, training, guidance, placement, mental hygiene, and other personnel functions having to do with both institutional nursing and public health nursing. Techniques of measurement and procedures in guidance will be demonstrated. Problems of morale and efficiency will be discussed. If possible a working personnel program will be planned for adaptation in individual hospitals. Replaces and includes Nurs. Ed. 62 but does not exclude students who have taken 62. Prerequisite: permission of the instructor.

First Semester

W 8:05 Campus Med. Sci. 113, Darley

69 Survey of Conditions and Trends in Nursing. 3 credits. \$10.

Survey and discussion of problems and trends in various nursing fields. Not offered 1941-42. Open to graduate nurses.

First Semester

M 6:20 Campus Med. Sci. 113, Densford

70ex Principles of Teaching and Supervision in Schools of Nursing. 3 credits. \$10.

Conditions favoring best preparation of the student nurse; sources, selection, and organization of subject-matter; evaluation of nursing; principles and practices, and teaching methods; content and methods of clinical teaching. Open to graduate nurses.

Second Semester

T 8:05 Campus Med. Sci. 113, Petry

71ex Curriculum Making in Schools of Nursing. 3 credits. \$10.

General principles of curriculum making; study of the function of the graduate nurse in the community as determinants of the clinical and classroom curricula of the professional school. Integration of materials into curricula preparing nurses as community health agents. Not offered 1941-42. Open to graduate nurses.

First Semester

T 6:20 Campus Med. Sci. 113, Petry

PHYSICAL EDUCATION**CLASSES FOR WOMEN**

At University Farm Campus (St. Paul)

Swimming—for Women. No credit. One hour weekly. \$5.

Instruction for beginners, intermediates, and advanced swimmers; water emergency tests, strokes; diving; lifesaving. Department furnishes regulation suits. Health examination at first meeting.

First Semester

T 7:30 Univ. Farm Gym., Eibner
Th 6:30 Univ. Farm Gym., Eibner

Second Semester

T 7:30 Univ. Farm Gym., Eibner
Th 6:30 Univ. Farm Gym., Eibner

Recreational Gymnastics and Plunge—for Women. No credit. One hour weekly. \$5.

Instruction and practice in body-building and posture exercises for 30 minutes, followed by 15-minute swim.

First Semester

T 6:30 Univ. Farm Gym., Eibner
F 10:00 a.m. Univ. Farm Gym., Eibner

Second Semester

T 6:30 Univ. Farm Gym., Eibner
F 10:00 a.m. Univ. Farm Gym., Eibner

On Main Campus

Beginning Swimming—for Women. No credit. One hour weekly. \$5.

Class and individual instruction. A health examination, for which a fee of 50 cents is charged, will be given at the first class meeting. University furnishes regulation suit and towel for a fee of 10 cents.

First Semester

M 7:30 Campus Women's Gym. 51, Starr

Second Semester

M 7:30 Campus Women's Gym. 51, Starr

Intermediate and Advanced Swimming—for Women. No credit. One hour weekly. \$5.

This is a class for those who know something about swimming and wish to increase their skill in strokes and diving. Instruction is given in the crawl, back crawl, side and breast strokes; elementary and advanced diving. Class and individual instruction. A health examination will be given at the first class meeting. A fee of 50 cents is charged for this examination. University furnishes regulation suit and towel for a fee of 10 cents.

First Semester

M 6:30 Campus Women's Gym. 58, Starr

Second Semester

M 6:30 Campus Women's Gym. 58, Starr

Beginning and Intermediate Swimming—for Women. No credit. One hour weekly. \$5.

This course includes instruction in a combination of skills suitable for beginning and intermediate swimmers. The fundamentals of swimming are presented for those who do not know how to swim. For those who wish to develop more skill in aquatic activities, instruction in the following activities is included: side stroke, crawl, back crawl, diving and water safety measures. Class instruction is carried on in small groups organized according to interest and needs of class members. A health examination, for which a fee of 50 cents is charged, will be given at the first class meeting. University furnishes regulation suit and towel for a fee of 10 cents.

First Semester

W 7:00 Campus Women's Gym. 58, Nelson

Second Semester

W 7:00 Campus Women's Gym. 58, Nelson

Beginning Golf—for Women. No credit. One hour weekly. \$5.

Class and individual instruction in the use of the brassie, midiron, mashie, and putter. Discussion of rules, golf etiquette, and terminology. Last few lessons at University Golf Course. Classes limited to 25. Equipment (clubs and soft balls) furnished by the members of the class.

Second Semester

T 6:30 Campus Women's Gym. 60, Thomas

Intermediate Golf—for Women. No credit. One hour weekly. \$5.

First ten weeks: class and individual instruction in the use of the brassie, midiron, mashie, and putter; next seven weeks: supervised play at the University Golf Course. Students furnish own clubs. Class limited to 25. Prerequisite: some knowledge of and experience in golf.

Second Semester

M 6:30	Campus Women's Gym. 60, Snell
M 7:30	Campus Women's Gym. 60, Snell
W 6:30	Campus Women's Gym. 60, Christensen
W 7:30	Campus Women's Gym. 60, Christensen

American Country Dancing—for Men and Women. No credit. One hour weekly. \$5, plus \$1 laboratory fee.

A recreational course reviving old American quadrilles, contradances, round dances, and the lancers.

First Semester

W 7:00 Campus Women's Gym. 151, Kane

Rhythmic Exercises for Body Building—for Women. No credit. One hour weekly. \$5, plus \$1 laboratory fee.

Rhythmic exercise, group and individual, for general body control with special emphasis on streamlining the figure, posture, carriage, and relaxation.

First Semester

M 6:30 Campus Women's Gym. 153, Mee

Badminton—for Women. No credit. One hour weekly. \$5.

Experience and training in the skills of badminton. Rackets furnished by department. Students furnish own shuttlecocks.

First Semester

W 8:30 Campus Women's Gym. 153, Snell

Beginning Tennis—for Women. No credits. One hour weekly. \$5, plus court fees (25 cents each time or \$1 for season) payable at courts.

Group and individual instruction. Instruction in the forehand and backhand drive, the service, and the chop. First eleven weeks' instruction given indoors; last six weeks at the university tennis courts. Individual practice for the improvement of strokes working with the tennis robot. Students furnish own tennis rackets and balls.

Second Semester

M 6:00	Campus Women's Gym. 151, Christensen
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Intermediate Tennis—for Women. No credit. One hour weekly. \$5, plus court fees (25 cents each time or \$1 for season) payable at courts.

Group and individual instruction for those who have played tennis; technique for the lob, smash, drop shot, and volley is taught. Review of forehand and backhand drive and service. First eleven weeks' instruction given indoors; last six weeks at the university tennis courts. Individual practice for the improvement of strokes working with the tennis robot. Students furnish own tennis rackets and balls.

Second Semester

M 7:00	Campus Women's Gym. 151, Christensen
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CLASSES FOR MEN

Badminton Club. No credit. One period, 21 weeks, \$7.

Four periods per week, as scheduled below, will be devoted to playing; not designed for teaching or coaching the game. Registration will be by periods, with a maximum of 16 players accepted for each. Prospective stu-

dents should register at the campus office of the General Extension Division to insure acceptance in any period. Registration may be for more than one period per week. Students furnish own rackets and shuttlecocks.

Periods: 6:00 to 7:30 p.m., and 7:30 to 9:00 p.m. University Armory, Monday and Wednesday, beginning September 30 and continuing 21 weeks, with a recess at Christmas, until March 12. In charge: Smith, Bowman.

N.B.—The classes will all be open to both men and women.

Swimming—for Men. No credit. One hour weekly. \$5.

Class and individual instruction for beginners in all swimming strokes, in diving, in senior lifesaving; preparation for Red Cross examinations. Woolen bathing suits not permitted. Health examination at first meeting. Other sections arranged on demand.

First Semester

T 8:05 Campus Cooke Hall, Thorpe

Second Semester

T 8:05 Campus Cooke Hall, Thorpe

Water Safety Instructors' Course. No credit. \$5.

Gives training preparatory for grade of Red Cross safety instructor. Begins February 4 and runs for 12 weeks.

Second Semester

T 7:00 Campus Cooke Hall, Thorpe

Golf. No credit. \$5, plus \$1 laboratory fee.

The fundamentals of golf—the grip, the stance, the swing for wood clubs, long irons, short irons, explosion shots, and the putter. Motion pictures or stereopticon slides show proper form of stroke. Eight to ten meetings for pictures, lectures, etc. will be held on Monday nights beginning February 10. Six lessons or appointments with competent golf instructors in the golf gymnasium will be scheduled for Tuesday, Wednesday, Thursday, or Friday evenings between February 18 and April 4. The last five meetings will be held, weather permitting, at the University Golf Course, where various professionals will assist. The outdoor schedule is adjusted to light. Students will furnish their own clubs.

Second Semester

M 7:00 Campus Physics Auditorium, Smith

Camp Leadership. 2 credits. \$10.

Adaptation of psychological, sociological, and educational principles and data, for the preparation of camp counselors as well as administrators. Follows the thesis that "camping is education." History, objectives, administration, and problems of organized camping; camper care and training; camp programs; trends. No prerequisite.

Second Semester

Th 6:20 Campus Folwell 101, Osell

PREVENTIVE MEDICINE AND PUBLIC HEALTH

N.B.—Classes carry credit in the College of Science, Literature, and the Arts, as well as in the College of Education.

53 Elements of Preventive Medicine. 5 credits. \$17.

Nutrition, diet, susceptibility, resistance, and immunity to disease; methods of spread and prevention of communicable and degenerative diseases; protection of food, water, and milk; school health work; vital statistics. Prerequisite: 12 credits in biol. sci. or consent of instructor.

First Semester

T 6:20 Campus Millard 129, Cowan

54 Principles of Public Health Nursing for Nursing School Personnel. 3 credits. \$10.

Health teaching in the various services of a public health program with particular emphasis on the public health nurse's part in each phase of the pro-

gram. Brief consideration of the organization and administration of public health nursing programs. No prerequisite.

Second Semester

T 6:20 Campus Med. Sci. 111, Arnstein

59 Health of the School Child. 3 credits. \$10.

For teachers and others interested in the health and development of the school child. Mental and physical growth; discovery of physical defects; exercises; fatigue; emotional problems; health habits; diseases of school children; practical problems of health supervision and health instruction. For prerequisite consult instructor.

Second Semester

M 6:20 Campus Millard 129, Ellis

106 Public Health Administration. 3 credits. \$10.

Structure, basic functions, and activities of public health agencies; public health laws and regulations; administrative procedures in public health practice; relationship to other governmental and social activities. For physicians, engineers, nurses, social workers, and others by arrangement. Prerequisite: P.M.&P.H. 53, 100, 109, or equivalent, or concurrent registration.

Second Semester

W 6:20 Campus Med. Sci. 111, Anderson

BUSINESS CLASSES

This department recognizes the professional status of the business executive. Scientific methods in analyzing business data, trained intelligence in handling the human relationships inherent in business, and a well-developed sense of moral responsibility will be the foundations of business effectiveness in the future. The training of prospective executives along these lines is more important than any detailed drill on special processes. At the same time there are those with definite interest in certain special fields who seek improvement and advancement, and to these the opportunity for scientific training and information is invaluable. The classes here offered aim to serve both classes of students; and those whom they serve are able, because of their daily employment in work related to their studies, to make the most advantageous use of their opportunity.

CERTIFICATES

The General Extension Division certificate in business is awarded to students who have met the requirements listed below, as a recognition of their completion of a well-planned program of study. This program contains a basic core requirement which is a broad and general preparation for business life. In addition, it offers a number of specialized lines on which the student may concentrate as a specific preparation for his immediate vocation.

1. Each candidate must have completed 90 credits, with an average grade of C, including the following basic requirements:

	Credits
Principles of Economics (Econ. 6-7).....	6
English* (Eng. 4-5-6, or 1ex-2ex).....	6 or 9
Business Law (B.A. 51, 52, and either 53 or 54).....	9
Principles of Accounting.....	8 or 9
Elements of Statistics (Econ. 5).....	3
Elements of Money and Banking (Econ. 3).....	3
Advanced General Accounting (B.A. 139).....	3
(Not required of accounting students)	
Corporation Finance (B.A. 155).....	3
Business Cycles (Econ. 149).....	3
Investments (B.A. 146).....	3
Orientation (Man in Nature and Society).....	6
Total	53 or 57

2. Each candidate must also have completed 18 credits in one of the following groups, selecting the credits from the classes listed below:

- a. **Accounting:** Practice and Procedure (B.A. 150-151); Auditing (B.A. 135-136); Cost Accounting (B.A. 152-153, 133, 181A); Income Tax Accounting (B.A. 134); Accounting Topics (B.A. 180A-181A-182A-183A); Intermediate Accounting (Econ. 26); Tabulating Equipment (B.A. 91).
- b. **Finance:** Advanced Money and Banking (B.A. 142); Labor Problems (Econ. 161); Securities Market (B.A. 148); Economics of Public Utilities (B.A. 165); Public Finance (B.A. 58); Advanced General Economics (Econ. 103-104 or B.A. 101-102); Cost Accounting (B.A. 152-153); Business Law (B.A. 54); Intermediate Accounting (Econ. 26); Investments (B.A. 146).

* Students whose work in English is not entirely satisfactory may be required to take other English classes.

- c. **General Business:** Business Policy (B.A. 109); Business Cycles (BA. 149); Mathematics of Investment (Math. 20); Cost Accounting; (B.A. 152-153, 133, 181A); Labor Problems (Econ. 161); Geography 41, 51; approved electives.
- d. **Insurance:** Psychology 6 or 9 credits; Life Insurance (B.A. 59); Fire and Marine Insurance (B.A. 60); Casualty Insurance (B.A. 61); Fidelity and Surety Bonding; Mathematics of Investment (Math. 20); Unemployment Insurance Accounting; Suretyship; General Insurance.
- e. **Advertising:** Psychology 1, 2, 56; Journalism 13, 65, 69; Elementary Advertising (B.A. 88); Retail Advertising; Advanced Advertising and Typography (B.A. 194); Commercial Drawing; Graphic Arts 64.
- f. **Merchandising:** Retail Credits; Retail Store Management (B.A. 69); Survey of Marketing (B.A. 77); Psychology 1, 2, 56; Elementary Advertising (B.A. 88); Retail Advertising; Transportation (B.A. 71-72); Retail Credits and Collections (B.A. 76-76B).
- g. **Transportation (Traffic):** Economics of Public Utilities (B.A. 165); Geography 41, 51, 102; Transportation (B.A. 71-72, 80); Advanced Traffic and Transportation I and II; Casualty Insurance (B.A. 61); Fire and Marine Insurance (B.A. 60); General Insurance.
- h. **Personnel Administration:** Personnel Administration (B.A. 167); Advanced Personnel Administration (B.A. 168); Psychology 1, 2, 130, 160; Labor Problems (Econ. 161); Labor Legislation and Social Insurance (Econ. 164); Casualty Insurance (B.A. 61); Unemployment Insurance Accounting; Sociology (various).

3. The remaining credits, to make a total of 90, may be chosen from any classes offered in business subjects and any classes in Science, Literature, and the Arts or Technology which may be approved. Classes in the following subjects will be acceptable, unless when offered they bear the indication that they are not acceptable: English Composition and Literature; Geography; History; Interior Decorating; Journalism; Mathematics; Parliamentary Law; Philosophy; Political Science; Psychology; Speech; Textiles; sciences such as Anthropology, Chemistry, Geology, Sociology, Zoology.

4. Students who have completed 45 credits of the above certificate requirement and have had these credits approved by the Students' Work Committee will be granted a preliminary certificate. These preliminary certificates are for such use as students may find it possible to make of them and are to be issued informally.

5. Students who have, previous to 1932-33, entered upon a program for the completion of the requirements for one of the 45-credit certificates, which are replaced by the above 90-credit certificate, will be protected until the completion of their work and the appropriate certificates will be issued informally.

DEGREES

Candidates for Degrees.—With a few exceptions all of the classes offered in business carry credit toward a degree in the School of Business Administration. The classes which do not are specifically indicated in their descriptions. It is necessary, however, for the students who are interested in degrees to secure their credits in two separate units. The first is the prebusiness course, or the first two years, which is administered in the College of Science, Literature, and the Arts. These requirements are modifications of those required for the Junior College certificate offered by the General Extension Division, and embrace a number of subjects other than those specifically concerned with either economics or business administration. Theoretically this prebusiness requirement should be completed before the work of the Senior College is done. In practice, however, most extension students do more of the work of the Senior College than of the work of the Junior College in working for their various certificates. Provision is made, however, for arranging an approved curriculum for all students, regardless of the order in

which some of their work may have been done. A student desiring such a curriculum must apply to the dean of the School of Business Administration at least one year before he expects to be eligible for a degree, and complete at least 45 credit hours of the requirements for a degree under the supervision of the adviser appointed for him. The Students' Work Committee of the General Extension Division will be glad to assist the student in arranging for this advice.

Extension classes are open to any person qualified by maturity and ability to profit by the study. In practically all cases only those who expect to qualify for a university degree will be expected to meet the requirements of prerequisites. PREREQUISITES ARE STATED FOR INFORMATION, NOT AS OBSTACLES.

ACCOUNTING

The beginning course for the current year (Principles of Accounting 20L and 25L, 8 credits) is a combination of textbook and laboratory instruction. It is designed to meet the requirements of all students, whether undertaking the study of accounting to learn their own interest and qualifications with respect to it, or to train themselves for actual work in the field, or for advanced study, to understand accounting procedure and concepts as related to other fields in which they are interested. Specialization in advanced courses can be undertaken after completion of two semesters of study of Principles of Accounting.

Recommended sequences are:

For general business students who are not specializing in accounting—Principles of Accounting (Econ. 20L-25L); Intermediate Accounting (Econ. 26); Advanced General Accounting (B.A. 139).

For students specializing in accounting—Principles of Accounting (Econ. 20L-25L); Intermediate Accounting (Econ. 26); Advanced General Accounting (B.A. 139) optional; Practice and Procedure (B.A. 150-151) but B.A. 150 is optional for those who have had B.A. 139; then specialization in Cost Accounting, or Auditing, etc.

Econ. 20L-25L† Principles of Accounting and Accounting Laboratory.
4 credits each semester. \$13.50, plus \$1 materials fee.

Lectures and discussions with working out of selected cases; compilation of accounting data; balance sheets, operating statements, accounting records, adjustment of accounts, accounting work sheets; the principles underlying the computation of profit and loss and the statement thereof. No prerequisite.

First Semester			Second Semester		
20L	M	6:20 Campus Vincent 307, Smith	25L	M	6:20 Campus Vincent 307, Smith
	M	6:20 St. P. First Natl. Bank 904 East, (A.I.B.), LeBorlous		T	6:20 Campus Vincent 307, Ostlund
	T	6:20 Campus Vincent 307, Ostlund			

N.B.—Above class is not limited to A.I.B. members.

Th	6:20	Campus Vincent 307, Sevenich	Th	6:20	Campus Vincent 307, Sevenich
	Th	6:20 Mpls. N. W. Bank Bldg. 603, Smith		Th	6:20 Mpls. N. W. Bank Bldg. 603, Smith

N.B.—Above class limited to 30, accepted in order of registration.

M	6:20	St. P. Ext. Center 202, Montgomery	M	6:20	St. P. Ext. Center 202, Montgomery
	F	6:20 St. P. Ext. Center 202, LeBorlous		F	6:20 St. P. Ext. Center 202, LeBorlous

†Classes marked with a dagger (†) are continuation classes and require the completion of two or three classes, as indicated, before any credit is given.

N.B.—The following combined course offers Accounting 20L the first eight weeks, 25L the second eight weeks. Fee \$13.50 each course, plus materials fee. Registration and fees accepted for combined course or for one class at a time, either class.

Second Semester

TF 6:20 Campus Vincent 6
TTh 6:20 St. P. Ext. Center 202, LeBorious

Elements and Principles of Accounting (A.I.B.) I and II. 7½ credits. \$25.

A special class, primarily for members of the American Institute of Banking, Minneapolis chapter, covering the essentials of Econ. 20L and 25L, which see above. Students completing receive 7½ credits and may continue with advanced classes in accounting. No prerequisite.

48 sessions beginning September 16
MF 6:40 McKnight Bldg. 250, Lund

Econ. 26 Intermediate Accounting. 3 credits. \$10.

This course is a comparative study of accounting procedure as related to the various theories and concepts of balance-sheet valuation and income determination. It supplements Principles of Accounting 20L and 25L and in conjunction with B.A. 139 forms a second year course for students interested in financial and investment work where training in analysis and interpretation of accounting statements is necessary. Prerequisite: Econ. 20L-25L.

First Semester

W 6:20 Campus Vincent 307, Ostlund

B.A. 139 Advanced General Accounting. 3 credits. \$10.

Primarily for the general business student. Interpretation of balance sheets and statements, particularly as found in corporation and investment publications; preparation, analysis, and utilization of statements; holding company and consolidated statements. Prerequisite: Econ. 26.

Second Semester

W 6:20 Campus Vincent 205, Heilman

B.A. 91 Tabulating Equipment Laboratory and Methods. 3 credits for certificate. \$10.

A description of the functions and operating principles of tabulating equipment, followed by illustrations of its uses for special accounting and statistical purposes, and a discussion of tabulating methods for general accounting purposes in business and governmental organizations. Prerequisite: Econ. 5 and 20L-25L.

First Semester

W 6:20 Campus Vincent 6, Boddy

B.A. 134 Income Tax Accounting. 3 credits. \$10.

Application of income tax laws to various business conditions; possible errors in preparation of income tax reports; state as well as federal problems. Prerequisite: B.A. 151.

First Semester

M 6:20 St. P. Ext. Center 204, Connolly
T 8:05 Campus Vincent 105, Connolly

B.A. 150-151† Accounting Practice and Procedure. 3 credits each semester. \$10, plus \$1 materials fee.

Practice in the peculiar accounting problems of business and the particular skills of the practicing accountant. Prerequisite: Econ. 20L-25L, or equivalent.

First Semester

150 T 8:05 Campus Vincent 113, Houston
W 6:20 St. P. Ext. Center 202, Rotzel

Second Semester

151 T 8:05 Campus Vincent 113, Houston
W 6:20 St. P. Ext. Center 202, Rotzel

N.B.—Special section for members of the American Institute of Banking meets for two semesters of 14 weeks each, for sessions of 2½ periods, as follows:

First Semester

(Begins September 19)

150 Th 6:40 McKnight Bldg. 250, Heilman

Second Semester

(Begins January 16)

151 Th 6:40 McKnight Bldg. 250, Heilman

B.A. 152-153† Cost Accounting. 3 credits each semester. \$10.

Principles used to determine the profitableness of each branch of manufacturing, and basis for judging the relative efficiencies of operation; materials, labor, and burden, continuous process and production order costs; burden distribution methods, standard costs, etc. Prerequisite: Econ. 25L, or equivalent.

First Semester

152 T 6:20 Campus Vincent 115, Rotzel
W 8:05 St. P. Ext. Center 204, Tuttle

Second Semester

153 T 6:20 Campus Vincent 115, Rotzel
W 8:05 St. P. Ext. Center 204, Tuttle

B.A. 133 Cost Methods. 3 credits. \$10.

Standard costs, including the definition, selection, and development of standards, the accounting methods used in standard cost systems, the analysis of variations and their interpretation. The application of standards to manufacturing and distributing activities. Prerequisite: B.A. 152-153, or B.A. 130, or cost accounting experience and approval of instructor.

Second Semester

W 6:20 Campus Vincent 6, Ostlund

Constructive Accounting. 3 credits for certificate. \$10.

The design and installation of a modern accounting system; the make-up of various forms for use in the system—purchase orders, receiving slips, invoices, requisitions, shop tickets, etc.; design and ruling of books or original entry; ledgers of various kinds.

First Semester

T 6:20 Campus Vincent 113, Tuttle

Accounting Systems. 3 credits for certificate. \$10.

Classification of industry according to types of accounting problems; special features of each; constructive, operative, and interpretative features. Case method used.

Second Semester

T 6:20 Campus Vincent 113, Tuttle

B.A. 135 Auditing and Public Accounting. 3 credits. \$10.

The application of principles and technical methods used in professional auditing practice. Typical frauds and errors in accounting records, auditors' working papers, financial exhibits, certificates, and reports are studied. Prerequisite: B.A. 139 or 150-151.

First Semester

M 6:20 Campus Vincent 113, Reighard
W 8:05 St. P. Ext. Center 202, Rotzel

† Classes marked with a dagger (†) are continuation classes and require the completion of two or three classes, as indicated, before any credit is given.

B.A. 136 Internal Auditing and Accounting Control. 3 credits. \$10.

Accounting systems and methods as related to internal check and audit control of routine transactions and the establishment of administrative and budgetary control. Prerequisite: B.A. 139 or 150-151.

Second Semester

M 6:20 Campus Vincent 113, Reighard

B.A. 158 Governmental Accounting. 3 credits. \$10.

Use of budgetary and financial accounts; fund accounting and statements; consolidated municipal statements; accounting for fixed properties, depreciation, improvements, special assessments, and revolving funds; debt service and sinking fund. Prerequisite: B.A. 139 or 151.

First Semester

W 6:20 Campus Vincent 205, Heilman

B.A. 180A-182A Accounting Topics—Budgetary Control. Not offered 1940-41.

B.A. 182A Accounting Topics—Audits and Investigations. 3 credits. \$10.

Adjusting journal entries; financial condition; problems in inventory valuation, in property accounting; appraisals; "writing down" of assets, and depreciation; application of funds; balance sheet giving effect of financing; the auditor's "results from operation" statement; material facts; certificates and reports. Prerequisite: consent of instructor.

Second Semester

W 8:05 St. P. Ext. Center 202, Rotzel

Unemployment Insurance Accounting. 3 credits for certificate. \$10.

Case problems setting forth saving in tax to employers under the new Minnesota Unemployment Insurance Act. Technical accounting procedures required. Prerequisite: general knowledge of accounting.

First Semester

M 6:20 Campus Vincent 113, Harper

Advanced Accounting Problems. Not offered 1940-41.

ADVERTISING AND SALESMANSHIP

N.B.—Students without previous training in this field should begin with either Psychology of Advertising or Elementary Advertising. In many ways it is preferable that both classes precede other study; and for credit in the School of Business Administration that order must be followed. The non-credit class in Salesmanship may be taken either before or after other classes in advertising.

Advanced Advertising Procedure, Retail Advertising, and Direct Mail Advertising should be considered advanced classes of a specialized nature, to be chosen according to the special interest of the student, and requiring a knowledge of the applications of psychology to advertising and the use of advertising as a tool in business.

Salesmanship. 3 credits for certificate. \$10.

Principles underlying salesmanship—buying motives; pre-approach, approach, the interview, meeting objections, closing the sale; demonstration sales. No prerequisite.

First Semester

M 8:05 Campus Vincent 115, Faragher
Th 8:05 Campus Vincent 115, Faragher

Second Semester

M 8:05 Campus Vincent 115, Faragher
W 8:05 St. P. Ext. Center 201, Faragher

B.A. 68 Sales Management. 3 credits. \$10.

Organization and direction of sales methods and men from the sales manager's viewpoint for manufacturing and wholesaling; determination of

selling policy; product and market research; sales planning and expense budgeting; selection of distribution methods and agencies; sales campaigns, territories, and quotas; incentives, compensation, and training for salesmen; supervision and control. Prerequisite: Econ. 6-7, and B.A. 77 or satisfactory equivalent.

Second Semester

Th 6:20 Campus Vincent 115, Chute

Psy. 56 Psychology of Advertising. See page 38.

N.B.—The following two classes, one each semester, form a continuous sequence covering the basic phases of advertising principles and procedures.

B.A. 88 Advertising (Elementary). 3 credits. \$10.

Covers two important phases of advertising: the place of advertising in business and advertising procedure. Attention to planning an advertising campaign, including market research, appropriation, choice of media, scheduling, preparation of copy, and layout. Prerequisite: B.A. 77 and Psy. 56.

First Semester

T 8:05 St. P. Ext. Center 202, Hertz
W 6:20 Campus Vincent 115, Chute

B.A. 194x Advanced Advertising Procedure. 3 credits. \$10.

Problems and case studies, continuing Elementary Advertising with especial emphasis on typography and layout. Preparation and criticism of advertisements and of advertising campaigns. During the first half of the course students prepare and set advertisements in the Journalism Department's enlarged typography laboratory in Murphy Hall. Prerequisite: B.A. 88.

Second Semester

First half, Th 6:20 Campus Murphy 311, Barnhart
Second half, Th 6:20 Campus Vincent 105, Valle

Retail Advertising. 3 credits for certificate. \$10.

Practical training in the fundamentals of modern retail advertising. Retail store organization, and the advertising department and publicity division; types of retail advertising and their relation to types of retail stores; planning retail advertising and advertising department procedure; fundamentals of typography, printing, and engraving, illustrated by field trips to newspaper and engraving plants; writing *selling* copy and headlines; layout; newspapers and other media for retailers; the qualifications of a retail advertising person. For prerequisite consult instructor.

Second Semester

Th 8:05 Campus Vincent 301, Drevescraft

Direct Mail Advertising—Sales Letter Writing. 3 credits each semester for certificate. \$10.

Personal coaching course covering: the vital points in planning campaigns; getting letters and advertising read; getting low-cost inquiries; how to write letters that pull; how to "follow-up" by mail; how to close sales; the "Check Chart" for increasing results; the 5 "MUST" factors of every mailing. Students work out own advertising and letters with instructor's guidance. No prerequisite.

First Semester

M 6:20 Campus Vincent 112, Brownson

Second Semester

M 6:20 Campus Vincent 112, Brownson

Radio Script Writing I. No credit. \$10.

The fundamentals of writing "for the ear," which requires a distinct technique: for advertisers, educators, propagandists. Script of various types: educational, commercial, other, including entertainment. Special stress on announcements for varying time periods, 30-word, 50-word, and 1-minute. Longer script, using dialog; radio drama with music and "sound effects," news and special programs. Repeated second semester. Prerequisite: a good command of English.

First Semester

T 8:05 St. P. Ext. Center 208, Weaver
F 6:20 Campus Folwell 308, Weaver

Second Semester

M 6:20 Campus Folwell 308, Weaver

Radio Script Writing II. No credit. \$10.

Basic plan: writing a series of 15-minute or longer programs for consecutive presentation. May be educational, commercial, or "sustaining," but must have radio showmanship and listener appeal built in. May be dramatic or other selected form. Students choose their own subjects. For those who have completed Radio Script Writing I.

Second Semester

F 6:20 Campus Folwell 308, Weaver

Radio Script Writing III. No credit. \$10.

For those who have shown especial aptitude in radio writing, and wish to explore individual fields: verse plays, historical narratives, dramatizations, radio "serials," social service dramas, special experimental programs, for sponsorship or otherwise. Open to those who have completed Radio Script Writing I and II.

First Semester

W 6:20 Campus Folwell 308, Weaver

BANKING AND FINANCE**Econ. 3 Elements of Money and Banking. 3 credits. \$10.**

The nature and functions of money and credit; the development of our monetary system with a critical examination of the reasons for the various changes; a study of commercial banking and the Federal Reserve System; the form and functions of the other types of financial institutions and security exchanges; an evaluation of recent changes resulting from legislation or revised business practices. No prerequisite.

First Semester

M 6:20 Campus Vincent 115, Stehman
W 6:20 St. P. Ext. Center 200, Kozelka

B.A. 58 Elements of Public Finance. 3 credits. \$10.

Public expenditures, revenues, debts, budgets; special attention to tax principles, practices, and burdens. Adapted to citizens generally, but of especial interest to public officials. Required of all candidates for degree in business. Prerequisite: Econ. 6.

Second Semester

Th 8:05 Campus Vincent 115, Borak

B.A. 142 Advanced Money and Banking. 3 credits. \$10.

The problems of a central bank and the theory of the value of money. Includes control of reserves, providing a scientific currency, regulation of credit, fluctuations of the general price level—their causes and possible reduction. Prerequisite: Econ. 3, 6-7.

Second Semester

W 6:20 Campus Vincent 221, Tow

B.A. 146 Investments. 3 credits. \$10.

A general survey of the external and internal factors influencing the price of securities and of the principles of an investment policy for the needs of the average conservative investor. Prerequisite: Econ. 3, 6-7 and B.A. 155.

First Semester

W 6:20 Campus Vincent 112, Uppgren

B.A. 148 The Securities Market. 3 credits. \$10.

The problems of the large corporate investors; the technique of selection and supervision of securities in such institutions as banks, trust companies, insurance companies, and investment trusts. Some practice in analysis of securities. Recommended to present, or potential, investment counselors, bond salesmen, analysts, or investment officers. Prerequisite: B.A. 146 and B.A. 155.

Second Semester

W 6:20 Campus Vincent 112, Uppgren

B.A. 155 Corporation Finance. 3 credits. \$10.

Forms of business organization; types of corporate securities and their uses; raising capital; surplus and dividend policies; holding companies, mergers, receiverships, and reorganizations; relation of the corporation to creditors, minority stockholders, and the public; recent legislation affecting corporate practices. Prerequisite: Econ. 3, 6-7.

Second Semester

M 6:20 Campus Vincent 115, Stehman

BUSINESS ADMINISTRATION**Hotel Organization and Operation. No credit. \$10.**

This course will deal with the fundamentals of hotel organization and operation. Instruction will be given by qualified experts, through lectures, demonstrations, and discussion.

First semester: types of hotels; location; site; patronage; promotion and methods of advertising; organization charts and their application; front office practice; legal terms; credit and protective departments; catering and food service; preparation of food; steward's department, beverage service.

Second semester: service departments; sales and convention promotion; housekeeping and laundry management; interior decorating; study of hotel textiles; hotel inspection tours; hotel law; personnel; employer-employee relations.

No prerequisite but second semester students will be expected to have taken the work of the first semester.

First Semester

M 8:05 Campus Vincent 1, Fisk and others

Second Semester

M 8:05 Campus Vincent 1, Fisk and others

N.B.—An advanced class in hotel management will be organized if sufficient demand materializes.

Purchasing Policies and Methods. 3 credits for certificate. \$10.

The general marketing and industrial background; marketing institutions and channels serving purchasing agencies; scope, organization, and relationships of the purchasing function; purchasing and price policies; purchasing methods, techniques, and control devices; legal and investment aspects; planning, budgeting, and standards. Prerequisite: Econ. 6-7.

Second Semester

W 6:20 Campus Vincent 115, Chute

B.A. 67 Retail Store Management for Pharmacies. Not offered 1940-41.**B.A. 76-76B Retail Credits and Collections I-II. 76, 3 credits; 76B, 3 credits for certificate. \$10.**

Economic and legal background of credit; relation of retail credit to other forms; sources of retail credit information; work of credit bureau and credit department; installment credit practice. Second semester devoted to organization and operation of retail collection departments; collection policies; collection methods; planning collection letters; locating "skips"; use of attorneys and collection agencies.

Conducted jointly by the instructors and several experienced retail credit men of the Twin Cities. Prerequisite: Econ. 6-7, and B.A. 77 or satisfactory equivalent.

First Semester

76 Th 6:20 Campus Vincent 113, Chute and others

Second Semester

76B Th 6:20 Campus Vincent 113, Thrush and others

B.A. 89 Business Organization and Management. 3 credits. \$10.

Survey of the procedures used and the problems of co-ordination and control for both large and small business organizations. Commercial, office, financial, and marketing aspects are considered in conjunction with production operations. Operating economy is conceived as the effective utilization of the investment in facilities, materials, labor, and personnel to serve available

markets, with emphasis on functional management and internal organization, budgetary cost control and analysis techniques, and the anticipation of management problems involved in planning. Consideration is also given to job analysis, incentives, and their relation to cost and price structures. No prerequisite.

First Semester

Th 6:20 Campus Vincent 301, Cummins

Wholesale Credit and Collection Curriculum. In co-operation with the National Institute of Credit.

The University of Minnesota co-operates with the Minneapolis and St. Paul chapters of the National Institute of Credit in a program of educational training leading toward the awards of associate and fellow of the National Institute of Credit. The National Institute of Credit is the educational branch of the National Association of Credit Men. Course registrations may be made through the association offices, 420 Rand Tower, Minneapolis, and 801 Guardian Building, St. Paul. Registration in the National Institute of Credit is required for credit toward awards of associate and fellow. Transfer credit may be applied for course completed previously in recognized colleges, up to 50 per cent of the requirements listed below.

The following program has been approved as fulfilling the requirements for awards of associate and fellow of the National Institute of Credit:

Association Curriculum

Extension Classes

ASSOCIATE AWARD

<i>Economics</i>	<i>Economics 6-7</i>
<i>Fundamentals of Accounting</i>	<i>Economics 20L-25L</i>
<i>Business English</i>	<i>3ex Written Communication in Business</i>
<i>Credits and Collections</i>	<i>To be announced</i>

FELLOW AWARD (in addition to courses above)

<i>Business Law</i>	<i>B.A. 51-53 or special course which may be announced later</i>
<i>Marketing</i>	<i>Offered alternate years</i>
<i>Public Speaking</i>	<i>Practical Speech Making</i>
<i>Problems of Credit Management</i>	<i>To be announced</i>

BUSINESS ENGLISH

1ex Business English. 3 credits for certificate. \$10.

A practical class for business people who recognize the value of good English in business and in general writing and conversation. Various kinds of business writing are studied with some attention to letter types; application of good grammar and correct forms in all business writing. No prerequisite.

First Semester

M 6:20 Campus Folwell 201, Fitch
 W 8:05 St. P. Ext. Center 203, Guthrie
 Th 6:20 Campus Folwell 101, Haga

Second Semester

M 8:05 Campus Folwell 101, Haga

2ex Business Correspondence. 3 credits for certificate. \$10.

A more advanced class with less emphasis on grammar and mechanics. Practical adaptations of successful letter writing to specialized correspondence under such headings as: executive problems, personnel, and financial. Each student will work out an individual communications project related to his own most imperative business needs. No prerequisite, but Business English or its equivalent is, for practical reasons, strongly recommended.

Second Semester

M 6:20 Campus Folwell 101, Fitch
 W 8:05 St. P. Ext. Center 203, Guthrie

3ex Written Communication in Business. 3 credits for certificate. \$10.

For advanced students and those with practical experience. A continuation of Business Correspondence with emphasis on administrative reports,

business articles, public letters, folders, booklets, etc. The development of a personal project. Prerequisite: Business English or permission of instructor.

First Semester

Th 6:20 Campus Folwell 201, Fitch

N.B.—For classes in English Composition, see pages 26-28.

BUSINESS LAW

B.A. 51-52-53†, 54 Business Law. 3 credits each semester; 51, 52, and 53 must be completed before credit for degree is granted; 51, 52, and either 53 or 54 for extension certificate. \$10, plus \$1 materials fee each class; no textbook.

Comprehensive course in the fundamental principles of law for the business and professional man. B.A. 51: contracts—formation, operation, transfer, discharge; agency—creation, nature and terms of the relation, rights, and liabilities of the parties. B.A. 52: organization, management, and responsibility of associations; business trusts; partnerships and corporations; bankruptcy. B.A. 53: personal property and transactions concerning it; law of sales, of bailments, and of the Uniform Negotiable Instruments and Bills of Lading acts. B.A. 54: nature and classification of real estate; deeds and conveyances; landlord and tenant; recording and abstracting; Torrens titles; liens and mortgages; wills, probating of estates, and duties of administrators and executors. No prerequisite but B.A. 51 should precede other classes.

First Semester

51 M 6:20 St. P. Ext. Center 208, Jackman
M 8:05 St. P. Ext. Center 208, Jackman
T 6:20 Campus Vincent 207, Jackman
W 6:20 Campus Vincent 207, Jackman
52 M 8:05 St. P. Ext. Center 204, Chapin
T 6:20 Campus Vincent 112, Chapin
53 T 8:05 Campus Vincent 207, Jackman

Second Semester

51 M 6:20 St. P. Ext. Center 208, Jackman
T 8:05 Campus Vincent 207, Jackman
53 M 8:05 St. P. Ext. Center 208, Jackman
T 6:20 Campus Vincent 207, Jackman
54 M 8:05 St. P. Ext. Center 206, Chapin
W 6:20 Campus Vincent 207, Jackman

ECONOMICS AND STATISTICS

Econ. 5 Elements of Statistics. 3 credits. \$10.

The principles of statistical methods applied to business; collection, tabulation, and interpretation of statistical data; averages, ratios, errors, index numbers, graphs, and charts. No prerequisite.

First Semester

W 6:20 Campus Vincent 105, Graves
W 8:05 St. P. Ext. Center 201, Kozelka

Econ. 6-7† Principles of Economics 1-2. 3 credits each semester. \$10.

Fundamental principles underlying the economic activities of society; utility and valuation; prices and the cost of production; the factors of production; division of labor and its relation to the development of industry; wages, rent, interest; capitalization, enterprise, business profits. Fundamental to the study of any business subject. No prerequisite.

First Semester

6 M 6:20 St. P. Ext. Center 206, Borak
Th 8:05 Campus Vincent 207, Graves

Second Semester

6 W 6:20 Campus Vincent 210, Graves
7 M 6:20 St. P. Ext. Center 206, Borak
Th 8:05 Campus Vincent 207, Graves

Econ. 103-104† Advanced Economics—Competition, Monopoly, and Inequality of Incomes. 3 credits each semester. \$10.

An advanced course in economic theory, prices, and costs; the value theory; the distribution of wealth—causes and effects of inequality; the distribution of income—inequality, rent, wages, interest, and profits. May be

† Classes marked with a dagger (†) are continuation classes and require the completion of two or three classes, as indicated, before any credit is given.

substituted for B.A. 101-102 in requirements for degree in business. For prerequisite consult instructor.

First Semester	Second Semester
103 Th 8:20 Campus Vincent 205, Waite	104 Th 6:20 Campus Vincent 205, Waite

B.A. 112 Business Statistics. 3 credits. \$10.

The technique of time series analysis; methods of determining normal or trend values; methods of measuring seasonal variation and adjustment of data for seasonal fluctuation; measurement of degree of relation between time series, graphically and by correlation technique; analysis and comparison of index numbers of local and national business conditions. Prerequisite: Econ. 5, or 14 or equivalent.

Second Semester
W 8:05 Campus Vincent 2, Kozelka

B.A. 180F Senior Topics: Statistics. 3 credits. \$10.

Intensive study of original sources dealing with selected topics in the theory of statistics. Oral and written reports. Prerequisite: Econ. 5 and B.A. 112, or consent of instructor.

Econ. 149 Business Cycles. 3 credits. \$10.

A critical examination of business cycle theory, with a discussion of proposed methods for eliminating or moderating industrial fluctuation. The relation of business cycles or industrial fluctuations to: the wage system; the influence of machine technique; crop fluctuations; wars, tariffs, and other "irregular" factors; the distribution of wealth; the problem of "purchasing power"; private profit and "competition"; effect of monopoly. Progress and stability; programs of taxation and public works as proposed remedies; possibilities under socialism. Prerequisite: Econ. 141 or B.A. 142, or consent of instructor.

Second Semester
W 6:20 Campus Vincent 211, Marget

Second Semester
T 8:05 Campus Vincent 2, Kozelka

Econ. 161 Labor Problems and Trade Unionism. 3 credits. \$10.

Employment; hours; wages; extent and stronghold of unionism; open and closed shops; collective bargaining; industrial unrest; government regulation of labor disputes. Special emphasis on the current proposals for industrial recovery and the re-employment of labor. Prerequisite: Econ. 6-7.

First Semester
M 8:05 Campus Vincent 205, Yoder

Econ. 164 Labor Legislation and Social Insurance. Not offered 1940-41.

Econ. 165 Economics of Public Utilities. 3 credits. \$10.

Study of public utility enterprises with special reference to valuation, rate structures, service standards, government regulation, public ownership; the T.V.A. and other recent developments. Prerequisite: Econ. 6-7.

First Semester
Th 8:05 Campus Vincent 210

Econ. 166 International Economic Problems. 3 credits. \$10.

The pre-war economic situation; economic effects of the war and the peace treaty; the economics of conquest; raw materials, population, and war; reparations and war debts; unstable factors in the post-war decade in relation to the depression beginning in 1929; the export of capital; selected problems in international economic policy. Prerequisite: Econ. 6-7.

First Semester
W 6:20 Campus Vincent 211, Marget

B.A. 167 Personnel Administration. 3 credits. \$10.

Evaluation of managerial policies and devices for the control of personnel; determination of labor needs; methods of dealing with workers; selective devices; training and safety programs; compensation, collective bargaining, governmental personnel programs. Prerequisite: Econ. 161.

Second Semester

M 8:05 Campus Vincent 205, Yoder

Econ. 187 Economic Reform. Not offered 1940-41.

INSURANCE**3ex General Insurance.** 3 credits for certificate. \$10.

A basic course in the principles and practices involved in underwriting the various forms of insurance coverage, property and casualty in particular. Prerequisite to all other insurance classes. No prerequisite.

First Semester

T 6:20 Campus Vincent 2, Ware

B.A. 59 Life Insurance. Not offered 1940-41.

B.A. 60 Fire and Marine Insurance. 3 credits. \$10.

Historic background of fire and marine insurance; insurance carriers; standard policy; state regulation and supervision; agency viewpoint of rate making; inland marine forms and coverages. Prerequisite: Econ. 6-7.

First Semester

M 6:20 Campus Vincent 2, Law

B.A. 61 Casualty Insurance. 3 credits. \$10.

The risks of insurance coverages, policy provisions, and methods of rating in the more important lines of casualty insurance—accident and health, employer's liability, workmen's compensation, automobile, robbery and theft, plate glass, and miscellaneous damage types. Prerequisite: Econ. 6-7.

Second Semester

M 6:20 Campus Vincent 6, McGee

Suretyship. Not offered 1940-41.

Life Insurance Fundamentals. Not offered 1940-41.

Law, Trusts, and Taxes. Not offered 1940-41.

General Education. Not offered 1940-41.

TEXTILES**Textiles.** 3 credits. \$10, plus 50 cents materials fee.

A class for consumers and for those making or selling clothing and home furnishings. Woven and knit fabrics of cotton, silk, rayon, wool, and linen; manufacturing and finishing processes; qualities, tests, uses, maintenance; explanation of technical terms and of characteristics determining comparative values; application to men's and women's apparel and to household items. No prerequisite.

First Semester

M 6:20 Campus Chemistry 115, Caplin

T 8:05 St. P. Ext. Center 204, Caplin

W 6:20 Mpls. N. W. Bank Bldg. 690, Caplin

Advanced Textiles. Not offered 1940-41.

TRAFFIC AND TRANSPORTATION

B.A. 71-72 Transportation: Services and Charges I and II. 3 credits each semester. \$10.

The rail, water, air, and highway transportation facilities, services, rates, and laws, and their relation to business establishments; problems in handling freight, express, and parcel-post shipments; scope, selection, and use of the facilities and services of common carriers; rate structures; problems involving freight classification and use of tariffs. 71 to precede 72. Prerequisite: Econ. 6-7.

First Semester
71 M 6:20 St. P. Ext. Center 203,
Nightingale
Th 6:20 Campus Vincent 1,
Nightingale

Second Semester
72 Th 6:20 Campus Vincent 1,
Nightingale

B.A. 80 Senior Topics: Transportation. 3 credits. \$10.

Advanced study of tariffs and tariff construction, of rate structures, and of auxiliary services, including problems thereon. Analysis of important current cases and decisions affecting shippers and carriers. Prerequisite: 71-72.

Second Semester
M 7:00 Campus Vincent 2, Nightingale

Advanced Traffic and Transportation I and II. 3 credits each semester for certificate. \$10.

Advanced consideration of regulatory state and federal laws governing rail and highway transportation. Detailed study of highway rates and problems. Attention to practice and procedure before rate and classification committees, state commissions, and the Interstate Commerce Commission. Preparation of informal, formal, and investigation and suspension cases before regulatory commissions. Prerequisite: B.A. 71-72 or equivalent.

First Semester
I F 6:20 Campus Vincent 2, Mann

Second Semester
II F 6:20 Campus Vincent 2, Mann

TECHNOLOGY CLASSES

In this department two kinds of classes are offered for two rather distinct types of students. Classes of regular college standing are offered for those who wish to accumulate as much of the work of the regular engineering course of study as they can while regularly employed. For those who do not seek an engineering degree but wish practical preparation for some phase of engineering procedure, some classes are offered that are not a part of the program of the Institute of Technology. The student's own needs or desires are to determine which kind of work is to be undertaken, and no disparaging distinctions are made between the two kinds.

Classes of the second kind are indicated in the program as being without prerequisites, for the most part, and either without credit or with credit toward an extension certificate only. They are offered freely to all who have the appropriate interest, for such value as they may have for the student. Each such class is usually complete in itself, except where two classes, in successive semesters, make up a unit. These classes are not offered as equivalents for any part of the required work of the Institute of Technology.

The regular collegiate classes offered correspond to those given to full-time engineering students, and are based on the same prerequisites. They are offered for those who wish to be thoroly prepared, to do the maximum work demanded, and perhaps ultimately to become candidates for a degree. Students who do not meet the prerequisite requirements may be admitted to these classes, but only as auditors who will not make extra demands upon the instruction and retard the progress of the prepared students.

CERTIFICATES

The General Extension Division certificate in technology is issued as an evidence of the completion of an organized program of study in technological subjects. While not the equivalent of a degree, it represents a comprehensive yet concentrated training in several branches of study which will be found valuable in many phases of industry and in activities which utilize engineering ability. The program embraces a core of fundamental subjects, including all the mathematics required for a degree, and the opportunity for specialization in one of several engineering fields. The requirements are as follows:

1. Each candidate must complete a total of 90 credits with an average grade of C in technological subjects, of which the following are required:

Mathematics:	Credits
9 Higher Algebra	5
11 College Algebra	5
12 Trigonometry	5
13 Analytical Geometry	5
24 Differential Calculus	5
25 Integral Calculus	5
Mechanical Drawing 1-2	6
Technical Mechanics	5
Strength of Materials	5
Total	46

2. Each candidate will be required to complete additional classes totaling approximately 30 credits in one of the separate fields of Engineering—Aeronautical, Architectural, Chemical, Civil, Electrical, Mechanical.

3. The remaining credits, approximately 14, may be completed either in optional courses within the chosen field, or in approved elective courses in one of the allied fields. Selection of classes in which to earn these credits should be made with the advice and approval of the Students' Work Committee.

4. Upon the completion of an approved 45 credits a preliminary certificate will be informally issued to be used for such purposes as the candidate may desire. The approval of classes which will yield these 45 credits must be had from the Students' Work Committee.

5. Those students who, previous to 1932-33, entered upon a program for the completion of the requirements for one of the 45-credit certificates, which are replaced by the above 90-credit certificate, will be protected until the completion of their work and the appropriate certificates will be issued informally.

DEGREES

Credits earned in these classes are now accepted toward degrees in the Institute of Technology, without a special examination, whenever the student is qualified by admission and prerequisite study. When a student is desirous of determining his status with respect to a degree he should consult the chairman of the Advanced Standing Committee of the particular unit in which he will do his major work—that is, the College of Engineering and Architecture, the School of Chemistry, or the School of Mines and Metallurgy. The requirements for degrees in these several units are set forth in the Bulletin of the Institute of Technology.

Many of the extension classes are open to all, regardless of previous study, who can profit by them. They are designed for those who wish to improve themselves in their industrial positions but who do not expect to become engineers. The descriptions of such classes indicate that there are no prerequisites. Other classes are of such a nature that they cannot be carried through without certain previous study. Descriptions of these classes indicate the necessary prerequisites. IN ALL CASES THE INSTRUCTOR IS THE JUDGE OF THE ADEQUACY OF PREPARATION AND WILL ACCEPT STUDENTS ACCORDINGLY.

GENERAL ENGINEERING

Consultation Period. No fee.

A session for guidance purposes, open to all students registered in technology classes; affords opportunity for consultation, discussion, or study, under direction, in all technological subjects.

First Semester

F 6:30 Campus Main Eng. 136, Edwards

Second Semester

F 6:30 Campus Main Eng. 136, Edwards

G.E. 70 Use of Engineer's Slide Rule. 1 credit for certificate. One hour meetings, weekly. \$5.

Theory and computation practice necessary for those who wish to use the slide rule in ordinary office computations. Repeated second semester. No prerequisite.

First Semester

T 7:00 Campus Main Eng. 205, Boon

Second Semester

T 7:00 Campus Main Eng. 205, Boon

G.E. 81 Cost Estimating. 3 credits for certificate. \$10.

Blueprint reading, quantity survey, mensuration; estimates of concrete, brick, timber, and steel structures. Repeated second semester. No prerequisite.

First Semester

T 8:05 Campus Main Eng. 217, Boon

Second Semester

T 8:05 Campus Main Eng. 217, Boon

AERONAUTICAL ENGINEERING**Aircraft Engines 1-2.** 3 credits each semester for certificate. \$10.

Types of engines and their development; calculation of size and horse power; use of dynamometers and torque stands; aviation gasoline, specifications and tests, octane numbers; principles of ignition, magnetos, starters, carburetors, combustion; modern operation systems, performance; oils and oil testing; the aviation Diesel. Lectures and laboratory tests. No prerequisite.

N.B.—Taught jointly with M.E. 50 Internal Combustion Engines.

First Semester

1 W 7:30 Campus Oak St. Lab., Robertson

Second Semester

2 W 7:30 Campus Oak St. Lab., Robertson

Aeronautics I: Airplane Construction. 3 credits for certificate. \$10.

Nomenclature; theory of lift and drag; wind tunnel; airfoil characteristics; airplane performance; stability and control; types of airplane; demonstration and inspection of airplane and its parts; materials and their properties; principles in propeller theory. Prerequisite: elementary mathematics.

First Semester

I T 7:30 Campus Armory 105, Barlow

Aeronautics II: Elementary Navigation and Meteorology. 3 credits for certificate. \$10.

Navigation instruments; principles of celestial navigation; laying out and checking course; dead reckoning; radio use; magnetic compass and its use; maps and charts, the atmosphere and clouds; reading of weather maps. Prerequisite: elementary mathematics.

Second Semester

II T 7:30 Campus Armory 105, Barlow

Aeronautical Drafting. See page 74.

AIR CONDITIONING

(See page 77)

ARCHITECTURE**Architectural Drafting.** No credit. \$10.

A class for home builders; not for the professional architect. Conventional methods of architectural presentation as used in house planning; detailing, perspective, and rendering, to suit individual needs. No prerequisite.

First Semester

W 7:30 St. P. Mech. Arts High 103, Smalley

Second Semester

W 7:30 St. P. Mech. Arts High 103, Smalley

Cost Estimating. See above.

ART

N.B.—All art classes scheduled for a given meeting will be taught simultaneously. Students may enter any unit listed, either semester. The beginning classes in Commercial and Freehand Drawing may, if registration is below minimum, be combined on one night. Class sessions 2½ hours.

Commercial Drawing I-II. 3 credits each semester for certificate. \$10.

Elementary and advanced commercial art; design, lettering, layouts, posters, figure drawing, in pen and ink, pencil, color, or other media. Solutions of practical problems stressed. Special attention given to fashion drawing and design. Open to beginners and advanced students either semester. No prerequisite.

First Semester

I M 7:30 Campus Main Eng. 417, Doseff

Second Semester

II M 7:30 Campus Main Eng. 417, Doseff

Freehand Drawing I-II. 1½ credits each semester. \$10.

Theory and practice of freehand drawing. Deals with perspective, design, and composition. Drawing of geometric solids, ornaments, and figures in charcoal, pencil, pen and ink, water color, or other media. Open to beginners and advanced students either semester. No prerequisite.

First Semester

I T 7:30 Campus Main Eng. 417, Doseff

Second Semester

II T 7:30 Campus Main Eng. 417, Doseff

Life Drawing and Painting. 1½ credits each semester. \$10.

Drawing and painting from life; figure composition; pencil, pen, charcoal, oil pastels, and water colors; print making. Corresponds to Drawing and Painting III. Open to beginners and advanced students either semester. No prerequisite.

First Semester

W 7:30 Campus Main Eng. 417, Burton

Second Semester

W 7:30 Campus Main Eng. 417, Burton

See also Art Studies, page 16, and Art Education, page 47.

CHEMISTRY AND CHEMICAL ENGINEERING

N.B.—All Chemistry classes, except Advanced Quantitative Analysis, meet for a minimum of one lecture, one recitation, and three hours laboratory a week. Class periods, 7:30 to 10:00 p.m., both Tuesdays and Thursdays.

9ex‡ General Inorganic—Nonmetals. 5 credits. \$17.

The common nonmetallic elements and their principal compounds; the laws and theories of chemistry. No prerequisite.

First Semester

TTh 7:30 Campus Chem. 111, 110, Geiger

12ex‡ Qualitative Analysis. 5 credits. \$17.

The laws, theories, and calculations involved; systematic qualitative analysis. Prerequisite: 9ex or its equivalent.

Second Semester

TTh 7:30 Campus Chem. 111, 110, Geiger

1ex‡ Quantitative Analysis—Gravimetric. 5 credits. \$17.

Principles and methods of gravimetric analysis; typical problems and proper laboratory practice. Prerequisite: Qualitative Analysis.

First Semester

TTh 7:30 Campus Chem. 310, 315, Geiger

‡ All chemistry classes require a deposit of \$5, payable at Chemistry Department, of which \$2 is laboratory fee and the remainder for breakage. The unused portion is to be returned.

2ex‡ Quantitative Analysis—Volumetric. 5 credits. \$17.

General principles and methods of volumetric analysis. Prerequisite: Qualitative Analysis.

Second Semester

TTh 7:30 Campus Chem. 310, 315, Geiger

7ex‡ Quantitative Analysis—Premedical. 4 credits. \$13.50.

Introductory, covering principles and methods of gravimetric and volumetric quantitative analysis; typical problems and proper laboratory practice. (Given in connection with 2ex.) Prerequisite: Qualitative Analysis.

Second Semester

TTh 7:30 Campus Chem. 310, 315, Geiger

123-124-125ex‡ Advanced Quantitative Analysis. 5 credits first semester, \$17; 4 credits second semester, \$13.50.

Prerequisite: Analytic Chem. 1-2 or the equivalent.

First Semester

123-124 TTh 7:30 Campus Chem. 310,
Geiger

Second Semester

124-125 TTh 7:30 Campus Chem. 310,
Geiger

Chemistry in Modern Life. See page 19.

Petroleum Products and Testing. 3 credits for certificate. \$10 each semester, plus \$5 laboratory fee for second semester.

A practical class in refining and testing of petroleum products, gasoline, kerosene, gasoline oils, lubricating oils, road oils, etc. Lectures will cover the chemistry of petroleum, the unit process, such as acid treatment, solvent refining, and cracking; the characteristics and properties of the products, with laboratory tests; the significance of the test results. Both semesters necessary for complete results. No prerequisite.

First Semester

T 7:30 Campus Exp. Eng. 215, Peterson

Second Semester

T 7:30 Campus Exp. Eng. 215, Peterson

Paint Materials. 3 credits for certificate. \$10.

This course will consist of a study of pigments, drying oils, and resins used in paints and varnishes. Discussions will cover combinations of the above which yield satisfactory service. The manufacture of raw materials will be covered sufficiently so as to bring out the nature of the desirable and undesirable properties of the material. Items such as covering capacity, hiding power, and bulking value will be discussed. Formulations and yields will be studied. Typical types of paint and varnish failures and corrective measures will be included in the course. No prerequisite.

First Semester

Th 7:30 Campus Exp. Eng. 215, Peterson

Second Semester

Th 7:30 Campus Exp. Eng. 215, Peterson

CIVIL ENGINEERING**11 Plane Surveying.** 3 credits but see note below. \$10.

Lectures and problems relating to the use of steel tape, compass, transit, and level; recording, computing, and plotting of field notes; care, use, and adjustment of instruments. Prerequisite: trigonometry and drawing.

First Semester

T 7:30 Campus Main Eng. 215, Cutler

21 Curves and Earthwork. 3 credits but see note below. \$10.

Problems relating to route surveying; mathematics of simple, compound, and spiral curves; vertical curves; plotting of ground line profiles; cross sec-

‡ All chemistry classes require a deposit of \$5, payable at Chemistry Department, of which \$2 is laboratory fee and the remainder for breakage. The unused portion is to be returned.

tions and earthwork volumes; mass diagram; overhaul. Prerequisite: 11 or equivalent.

Second Semester

T 7:30 Campus Main Eng. 215, Cutler

N.B.—Inasmuch as these classes, 11 and 21, are given without field work, full credit may be withheld until such field work is satisfactorily completed.

33 Elementary Structural Design. 3 credits for certificate. \$10.

Designing principles and methods; complete designs and detail drawings of typical simple structures. Prerequisite: C.E. 32, M.&M. 128, Draw. 23.

First Semester

T 7:30 Campus Main Eng. 203, Darrell

51 Highways and Pavements I. 3 credits. \$10.

Elementary economics, location, construction, and maintenance of highways and pavements; road building materials and their methods of testing, with laboratory practice. Begins November 13 and continues 17 weeks. Prerequisite: C.E. 12 Surveying.

First Semester

W 7:30 Campus Exp. Eng. 215, Lang

52 Highways and Pavements II. Not offered 1940-41.

141 Reinforced Concrete and Concrete Design I. 3 credits. \$10.

Principles of reinforced concrete; theory and design of beams, slabs, and columns; use of transformed sections, formulae, tables, and diagrams; discussion and application of recent specifications. Begins November 14 and continues 17 weeks. For prerequisite consult instructor.

First Semester

Th 7:30 Campus Main Eng. 104, Hughes

142 Reinforced Concrete and Concrete Design II. Not offered 1940-41.

DRAWING AND DESCRIPTIVE GEOMETRY

1-2 Engineering Drawing. 3 credits each semester. \$10.

Elements of drafting, representation, geometry, sketching, lettering, working drawings, conventions, tracing. Auxiliary views, multiple projection, detail and assembly drawings. Students may enter either class either semester. No prerequisite.

N.B.—Three credits given only for completion of entire work of a semester; 1½ credits may be given for satisfactory completion of a half a semester's work, with another registration necessary for the completion of the remainder.

First Semester

1 W 7:30 St. P. Mechanic Arts High 101,
Dow

Th 7:30 Campus Main Eng. 201, French

Second Semester

2 W 7:30 St. P. Mechanic Arts High 101,
Dow

Th 7:30 Campus Main Eng. 201, French

3 Descriptive Geometry. 3 credits. \$10.

Elementary course in the methods of representation, correlated in part with analytical geometry. Graphical and algebraic solutions. Lectures, demonstrations, and drafting. Prerequisite: Draw. 2, M.&M. 11.

First Semester

Th 7:30 Campus Main Eng. 101, Cruzen

22 Structural Drafting. 2 credits. \$7.

Details of fabrication of beams, girders, columns, trusses, etc.; material bills. Repeated second semester. Prerequisite: Draw. 1.

First Semester

Th 7:30 Campus Main Eng. 201, French

Second Semester

Th 7:30 Campus Main Eng. 201, French

20 Advanced Mechanical Drawing. No credit. \$7.

Working drawings, gearing, cams, developments, multiple auxiliary views, special projections. Repeated second semester. No prerequisite.

First Semester

W 7:30 Campus Main Eng. 101, Herrick W 7:30 St. P. Mechanic Arts High 101, Dow
W 7:30 St. P. Mechanic Arts High 101, Dow

Second Semester**29 Aeronautical Drafting.** 3 credits. \$10.

Detail, assembly, and layout drawings. Standard practices in the aircraft industry. Army-Navy standards and specifications; tolerances and allowances; graphical integration. Prerequisite: Draw. 2 or instructor's approval.

First Semester

Th 7:30 Campus Main Eng. 101, Cruzen

38 Reading Drawings. Not offered 1940-41.**52 Alignment Charts.** Not offered in 1940-41.

Use of Engineer's Slide Rule. See page 69.

Cost Estimating. See page 70.

ELECTRICAL ENGINEERING

N.B.—Please note that the following three classes, Fundamentals of Electrical Engineering, Alternating Current Circuits and Transformers, and Alternating Current Machinery, constitute a basic sequence which should be taken in the order listed. Work may then be taken in advanced courses.

Basic Sequence:

a. Fundamentals of Electrical Engineering. Not offered 1940-41.

b. Alternating Current Circuits and Transformers. Not offered 1940-41.

c. Alternating Current Machinery. 3 credits for certificate. \$10.

Study of alternating current synchronous generators and motors; induction motors; commutator motors; control equipment; application of motors in industry. Lecture, demonstration, and laboratory. Prerequisite: (a) and (b).

First Semester

T 7:30 Campus Elec. Eng. 237, Caverley

Advanced Courses:

125-126 Senior Electrical Engineering. 5 credits. \$17.

Continues studies begun in 11-15, 111-116, 121-124. Lectures and laboratories (3 hours) on alternate sessions; meets twice a week. Prerequisite: Math. through Calculus, and E.E. 111-116 and 121-124.

First Semester

MW 7:30 Campus Elec. Eng. 237 Johnson, Caverley

141 Central Stations. 3 credits. \$10.

Electric power generating stations and distributing systems. Economic consideration: costs, load curves, plant location, selection of prime movers, station equipment. Prerequisite: E.E. 121-126.

Second Semester

W 7:30 Campus Elec. Eng. 237, Johnson

INDUSTRIAL ENGINEERING**M.E. 171 Production Control.** 3 credits for certificate. \$10.

Principles and practice involved in economical production; standardization; requirements for uniformity and interchangeability; jigs, fixtures, special equipment; gauges and inspection systems; division of labor; conveying, handling, stores control; fatigue elimination. Prerequisite: shop experience.

First Semester

T 6:20 Campus Mech. Eng. 202, Whitson

M.E. 174 Production Management—Time and Motion Studies. 3 credits for certificate. \$10.

Production methods and layouts; fatigue reduction; time study; process charts, operation sheets, and micromotion studies. Lectures, laboratory studies, and factory problems. No prerequisite.

Second Semester

T 6:20 Campus Mech. Eng. 202, Whitson

MATHEMATICS AND MECHANICS

N.B.—The numbers of these courses are those used by the Institute of Technology.

Elementary Algebra. Credit toward entrance. \$10, plus \$1 materials fee.

Elements of algebra to quadratic equations. Both semesters necessary. No prerequisite.

First Semester

M 7:30 Campus Main Eng. 106, Edwards

Second Semester

M 7:30 Campus Main Eng. 106, Edwards

Mathematics Review. Not offered 1940-41.

Solid Geometry. Credit toward entrance. \$10.

Standard theorems and exercises; practice in special proofs and original exercises. Class will finish December 16; extra sessions arranged to make semester's work complete. Prerequisite: plane geometry.

First Semester

M 6:00 Campus Main Eng. 104, Edwards

9 Higher Algebra. 5 credits. \$17.

A review and collegiate treatment of the topics of elementary algebra, which is prerequisite. Not open for credit to those who present higher algebra for entrance to college.

First Semester

Th 7:00 Campus Main Eng. 106, Edwards

11 College Algebra. 5 credits. \$17.

Quadratic equations; equations in the quadratic form; simultaneous quadratic equations; graphical representation; progressions, mathematical induction; binomial theorem; permutations; combinations; probability; determinants; theory of equations. Prerequisite: M.&M. 9.

Second Semester

Th 7:00 Campus Main Eng. 106, Edwards

12 Trigonometry. 5 credits. \$17, plus \$1 materials fee.

Logarithms and plane trigonometry. Prerequisite: M.&M. 9.

First Semester

T 7:00 Campus Main Eng. 106, Edwards

Th 7:00 St. P. Ext. Center 201, Dow

13 Analytical Geometry, Plane and Solid. 5 credits. \$17, plus \$1 materials fee.

Elements of plane analytical geometry including conic sections, brief introduction to solid analytical geometry. Prerequisite: trigonometry.

Second Semester

T 7:00 Campus Main Eng. 107, Edwards

Th 7:00 St. P. Ext. Center 201, Dow

24 Differential Calculus. 5 credits. \$17.

Limit; derivative; simple applications of derivative; maxima and minima; differentials; rates; change of variable; radius of curvature; mean value; indeterminate forms; partial differentiation; series. Prerequisite: M.&M. 13.

First Semester

T 7:00 Campus Main Eng. 107, Peebles

25 Integral Calculus. 5 credits. \$17.

Expansion of function; Taylor's theorem; standard elementary forms; definite integral; rational fractions; integration by substitution, by parts; reduction formulas; integration of processes of summation; double and triple integration; elementary ordinary differential equations. Prerequisite: M.&M. 24.

Second Semester

T 7:00 Campus Main Eng. 107, Peebles

M.&M. 127 Technical Mechanics. 5 credits each semester. \$17.

First semester, Statics: characteristics of a force, parallelogram law, moments, resultants, equilibrium, friction, graphical methods, work, theory of the moment of inertia. Second semester, Dynamics: mass, acceleration, governors, power, momentum, theorem of Coriolis. Prerequisite: Math. 25.

First Semester

Th 7:00 Campus Main Eng. 107, Teeter

Second Semester

Th 7:00 Campus Main Eng. 107, Teeter

M.&M. 128a-128b Strength of Materials. Not offered 1940-41.**M.&M. 129 Hydraulics. 3 credits each semester. \$10.**

Elements of hydraulics including flow through tubes and pipes, conduits and rivers; principles of turbines and pumps; open channel flow. Prerequisite: Math. 25.

First Semester

M 7:00 Campus Main Eng. 107, Teeter

Second Semester

M 7:00 Campus Main Eng. 107, Teeter

M.&M. 141 Testing Materials. 3 credits. \$10.

The testing of various grades of carbon and alloy steels, cast iron, wood, cement, and concrete to determine their mechanical properties. The testing of materials to meet standard specifications as published by various scientific and engineering societies. The tests are supplemented by lectures on specific methods of testing. Prerequisite: trigonometry and M.&M. 128a-128b.

First Semester

Th 7:00 Campus Exp. Eng. Lab., Priester

Consultation Period. See page 69.

MECHANICAL ENGINEERING**M.E. 8-9ex Foundry Control Methods. 3 credits each semester for certificate. \$10, plus \$2 materials fee.**

A laboratory and lecture course dealing with control of the materials and processes used in commercial foundry practice. First semester: Properties and laboratory testing of molding sands, the fundamentals of foundry melting processes, foundry test bars, and temperature measurements. Second semester: X-ray examination, metallurgy of cast iron, furnace operation and control, and properties of castings. No prerequisite.

First Semester

T 6:20 Campus Mech. Eng. 153, Holtby

Second Semester

T 6:20 Campus Mech. Eng. 153, Holtby

Diesel Engines (Theory, Construction, and Operation). 3 credits each semester for certificate. \$10, plus 75 cents materials fee.

Development of the modern Diesel engine; air injection equipment, mechanical injection pumps, fuel spray nozzles, combustion chamber construc-

tion, Diesel power generating plants, high speed Diesels for rail cars, busses, tractors, and aircraft; Diesel fuels and the chemistry of combustion; operating equipment and care. Laboratory demonstrations in second semester. A course for operating engineers and others interested in a broad technical study of the Diesel engine. Two semesters, continuous, both necessary.

First Semester

Th 7:30 Campus Oak St. Lab., Robertson

Second Semester

Th 7:30 Campus Oak St. Lab., Robertson

M.E. 27 Machine Design. 3 credits. \$10.

Fundamental principles of design of machine elements; lubrication, theory and application; friction drives, shafts, screws, gears, belts, connectors, springs, flywheels, machine frames, shrink fits. Prerequisite: M.&M. 85 or 128.

First Semester

W 7:30 Campus Main Eng. 101, Herrick

M.E. 24ex Elements of Machine Design. 3 credits for certificate. \$10.

Design of beams, shafting, columns, screw fastenings, springs, friction clutches, and brakes. Factor of safety. Stresses due to suddenly applied, repeated, and reversed loads. No prerequisite.

Second Semester

W 7:30 Campus Main Eng. 101, Ryan

M.E. 50a-b Internal Combustion Engines. 3 credits each semester for certificate. \$10.

A practical course in theory, construction, testing of gasoline, semi-Diesel and Diesel engines; fuels; combustion; lubrication; cooling and electric systems; carburetors; theoretical and practical engine cycles; use of instruments for determining horsepower, mechanical, and thermal losses in engine operation; laboratory tests. No prerequisite.

N.B.—Taught jointly with Aero. 2, Aircraft Engines. Students may enter either semester.

First Semester

50a W 7:30 Campus Oak St. Lab., Robertson

Second Semester

50b W 7:30 Campus Oak St. Lab., Robertson

M.E. 65-66ex† Air Conditioning.—First year. 3 credits each semester for certificate. \$10, plus \$1 materials fee.

Especially designed for those engaged in selling, installing, or recommending the modern types of appliances for heating, cooling, humidifying, or otherwise conditioning the air of houses and other buildings. Deals with air vapor mixtures; the wants of the human body; the laws of temperature, pressure, humidity, etc.; the methods of heating, cooling, cleaning, and distributing air and the peculiarities of each; testing and measuring pressure, humidity, etc., and the instruments used; critical evaluation of the results of processes. Mimeographed matter and blueprints issued in lieu of a textbook. No prerequisite but 65 must precede 66.

First Semester

65ex W 7:30 Campus Exp. Eng. 110, Algren, Jordan, Lund

Second Semester

66ex W 7:30 Campus Exp. Eng. 110, Algren, Jordan, Lund

M.E. 67-68ex† Air Conditioning—Second year. 3 credits each semester for certificate. \$10, plus \$1 materials fee.

This class deals with the applications of the fundamentals studied in the first year's work to typical problems and installations. It includes the calculation of heat gains and heat losses for typical structures, and the design of the heating and cooling systems. A part of the second semester work deals

† Classes marked with a dagger (†) are continuation classes and require the completion of two or three classes, as indicated, before any credit is given.

with the fundamentals of refrigeration and its practical applications. Mimeographed material to be issued in lieu of a textbook. Prerequisite: M.E. 65-66ex; 67 must precede 68.

First Semester

67ex Th 7:30 Campus Exp. Eng. 110,
Algren

Second Semester

68ex Th 7:30 Campus Exp. Eng. 110,
Algren

METALLOGRAPHY

1-2ex Metallography and Heat Treatment of Iron and Steel. 3 credits each semester for certificate. \$10.

A beginning course suitable for those engaged in practical heat treatment, in writing specifications, purchasing or selling iron or steel; lectures, demonstrations, and laboratory work in pyrometry, thermal analysis, preparation of alloys, microscopic examination of metal alloys, preparation of photomicrographs; the theory of heat treating, its relation to practice. No prerequisite but 1 must precede 2.

First Semester

1ex M 7:30 Campus Sch. Mines 306,
Forsyth

Second Semester

2ex M 7:30 Campus Sch. Mines 306,
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WHERE EXTENSION CLASSES MEET

MINNEAPOLIS

University of Minnesota Campus:

Anatomy Building	Murphy Hall
Armory	Museum of Natural History
Botany Building	Music Building
Burton Hall	Northrop Auditorium
Chemistry Building	Physics Building
Cooke Hall	Pillsbury Hall
Folwell Hall	Psychology Building
Jones Hall	Vincent Hall
Medical Sciences	Wesbrook Hall
Millard Hall	Women's Gymnasium
Mines Building	Zoology Building
Electrical Engineering Building	
Experimental Engineering Building	
Main Engineering Building	
Mechanical Engineering Building	
Oak Street Laboratory	
University of Minnesota Hospitals	

For location of campus buildings, see map inside this cover.

Downtown:

McKnight Building, Room 250
Northwestern Bank Building, Rooms 603, 664, 690

ST. PAUL

Agricultural Campus:

Agricultural Engineering Building
Gymnasium

Downtown:

University Extension Center,
500 Robert Street, Foot-Schulz Building
First National Bank Building, 4th and Robert Streets
Mechanic Arts High School, Central and Robert Streets
Wilder Dispensary Building, 279 Rice Street

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- Fred L. Kildow, B.A., Assistant Professor of Journalism
- Evron M. Kirkpatrick, Ph.D., Assistant Professor of Political Science
- Ida MacDonald, B.A., Assistant Professor of Nursing Education
- David MacMillan, B.S., Assistant Professor of Physical Education for Men
- Horace T. Morse, Ph.D., Assistant Professor of Education and Assistant to the Dean of the Graduate School
- Carl L. Nordly, Ph.D., Assistant Professor of Physical Education for Men
- Mellie F. Palmer, R.N., B.S., C.P.H., Assistant Professor of Preventive Medicine and Public Health
- Ralph A. Piper, M.A., Assistant Professor of Physical Education for Men
- Ella J. Rose, M.A., Assistant Professor of Home Economics Education
- W. Ray Smith, B.A., Assistant Professor of Physical Education for Men and Director of Intramural Athletics
- Catherine Snell, B.S., Assistant Professor of Physical Education for Women
- Helen M. Starr, M.A., Assistant Professor of Physical Education for Women
- Harold T. Widdowson, M.A., Assistant Professor of Industrial Education
- S. Alan Challman, B.A., M.D., Professorial Lecturer in Education
- Ella C. Clark, M.A., Professorial Lecturer in Education
- Harry P. Cooper, M.A., Professorial Lecturer in Education
- Ralph T. Craigo, B.S., Professorial Lecturer in Industrial Education
- Elizabeth Eckhardt May, Ph.D., Professorial Lecturer in Education
- Dean M. Schweickhard, M.A., Professorial Lecturer in Trade and Industrial Education
- Barbara H. Wright, M.S., Professorial Lecturer in Education
- Jean H. Alexander, M.A., Instructor in Education
- Beatrice A. Baird, M.A., Instructor in Physical Education for Women
- David C. Bartelma, M.A., Instructor in Physical Education for Men
- Sheldon E. Beise, B.S., Instructor in Physical Education for Men
- Hilma L. Berglund, M.A., Instructor in Art Education
- Phil Brain, Instructor in Physical Education for Men
- Genevieve Braun, M.S., Instructor in Physical Education for Women
- Carlotta M. Brown, Instructor in Home Economics
- Grace D. Christensen, B.S., Instructor in Physical Education for Women
- Pearl T. Cummins, B.S., Instructor and Extension Worker in Institute of Child Welfare
- Nicholas Fattu, M.S., Instructor in Education
- Lucille Fisher, B.S., Instructor in Art Education
- Clifton A. Gayne, Jr., M.A., Instructor in Art Education
- Thomas R. Gibson, M.S., Instructor in Physical Education for Men
- Gladys L. Gilpin, B.S., Instructor in Home Economics Education
- Bertha Handlan, M.A., Instructor in Education
- Neith E. Headley, M.A., Instructor, Institute of Child Welfare
- Mary Frances Inman, M.S., Instructor in Home Economics Education
- Hedda Kafka, M.A., Instructor in Home Economics

Anna M. Krost, M.S., Instructor in Home Economics Education
 Clifford K. Lush, M.A., Instructor in Trade and Industrial Education
 Eleanor P. Marlowe, M.A., Instructor in Education
 Deborah Meader, B.A., Instructor in Education
 Marvel Mee, B.S., Instructor in Physical Education for Women
 Lucile G. Mo, M.A., Instructor in Commercial Education
 Hazel B. Nohavec, M.A., Mus.D., Instructor in Music Education
 Clarence Osell, M.S., Instructor in Physical Education for Men
 George Otterness, B.A., Instructor in Physical Education for Men
 Amy D. Peterson, B.S., Teacher in the Nursery School
 Shailer Peterson, M.A., Instructor in Education
 Gerald Prescott, B.A., Band Master and Instructor in Department of Music
 Gertrude D. Ross, M.S., Instructor in Art Education
 Ruth F. Segolson, M.S., Instructor in Home Economics Education
 W. W. Staudenmaier, M.A., Instructor in Education and Principal of Tuttle
 Elementary Demonstration School
 Lloyd Stein, B.S., Trainer, Physical Education for Men
 Walter W. Sturtevant, M.A., Instructor in Trade and Industrial Education
 Niels Thorpe, B.S., Instructor in Physical Education for Men
 Donald Torbert, M.A., Instructor in Art Education
 Mary Jo Walker, Ph.D., Instructor in Education
 Virgil R. Walker, M.A., Instructor in Education
 Dallas C. Ward, B.S., Instructor in Physical Education for Men
 Lucy M. Will, M.A., Instructor in Education
 Ernest Ziegfeld, B.S., Instructor in Art Education

TUTTLE ELEMENTARY SCHOOL

W. W. Staudenmaier, M.A., Instructor in Education and Principal
 Ruby Dahlin, B.S., Demonstration Teacher—Grade 3
 Velma Denny, M.A., Demonstration Teacher—Grade 2
 Ruby Johnson, B.S., Demonstration Teacher—Grade 3
 Margaret Ann Libert, B.S., Demonstration Teacher—Grade 6
 Katherine Michaelson, B.S., Demonstration Teacher—Grade 6
 Florence Pederson, B.S., Demonstration Teacher—Grade 2
 Leonora Persinger, Demonstration Teacher—Special
 Fay Rogers, M.A., Demonstration Teacher—Grade 1
 Jean B. Smith, B.S., Demonstration Teacher—Kindergarten
 Adele K. Solheim, B.S., Demonstration Teacher—Grade 5
 Norma Verbeck, B.S., Demonstration Teacher—Grade 4

UNIVERSITY HIGH SCHOOL

William S. Carlson, Ph.D., Associate Professor of Education and Director of the
 Training School
 James E. Curtis, M.A., Instructor in Physical Education and Assistant Director of
 the Training School
 Edgar B. Wesley, Ph.D., Professor of Education and Head of the Department of
 Social Studies, University High School
 Hubert P. Beck, M.A., Instructor in History
 Evelyn Bergan, B.A., First Library Assistant
 Mason R. Boudrye, B.Ed., Instructor in Science

Donald Castleberry, M.A., Instructor in History
 Margaret Day, B.S., Instructor in English
 Willis Dugan, M.A., Personnel Director
 Wilton B. Gundlach, M.A., Instructor in Mathematics
 Bertha Handlan, M.A., Instructor in English
 Eunice Hendrickson, B.S., Instructor in Home Economics
 Mabel E. Jackman, B.S., Librarian
 Raymond A. Kehl, M.A., Instructor in English
 Luroy C. Krumwiede, B.S., Instructor in Music
 Channing MacFadon, M.A., Instructor in French
 Eleanor P. Marlowe, M.A., Instructor in Latin
 George H. McCune, M.A., Instructor in History
 Dorothy McClure Merideth, M.A., Instructor in History
 William J. Micheels, M.A., Instructor in Industrial Education
 Margaret D. Nelson, M.A., Instructor in English and Associate Counselor
 Frances M. Obst, M.A., Instructor in Art Education
 Shailer Peterson, M.A., Instructor in Science
 J. Clark Rhodes, B.M., B.A., Instructor in Music
 Hugh M. Shafer, M.A., Associate Counselor
 Frans V. E. Vaurio, M.S., Instructor in Science and Mathematics
 Gerald B. Voelker, M.A., Instructor in English
 Mary Jo Walker, Ph.D., Instructor in French
 Virgil R. Walker, M.A., Instructor in Mathematics
 Lucy M. Will, M.A., Instructor in German

MEMBERS OF OTHER FACULTIES GIVING INSTRUCTION IN
THE COLLEGE OF EDUCATION

For a complete list of members of other faculties giving instruction in the College of Education, see the following bulletins:

College of Science, Literature, and the Arts
 College of Agriculture, Forestry, and Home Economics
 Medical School
 Institute of Technology
 School of Business Administration
 Division of Library Instruction
 Institute of Child Welfare

GENERAL INFORMATION

The College of Education is organized to offer professional curricula in the field of education, to promote research in the problems of education, and to provide educational guidance for prospective teachers and other educational workers in the schools. The completion of satisfactory curricula in this college entitles graduates to receive certificates for school work from the Minnesota State Department of Education. Such certificates are issued only to those graduating from this college.

Courses of study in the College of Education are based on the requirements of the Minnesota State Department of Education. Since requirements for certification vary in the different states, students who desire to teach in states other than Minnesota, should familiarize themselves with the regulations of the state in which they expect to teach.

Among the important undergraduate curricula offered by the college are those relating to teaching in the following fields: academic subjects in elementary and junior and senior high schools, agriculture, art, business subjects, home economics, industrial arts, music education, natural science, and physical education.

Work is also offered in the fields of library service, recreational leadership, school health work, teaching of subnormal children, work of the visiting teacher, nursery school and kindergarten education, nursing education, and public health nursing.

Five-year curricula leading to the master of education (M.Ed.) degree are offered in art education, industrial education, music education, natural science, physical education for men, and physical education for women.

Undergraduate and graduate courses are available in adult education, agricultural education, art education, clinical psychology, comparative education, educational administration, educational psychology, educational and vocational guidance, elementary education, higher education, history and philosophy of education, home economics education, industrial education, music education, physical education, professional education of teachers, radio education, secondary education, supervision, theory and practice of teaching, and visual education. For graduate work in education with major emphasis on one of these fields see the five-year curricula listed in this bulletin, and the Bulletin of the Graduate School.

ADMISSION

Admission as regular students.—Admission to regular standing in the College of Education may be effected in one of the following ways:

a. Completion of the requirements for admission to the College of Education as outlined below, or to the junior year of the College of Agriculture, Forestry, and Home Economics. This preparation involves the earning of 90 credits and 90 honor points exclusive of physical education and represents two years of work in a junior college. Students enter the College of Education as juniors and can usually complete the work for the B.S. degree in two years.

b. Graduation from the regular two-year course of the Minnesota state teachers colleges or of other fully accredited state teachers colleges. The College of Education grants 90 credits to such graduates.

c. Registration in one of the following four- or five-year specialized curricula in the freshman year, provided the requirements for admission to the University have been completed:

Art Education
Industrial Education
Music Education

Physical Education for Men
Physical Education for Women

In all other cases of four- or five-year curricula as outlined in this bulletin, the prescribed work of the first two years is to be taken prior to the student's entrance to the College of Education.

ENTRANCE REQUIREMENTS

All students who desire to prepare for teaching and who have not enrolled as freshmen in one of the four- or five-year curricula must register in the College of Education beginning with the junior year. They should enroll as pre-education students in the Junior College and consult an adviser in the College of Education as early in their course as possible.

ALL STUDENTS

1. At the time of entrance to the University a student must present a certificate from the Students' Health Service indicating that he is free from physical defects which would prevent him from the successful pursuit of educational work.
2. At the time of entrance to the College of Education the student will be given a general examination designed to show his capacity to pursue professional curricula in education.
3. Any student entering the College of Education after the first quarter of the freshman year must have a C average, or one honor point per credit on all work taken prior to entrance.
4. All students entering the College of Education must have the required physical education work.

STUDENTS IN SPECIALIZED CURRICULA

Students who are following one of the specialized curricula (pages 31-81) in which the work of the freshman and sophomore years is prescribed, should present for entrance the Junior College courses listed in their curriculum. Two years of work representing 93 credits for men and 95 credits for women carried with an average of one honor point per credit are required. For men 3, and for women 5, of these credits shall be in physical education.

Students with two years of college training who are lacking certain specific Junior College courses may be admitted to the College of Education and will make up deficiencies after enrollment in the College of Education. Such deficiencies, however, may delay graduation or necessitate extra summer work. All courses of a special curriculum or equivalents should be completed, altho it may not always be possible to complete the courses in the order listed.

STUDENTS WITH TWO YEARS OF WORK AT THE UNIVERSITY OF MINNESOTA

For students who have taken two years of work in the College of Science, Literature, and the Arts or equivalent work in a liberal arts college or junior college, entrance to the College of Education will be conditioned upon meeting the general and specific requirements outlined below:

1. In the freshman and sophomore years, men must complete three quarters of physical education; women must complete six quarters of physical education. For men 3 credits, and for women 5 credits, to be counted toward graduation from the College of Education, will be granted for the completion of the requirement in physical education. The total number of credits required for graduation will be 183 for men and 185 for women. No credit is granted for physical education in the College of Science, Literature, and the Arts but upon transfer to the College of Education, the student will receive credits and honor points earned in the various courses. Students will receive credit for courses in military and naval science and tactics.

2. A minimum of 93 credits for men and 95 credits for women carried with an average of one honor point per credit. For men 3, and for women 5, of these credits shall be in physical education. The remaining 90 credits shall be earned in the following groups of college courses:

- Group A English
- Group B Foreign languages: Classics, German, Romance Languages, Scandinavian
- Group C Social sciences: Anthropology, Economics, Geography, History, Political Science, Sociology
- Group D Natural sciences: Astronomy, Botany, Chemistry, Geology and Mineralogy, Physiology, Physics, Psychology, Zoology
- Group E Mathematics
- Group F Journalism, Philosophy, Speech, Fine Arts, or such courses in other colleges or departments of the University as are approved by the College of Education

3. Within the general requirements listed above, the student during his high school and Junior College years must have completed the required work indicated under A, B, C, and D below, and at least 20 credits in Groups B, C, and D must be completed in college.

SUBJECT	IN HIGH SCHOOL	IN COLLEGE
A. English	3 years	and 9 credits in composition
B. Language	3 years in one language or 2 years in one language or 1 year in one language	or 20 credits in one language and 10 credits in same language and 15 credits in same language
C. Social sciences	2 years	or 10 credits in one department
D. Natural sciences	2 years	or 10 credits in one department

NOTE.—In lieu of the specific course requirements indicated in the language group a student may elect a comprehensive examination in a chosen language to be conducted by a committee appointed by the dean of the College of Education.

4. Within the total credits stipulated under No. 2 a student must meet in fields of study which are represented in prevailing high school curricula, the following requirements: at least 15 credits in a major field and at least 10 credits in each of two minor fields. The purpose of this requirement is to prepare the student for the study of the advanced courses necessary to the completion of satisfactory teaching majors and minors.

5. The student must have completed 6 credits in general psychology.

6. Men must have completed 3, and women 5, credits in physical education.

7. Students with two years of college training who are lacking certain entrance requirements, such as science, language, or psychology, may be admitted to the College of Education and will make up all deficiencies after enrolment in the College of Education. Such students should consult the chairman of the Students' Work Committee.

8. Students admitted on probation are subject to the rule regarding evaluation of credits. (See page 10-11.)

9. Students in the College of Education may elect toward a degree a maximum of 24 hours in military training of which 6 credits are to be in the Basic Course and 18 credits from advanced R.O.T.C. courses. (See pages 18-19.)

10. A maximum of 27 credits is elective from courses in agriculture and home economics except in the special curricula in those fields.

Students in Agriculture and Home Economics.—Students expecting to receive certificates upon graduation to teach agriculture or home economics shall be registrants in the College of Education beginning with the junior year. Students in the College of Agriculture, Forestry, and Home Economics desiring a teacher's certificate in home economics or in agriculture shall, in addition to their registration in that college, register also in the College of Education. No formal application for transfer is necessary if such transfer is made at the beginning of the junior year. At least 90 credits, and honor points equal to the number of credits are required for admission to the junior class.

Students from the General College are admitted provisionally pending completion in a satisfactory manner of one year's work. (See rule regarding evaluation of credits, page 10-11.)

STUDENTS FROM OTHER COLLEGES

Students who transfer from other colleges with advanced standing are required to complete the work of the freshman and sophomore years as outlined in their curriculum or as outlined above in Junior College requirements (page 9). However, students who have had two full years of college work but lack specific entrance requirements, such as language, science, or psychology, may register in the College of Education and make up deficiencies after enrolment in the college. Such deficiencies may delay graduation or necessitate extra summer work.

New Students' Committee.—The faculty of the College of Education maintains a New Students' Committee, the duties of which are to assist students transferring from other colleges with advanced standing. Students in the special fields may secure help from the heads of their own departments in Physical Education, Art Education, Music Education, and Child Welfare. All academic majors in such fields as social studies, English, languages, or science, should communicate with Miss Dora V. Smith, chairman of the committee, or with Miss Jean H. Alexander, chairman of the Students' Work Committee, both at 206 Burton Hall. Instructions for Freshman Week and information concerning registration procedures and the location of major advisers will be mailed to advanced standing students on request. A transfer students' booth for the purpose of giving information during Freshman Week is maintained by upper classmen in the upstairs rotunda of Burton Hall.

Admission on probation.—Students with advanced standing who wish to enter the College of Education are admitted on probation if the average of the grades presented for admission is below that of the average mark required for graduation in the college from which they enter.

Evaluation of advanced standing credits.—All advanced standing is assigned provisionally only, pending the completion in a satisfactory manner of one year's work. The College of Education defines satisfactory as meaning an average of C (an average of 1.00 honor point per credit) or better (see page 14).

At the completion of one year's work a transfer student earning an honor point average of 1.00 shall be given all his transferred credits.

Any transfer student who at the completion of one year's work has earned an average of less than *one honor point per credit* shall be given transferred credits in amount determined by multiplying the number of transferred credits by the average honor point earned. For example, a student who presents 80 transferred credits and who during his first year here earns an average of .75 honor points will be given .75 of 80, or 60, transferred credits.

Transfer students who fail in their first year's study at the University to make an honor point average of 1.00, and therefore lose advanced standing credits, may have them all restored when and if at some later date the average honor point ratio is as much above 1.00 as the first year's honor point average was below 1.00. For example, a transfer student who in his first year's work makes an honor point average of .75 and thereby forfeits one fourth of his advanced standing credits, may have his forfeited credits restored when the honor point ratio for all his work at Minnesota is 1.25.

Evaluation of transferred credits will be made after three quarters' residence as a full-time student. As a basis for evaluation not less than 40 nor more than 50 Minnesota credit hours will be used in determining the honor point ratio.

Students with a B.A. degree.—Students already holding a B.A. or B.S. degree may in some cases register for the course Professional Training of Teachers. (See page 12.)

Prerequisites for senior work.—Students who transfer with three years of college work approximating 135 credits, must have had courses equivalent to Ed. 51A-B-C, Introduction to Secondary School Teaching, and courses in their major prerequisite to practice teaching in order to complete the work for a degree in one school year. For prerequisites for practice teaching see page 13.

STUDENTS FROM SCHOOLS OF NURSING

Students who specialize in nursing education or public health nursing and who desire a teacher's certificate register in the College of Education for the last 45 credits of work. A student who enters the University as a freshman spends five quarters in the College of Science, Literature, and the Arts, earning 75 credits. During the next ten quarters the student is registered in the School of Nursing taking required subjects and nursing practice. During the last three quarters the student is registered in the College of Education. For detailed statement see pages 60-63.

STUDENTS FROM TEACHERS COLLEGES

Graduates from the standard two-year course of the Minnesota state teachers colleges and of other fully accredited teachers colleges are admitted to the College of Education with 90 blanket credits. These credits are accepted in lieu of the Junior College requirements listed above but a student in a specialized field will be held for all the work of his curriculum.

Graduates of the three-year course in the state teachers colleges of Minnesota may receive not more than 113 quarter credits; credits earned in such three-year normal course shall be applied, in case they are deemed of equivalent merit, in the College of Education, to courses for supervisors in elementary grades, principals in state graded schools, teachers in junior high schools, or in normal school departments in high school; students coming from such three-year course shall not receive certificates for teaching high school subjects from the University without completing the prescribed courses of the University for such certificates or their equivalents.

Students who transfer from the third or fourth year of the degree course offered in Minnesota teachers colleges may receive credit for any part of their work in so far as such work is equivalent in subject-matter to courses offered in the College of Education.

Graduates of a five-year normal course, if individually recommended by the normal school president, are allowed 63 quarter credits and are admitted as unclassified students pending the completion of 27 additional credits.

Teachers of experience who are unable to meet the regular requirements for admission are admitted to the College of Education as unclassified students.

Graduates of state teachers colleges will not be permitted to take for credit, Psy. 1-2, General Psychology. Graduates of state teachers colleges should not take Ed. 61A-B-C without special permission.

STUDENTS WITH A BACHELOR'S DEGREE

Provision is made for a selected group of students who already have earned a Bachelor's degree in some other college and desire to complete their preparation for teaching and qualify for a teacher's certificate to do so in the shortest possible time by registering in the course Ed.W, Professional Preparation for Teaching. To be admitted to Ed.W, students must have a 1.7 average and the consent of the adviser for the course. Such students plan their complete program in conference with the adviser and must earn a minimum of 45 credits. All requirements of the curriculum chosen must be completed and all units of the course, totaling 45 credits, must be completed. Students who complete the course receive the bachelor of science degree and are entitled to certification by the Minnesota State Department of Education.

RESIDENCE REQUIREMENTS

The minimum term of residence in the College of Education is two years beginning as soon as the entrance requirements have been fulfilled.

Students may shorten the two years of residence only by meeting such additional requirements in quality and quantity of professional work as will make the training of such students equal to that of students regularly registered for two full years.

The required courses in education are arranged in a sequence for the junior and senior years and cannot be completed in less time except in unusual cases or by extra summer work. Students who have not completed the junior courses by the opening of the fall quarter will not, as a rule, be admitted to senior work. Students who do not enter the College of Education at the beginning of the junior year will not, as a rule, be able to complete the requirements of their curricula in two years.

A minimum of 45 credits in residence is required for graduation. Students who transfer from other colleges with three or more years of work receive a maximum of 135 credits. Students who transfer with 135 credits must, as a rule, enter in the fall and must be able to pass the required examinations and must have completed all requirements for practice teaching, in order to graduate in three quarters. In order to receive a certificate for teaching a student must be a graduate of the College of Education.

EXAMINATIONS AND REQUIREMENTS FOR REGISTRATION IN DIRECTED TEACHING

Registration for directed teaching in the senior year of the College of Education is subject to the approval of the director of student teaching. Such approval involves (1) a satisfactory report of the physical examination; (2) a satisfactory rating on the general English examination given during the junior year; (3) completion of all prerequisite courses in the major or satisfactory preparation in the major field; (4) satisfactory completion of all prerequisite courses in education; (5) satisfactory performance on all tests and examinations required by the committee on examinations; (6) a C+ average (1.5 honor points per credit) in all courses in the major; (7) the recommendation of the major adviser; (8) the completion of any specific requirements set up by the examination committee or by the major department or by the director of student teaching. A student may be required to cancel his registration in directed teaching if he fails to meet the requirements or if his work is unsatisfactory. The student who is required to cancel his registration in directed teaching during the second or third quarter will be allowed to graduate without a teacher's certificate provided all other requirements have been met.

GRADES, CREDITS, AND HONOR POINTS

Grades.—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 (failure), which may be removed only by a repetition of the work in the course, or, in exceptional cases, by examination by permission of the faculty concerned.

3. There shall be a Grade I (incomplete), which shall indicate that a student, for reasons satisfactory to the instructor in charge, shall have been unable to complete the work of the course. This grade shall be given only when the work already done has been of a quality acceptable for the completion of the course. Any student receiving this grade shall be given an opportunity to complete the said course within the first thirty days of his next quarter in residence.

4. There shall be a symbol, T (transferred), indicating the transfer of credit from another institution or from one college to another of the University of Minnesota. This symbol shall be provisional and subject to final evaluation by the faculty of the college or school to which the student is transferred.

The amount of work pursued by a student is estimated in credit hours; the quality or grade of his work, in honor points.

A credit hour is one hour per week of recitation or lecture work extending throughout one quarter, or three hours per week of laboratory work through one quarter. It is assumed that each credit hour will demand on the average three hours a week of the student's time for recitation or lecture, one hour in class and two hours of preparation; for laboratory courses, three hours in the laboratory.

Honor points are computed as follows: each credit hour with the grade of A entitles the recipient to 3 honor points; each credit hour with the grade of B 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.

AMOUNT AND QUALITY OF WORK FOR THE BACHELOR OF SCIENCE DEGREE

a. Upon entering the College of Education the student should, under advisement, (1) plan his program to secure one academic major and one or more academic minors and the required professional courses;* or (2) he should plan his program in accordance with one of the specialized curricula.

b. During his entire course the student must earn (1) 183 credits if a man or 185 credits if a woman, including the required courses in physical education, or a smaller number of credits determined as follows: For every 5 honor points in excess of one honor point per credit the number 183 or 185 is diminished by one, but no student will be recommended for graduation who has not completed all of the courses required in his particular curriculum and who has not satisfied all the requirements of his curriculum; (2) $1\frac{1}{2}$ honor points per credit or an honor point ratio of 1.5 in his *major subject*; and (3) an average of 1 honor point per credit or an honor point ratio of 1.0 in *all other courses* pursued during the junior and senior years.

c. Fifteen credits are regarded as the usual load. Students who register for more than 17 hours should have a record of $1\frac{1}{2}$ honor points per credit for the previous quarter. Students may be required to cancel one or more courses if their load is too heavy or their record is unsatisfactory.

d. All students registered in the College of Education shall maintain satisfactory standards of oral and written English. To determine when satisfactory standards have been attained the student is required to pass a general examination in English during the junior year.

e. Students registered as freshmen and sophomores in the College of Education will be guided by the faculty regulations of the College of Science, Literature, and the Arts, but are responsible to the Students' Work Committee of this college.

f. Students who register in specialized curricula in the freshman and sophomore years must have an average of one honor point per credit, or an honor point average of 1, for the first two years before they are admitted to junior work.

g. A student must have an honor point average of 1.5 or $1\frac{1}{2}$ honor points per credit in his major subject to be admitted to practice teaching in his senior year.

Honor points in the major.—Honor points are computed on the basis of one and one-half times the number of credits required in the major subject; e.g., in case a major recommendation requires 36 credits, the number of honor points will be 54. From among the courses carried in a department the student may select those which he will present as meeting this requirement except that he must include all courses which are specified in the departmental announcement as required for the recommendation for the certificate.

* For requirements in Education see pages 22-23.

UNSATISFACTORY WORK

Continued residence in the college is conditioned upon reasonable success in the student's work and progress toward graduation. Any student who does not make satisfactory progress in the course in which he is registered may be placed on probation by the Students' Work Committee. No student is considered to have a satisfactory standing who fails to secure in the course of any year the normal advance of one honor point for each credit for which he is registered and $1\frac{1}{2}$ honor points for each credit earned in his major subject.

Grades of D, E, and F are considered unsatisfactory. A student who is found to have unsatisfactory marks in 50 per cent of his work at the end of any quarter will be placed on probation.

If he fails to make satisfactory marks in more than 50 per cent of his work the following quarter, he is liable to be dropped. Only in exceptional cases will such a student be allowed to continue in the College of Education.

Any student who has been on probation for more than one quarter and who fails to make an average of one honor point per credit may be dropped by the Students' Work Committee. See also rule for evaluation of credits.

GRADUATION—DEGREES—HONORS

The degree of bachelor of science.—Students graduating from the four-year curricula of the College of Education will receive the degree of bachelor of science. A total of 183 credits and 183 honor points for men and 185 credits and 185 honor points for women is required for graduation. Candidates for this degree must (a) have met the requirements in a major and in a minor field and in professional subjects, or (b) they must have completed one of the specialized curricula. In addition they must have met the special scholarship requirements as stated on page 14. Candidates may major in any department listed on page 21.

Graduation with high distinction.—All graduates of the four-year curricula of this college who have attained *special excellence* in scholarship as evidenced by an honor point ratio* of 2.5 or more are candidates for the degree of bachelor of science *with high distinction*. This award is *not automatic* but is conditioned upon favorable recommendations of the faculty and is conferred by faculty action only. Other conditions that influence the award are the amount of advanced work taken by the student, the percentage of work taken at the University of Minnesota, evidence of ability to do independent work, and other conditions affecting scholastic standing.

Graduation with distinction.—All graduates of the four-year curricula of this college who have attained *excellence* in scholarship to the extent of having earned an average honor point ratio* of 2.0 or more are candidates for the degree of bachelor of science *with distinction*. This award is *not automatic* but is conditioned upon favorable recommendation of the faculty and is conferred by faculty action only. Other conditions that influence the award are the amount of advanced work taken by the student, the percentage of work taken at the University of Minnesota, evidence of ability to do independent work, and other conditions affecting scholastic standing.

The degree of master of education.—Students graduating from one of the five-year curricula in the College of Education will receive the degree of

* The honor point ratio is calculated by dividing the total number of honor points earned by the total number of credits earned. See pages 13-14.

master of education. A minimum of 225 credits (exclusive of the general required freshman and sophomore physical education courses) is required for this degree, together with the completion of all requirements of the curriculum. See below.

MASTER OF EDUCATION DEGREE

The College of Education grants the professional degree of master of education (M.Ed.) to students who satisfactorily complete the prescribed five-year programs. Five-year curricula are available in Art Education, Industrial Education, Music Education, Physical Education for Men, and Physical Education for Women. Five-year curricula in other fields are under development. Students register in the curricula named above at the beginning of the freshman year. In most cases the student who already has a Bachelor's degree in the field may qualify for the degree of master of education by completing all the requirements of the fifth year.

The general requirements for this degree include: (1) 90 quarter credits in academic fields; (2) a teaching minor in an academic field; (3) a broad major field (not subject) specialization, usually about 90 quarter credits; (4) 35 quarter credits in education including one quarter of internship under a master teacher. The total number of quarter credits is from 225 to 230, of which at least 45 must be in courses numbered above 100. In the courses comprising the fifth year of the curriculum, a B average (2 honor points per credit) is required. Final written and oral comprehensive examinations, and demonstration of teaching competence in teaching classes, are required.

GRADUATE WORK IN EDUCATION†

Graduate work in education leading to the degree of master of arts or doctor of philosophy may be pursued in the Graduate School. All courses bearing numbers 100 and above (with the exception of those designated by a capital "E") are open for credit to graduate students. Before attempting to make out their programs, graduate students in education should consult the dean of the College of Education and the dean of the Graduate School.

Graduate courses may be pursued during the Summer Session. The work for the Master's degree may ordinarily be completed in three or four Summer Sessions. For full statement of regulations, consult the Bulletin of the Graduate School.

Prerequisites for graduate work in education.—For major work the prerequisite is at least 6 quarter credits in psychology and in addition to this a total of not less than 18 quarter credits of undergraduate work in education which shall include Ed.51A-B-C or Ed.61A-B-C or the equivalent. For minor work at least six quarter credits in psychology, and, in addition to this, a total of not less than 18 credits of undergraduate work in education is required.

Candidates for a degree.—Students who have met the requirements for admission to the Graduate School and for the courses elected, may register for graduate courses in education, but are not candidates for a degree until the formal acceptance of their candidacy.

Language requirement.—Candidates for the Master's degree majoring in any of the fields of education are exempted from the foreign language requirement without petition. Candidates for the Doctor's degree will meet the requirement of the Graduate School.

† For complete description of graduate work in education see the Bulletin of the Graduate School.

Academic work.—Students who have taken their undergraduate work at teacher training institutions or have had an undergraduate major in professional or technical work should note especially the requirement in academic credits for admission to the Graduate School.

MAJORS AND MINORS

Major and minor work for advanced degrees may be arranged from the graduate courses listed below (pp. 82 to 115) under the following groupings:

Doctor's Degree

Major.—Major work will be chosen in the field of education in the following manner:

With the approval of his adviser the student will select a group of courses, excluding the field of his minor, centering about his special interest in education. Major fields are:

Education
Educational Administration
Educational Psychology

Minor.—Minors may be chosen as follows:

1. From one of the fields listed above, not representing the major, and from additional fields in education as listed below:

Education	Educational Psychology
Agricultural Education	History and Philosophy of Education
Curriculum and Instruction	Home Economics Education
Educational Administration	Industrial Education

2. Any other field of study offered in the University of Minnesota in which satisfactory courses of graduate character are available and which is obviously related to the field of major interest.

3. Students majoring in fields other than education may choose education or any of its subdivisions enumerated above under 1, as a minor when it appears that such a minor is appropriately related to a major field.

Master's Degree—Plan A

Major.—Majors may be chosen as follows:

The student, with the approval of his adviser, may select a group of courses in one of the fields listed below, excluding the field of his minor, centering about his special interest in education.

Agricultural Education	Educational Psychology
Curriculum and Instruction	History and Philosophy of Education
Education	Home Economics Education
Educational Administration	Industrial Education

Minor.—Minors may be chosen as follows:

1. From any of the groupings of courses enumerated above when such grouping is not included in the major.

2. From any other field of study offered at the University of Minnesota in which satisfactory courses of graduate character are available and which is obviously related to the major field.

3. Students majoring in fields other than education may choose education or any of its subdivisions enumerated above as a minor when it appears that such a minor is appropriately related to the major field.

Master's Degree—Plan B

Field of concentration.—Under Plan B, which encourages a wider selection of courses, the student will be expected to select a field of concentration in which he will attain from 21 to 27 credit hours. The field of concentration differs from a major in that it encourages the choice of a somewhat wider range of courses related to the student's interest. As in the case of the major, however, the student will be expected to indicate his field of concentration according to the general arrangement of courses that prevails for the requirement of a major. This arrangement is as follows:

Agricultural Education	Educational Psychology
Curriculum and Instruction	History and Philosophy of Education
Education (in special cases)	Home Economics Education
Educational Administration	Industrial Education

Additional courses.—The student may elect the additional courses required to complete the total of 45 credits from areas of education not included in the field of concentration and from any other fields of study offered at the University of Minnesota in which satisfactory courses of graduate character are available and which is obviously related to the student's interest. Further work in subject-matter areas is encouraged.

Candidates for the Master's degree under Plan B are expected to earn 9 credits in advanced courses involving papers prepared in independent study. This requirement may be satisfied in starred courses.

MILITARY SCIENCE AND TACTICS

Credit for advanced courses in military science.—A graduate of a Basic Course, R.O.T.C., who expects to remain in the University at least two more years, may be selected by the professor of military science and tactics to pursue an Advanced Course, provided he signs a contract with the University and the government by which he agrees to complete the Advanced Course, R.O.T.C., in this or any other institution where such course is given, to devote five hours per week to the military training prescribed, and to attend one summer training camp.

In any course of study (given entirely within this college) leading to the degree of bachelor of science, the total number of credits required for graduation will be reduced by eighteen for any student who completes the work of a two-year Advanced Course, R.O.T.C.

A student enrolled in an Advanced Course, R.O.T.C., is provided with a regulation officer's uniform and receives from the government a fixed monetary allowance while enrolled in this course, except during the period of summer training camp, when he is paid at the rate prescribed for the seventh grade in the Army.

All students who complete the Advanced Courses, R.O.T.C., if recommended by the professor of military science and tactics and the president of the University, will be commissioned in the Officers' Reserve Corps, Army of the United States.

NAVAL SCIENCE AND TACTICS

The University of Minnesota is one of nine universities to offer United States naval training. The Naval Reserve Officers' Training Corps of the University of Minnesota provides for selected, physically qualified male students, a four-year course which leads to a commission as ensign, United States Naval Reserve, or as second lieutenant, United States Marine Corps Reserve, provided the candidate applies for the commission, obtains a degree from the University, is recommended

by the professor of naval science and tactics, and passes a prescribed physical examination.

The courses in Naval Science and Tactics are divided into two groups, Naval Science and Navigation. Navigation is covered in three quarters at the convenience of the student. Naval Science 1f-2w-3s (First Year Basic Course) and 4f-5w-6s (Second Year Basic Course) with Navigation comprise the Basic Course in Training. Naval Science 7f-8w-9s and 10f-11w12s, plus any incomplete navigation, comprise the Advanced Course.

N.R.O.T.C. practice cruises on board battleships, cruisers, and destroyers in the Atlantic or Pacific are held annually during the summer. Attendance at one Advanced Course cruise is required as a prerequisite to a commission, but all N.R.O.T.C. students are eligible for a cruise each summer.

The Basic Course in Naval Science requires two hours of classroom work and one hour of drill per week for which $1\frac{1}{2}$ credits per quarter are accepted towards graduation. The Advanced Course requires three hours of classroom work and one hour of drill per week for which 3 credits per quarter are allowed. The Navigation Course requires three hours of classroom work per week for which 3 credits per quarter are allowed. Naval science credits and navigation credits are accepted as fulfilling degree requirements.

Uniforms and equipment are furnished to students by the government without charge. All textbooks used are lent to the students. All N.R.O.T.C. students attending cruises are furnished transportation and subsistence. Students enrolled in the Advanced Course are paid monthly commutation of subsistence by the Naval Department, and cruise pay on the Advanced Course cruise. The total pay received from the government amounts to about one hundred ninety dollars (\$190) for the two years in the Advanced Course.

All prospective candidates for the N.R.O.T.C. *must* apply in person to the professor of naval science and tactics, University of Minnesota, before registering for the course, as enrolments are limited by law and a prescribed physical examination must be taken before the candidate can be considered.

Navigation courses given by the Department of Naval Science and Tactics are open to all university students. See Bulletin of College of Science, Literature, and the Arts and Combined Class Schedule.

LABORATORY SCHOOLS

The University High School is a six-year secondary school maintained by the College of Education to provide opportunity for observation, demonstration, experimentation, and research. Many students do their practice teaching in the University High School. W. S. Carlson principal of the school, is the director of student teaching.

Other demonstration schools affiliated with the College of Education are: Tuttle School, Minneapolis, W. W. Staudenmaier, principal; Galtier School, St. Paul, Jessie L. Whitman, principal; Groveland School, Groveland, Minnesota, Frank L. Van Alstine, principal.

BUREAUS OF RECOMMENDATIONS AND RESEARCH

Bureau of Recommendations.—Graduates of the College of Education and graduate students in education who have met the requirements for a state teacher's certificate will be recommended for positions for which they are qualified. Senior

students on the Minneapolis campus should register with the Bureau of Recommendations, 208 Burton Hall. The fee is \$4 and entitles the student to one year of placement service.

Bureau of Educational Research.—The College of Education conducts a Bureau of Educational Research for the purpose of promoting investigations by faculty and students in problems of education. The bureau is under the direction of the dean of the college and the members of the faculty co-operate as their several interests dictate. Through the bureau opportunity is given for co-operation with public schools in studies bearing upon problems of school administration, classroom instruction, and related matters. The bureau is responsible for the publication of a series of studies under the general title of Educational Monographs.

SPECIAL FEES

All methods courses and all special methods and directed teaching courses carry a fee of \$1 per credit hour. All courses listed under Curriculum and Instruction and Methods and Directed Teaching carry a fee of \$1 per credit. Certain courses in the various departments require the payment of special fees. Such fees are indicated in connection with the course descriptions in this bulletin and with the schedule of courses as listed in the College of Education section of the Combined Class Schedule. For a statement of tuition and other fees see the Bulletin of General Information.

PROFESSIONAL LECTURES

From time to time during the year lectures of general interest to students of education will be given by members of the faculty and invited speakers. All students in the College of Education are expected to attend these lectures. Special announcements will appear in the Official Daily Bulletin.

CONFERENCES FOR STUDENT TEACHERS

Conferences for student teachers are arranged during the school year by the director of student teaching. Such conferences are a part of the required work in all courses that include directed teaching and practice work. Discussion centers around professional topics and problems of interest to student and beginning teachers. Detailed announcement of the series is made at the opening of the fall quarter.

CERTIFICATION OF TEACHERS

Employment in a professional capacity in the schools of Minnesota is conditioned upon the proper licensing of the person to be employed. By a law enacted in 1929 all authority for such certification is conferred upon the State Department of Education. Certification by institutions and the university teacher's certificate have been discontinued. Within the scope of this law the University operates its program for those students who desire certification for teaching in the public schools of this state.

The law provides that certification is automatic for the graduates of the College of Education who have completed specifically named curricula in this college. No provision is made for the certification of any other university graduates. Certificates may be issued only to those persons who are "physically competent and morally fit to teach." The various curricula in the College of Education

provide the training necessary for any type of state certificate which is based upon four or five years of training beyond the high school.

Four-year programs of study which provide the training necessary for holding positions in the public schools of Minnesota are offered in the following subjects:

Agriculture	Natural Science
Art Education	Nursery School and Kindergarten Education
Botany	Nursing Education
Chemistry	Physical Education for Men
Commercial Education	Physical Education for Women
Elementary Education	Physics
Elementary School Supervision	Political Science
English	Public Health Nursing
French	Recreational Leadership
Geography	Scandinavian
German	Social Studies
History	Sociology
Home Economics	Spanish
Industrial Education	Speech
Junior High School Education	Speech Pathology
Latin	Teaching Subnormal Children
Library Methods	Visiting Teachers
Mathematics	Zoology
Music Education	

Students who desire certification upon graduation from the University of Minnesota shall be registrants in the College of Education beginning with the junior year. Students in home economics and agriculture shall also be registrants in the College of Agriculture, Forestry, and Home Economics. They shall have satisfied the prescribed requirements for a major and a minor in secondary school subjects or the specific requirements of a specialized curriculum as outlined in this bulletin. Such students will also be required to complete the two years' work leading to the degree of bachelor of science. No certificate is granted without a degree from the College of Education.

By a proper selection of courses students qualifying for the degree of bachelor of science may qualify for teaching in more than two fields. This is desirable since most beginning teachers in public schools are required to teach several subjects.

Because the regulations and requirements in subject-matter fields and in education necessary for certification in different states are constantly changing, students who plan to teach in states other than Minnesota should consult their major advisers in order that they may fully complete the requirements for the specific state in which they wish to teach.

PROFESSIONAL REQUIREMENTS

FOR TEACHERS OF SECONDARY SCHOOL SUBJECTS

In order to qualify for the Minnesota state high school standard certificate in secondary school subjects the student must be a graduate of the College of Education. To qualify for a degree and for the certificate students not completing a specialized curriculum as set forth in this bulletin will meet the following requirements:

- A. One academic major.
- B. One or more academic minors.

Majors and minors must be selected from the subjects commonly taught in high schools. Students should elect majors and minors early in their college course and with regard to the demands of high schools. By careful selection of courses students may complete two or more minors thus qualifying them to teach in several different fields. The following pages list the fields in which majors and minors are offered and the requirements in each field.

- C. Professional courses totaling not less than 26 credits.

The student preparing for high school teaching in academic subjects must meet the following professional requirements:

1. Required course.—General.—Ed.51A-B-C. Introduction to Secondary School Teaching. (9 cred.; prereq., Psy. 1-2.)

This course consists of work in educational psychology, the high school, and the technique of high school instruction.

2. Methods and practice teaching.—In addition, the student must complete a *Special Methods and Directed Teaching Course* (9 cred.; prereq., Ed.51A-B-C and passing the comprehensive examination) in his major field and a course in Special Methods in his minor field (3 or 4 cred.; prereq., Ed. 51A-B-C and passing the comprehensive examination).

3. Education electives.—To complete the professional requirement of at least 26 quarter credits required for this degree and the teacher's certificate the candidate will elect additional credits, under faculty advisement, from among the following subjects:

Course No.	Title	Credits	Prerequisite Courses
H.Ed. 71	Brief Course in the History of Education	5	Psy. 1-2
H.Ed. 73	Educational Sociology	3	Psy. 1-2
H.Ed. 76	Philosophy and American Education.....	3	Psy. 1-2
H.Ed. 101	Historical Foundations of Modern Education	3	Psy. 1-2
H.Ed. 102	History of Modern Secondary and Higher Education	3	Psy. 1-2
H.Ed. 103	History of Modern Elementary Education	3	Psy. 1-2
H.Ed. 131	Comparative Education	3	9 hrs. in ed.
H.Ed. 176	Conflicting Issues in Modern Education....	3	Psy. 1-2
H.Ed. 179	Critical Thinking for Teachers.....	3	Psy. 1-2
H.Ed. 180	The School and the Social Order.....	5	12 hrs. in soc. sci.
Ed.C.I. 113	The High School Curriculum.....	3 or 4	9 hrs. in ed.
Ed.C.I. 119	The Elementary School Curriculum.....	3	9 hrs. in ed.
Ed.C.I. 121	Educational Advising of Women and Girls	3	15 hrs. in ed.
Ed.C.I. 122	Literature for Adolescents.....	2	See departmental statement
Ed.C.I. 135	Teaching of Occupations and Group Guidance	2	9 hrs. in ed.

Course No.	Title	Credits	Prerequisite Courses
Ed.C.I. 144	Teaching of Reading in Upper Grades and Junior and Senior High Schools.....	2	9 hrs. in ed.
Ed.C.I. 169	Extra-curricular Activities	2 or 3	9 hrs. in ed.
Ed.Ad. 124	Public School Administration	3	10 hrs. in ed.
Ed.Ad. 133	Guidance in Secondary Schools.....	2 or 3	9 hrs. in ed.
Ed.Ad. 167	The Junior High School.....	3	9 hrs. in ed.
Ed.Psy. 120	Basic Principles of Measurement.....	3	Ed.Psy. 60 or equiv.
Ed.Psy. 140	Construction and Use of Educational Tests and Examinations	3	Ed.Psy. 120 or equiv.
Ed.Psy. 146-147	Child Guidance	4	15 hrs. in ed. and psy.
Ed.Psy. 157	Psychology of Child Development	2 or 3	Ed. 51A or equiv.
Ed.Psy. 158	Psychology of Adolescence.....	3	Ed. 51A or equiv.
Ed.Psy. 159	Personality Adjustments in Education	3	9 hrs. in ed. and psy.
Ed.Psy. 183	Education of Gifted Children.....	2 or 3	Ed. 51A or equiv.
ArtEd. 189	Application of Esthetic Theory to Public Education	3	See departmental statement
Ind. 105	Industrial Education	3	See departmental statement
Ind. 110	Guidance in the Schools.....	3	Ed. 51A or equiv.
P.M.&P.H. 59	Health of the School Child	3	P.M.&P.H. 4, 51, 52, or 53

DIRECTED TEACHING*

Special methods and student teaching are normally combined into a one-year course extending throughout the senior year. Failure to register for such course for the fall quarter of the senior year will probably result in delay in graduation. All courses prerequisite to special methods and practice teaching, including the final comprehensive examination in Ed. 51A-B-C, should have been completed by the beginning of the senior year. In addition to the special methods and practice teaching course in the subject which the student wishes to teach he must satisfy the requirements for a major or minor in that subject according to his curriculum. By the beginning of his senior year he should have made adequate preparation, particularly in his major teaching field, for successful directed teaching in high school classes.

Arrangements for directed teaching should be made at the close of the junior year and before the student registers for other courses. In the academic subjects arrangements should be made through Mr. William S. Carlson, director of student teaching, and in the special subjects through the major advisers.

* See prerequisites for Methods and Directed Teaching, page 13.

MAJORS AND MINORS IN ACADEMIC SUBJECTS

BOTANY

Major adviser.—Professor F. K. Butters.

For curriculum in natural science, see pages 58-59.

Botany as a major subject:

Course No.	Title	Credits
Bot. 1	General Botany	4
Bot. 2	Elementary General Morphology of Plants	3
Bot. 5	Elementary Plant Histology	3
Bot. 7	Taxonomy of Flowering Plants	3
Bot. 21	Elementary Ecology	3
Bot. 22	Elementary Plant Physiology	3
Bot. 61	Thallophytes	3
Bot. 62	Bryophytes and Pteridophytes	3
Additional credits	.....	5
Total credits		30

Botany as a minor subject:

Bot. 1, 2, 7, 21, 22 and 3 additional credits.

CHEMISTRY

Major adviser.—Professor Palmer O. Johnson.

For curriculum in natural science, see pages 58-59.

Chemistry as a major subject:

Course No.	Title	Credits
Inorg. Chem. 9-10	General Inorganic Chemistry	10
Inorg. Chem. 12	Qualitative Chemical Analysis	5
Anal. Chem. 7	Quantitative Analysis	4
Org. Chem. 51-52	Elementary Organic Chemistry	10
Additional credits	.....	10

Chemistry as a minor subject:

Inorg. Chem. 9-10, 12; Anal. Chem. 7; six additional credits in chemistry.

Students without entrance credits in chemistry register for Inorg. Chem. 6-7, 8 instead of 9-10.

ENGLISH

Major advisers.—Professor Dora V. Smith, Associate Professor C. W. Nichols.

English as a major subject:

Course No.	Title	Credits
Eng. 22-23	Introduction to Literature	10
Eng. 55-56	Shakespeare	6
Eng. 73-74	American Literature	6
Comp. 27-28	Advanced Writing	6
Speech 1-2	Fundamentals of Speech	6
Additional credits, all of which must be secured in courses numbered 100 or above	.....	6
Total credits		40

Course No.	Title	Credits
English as a minor subject:		
Eng. 22-23	Introduction to Literature	10
Eng. 55-56	Shakespeare	6
Eng. 73-74	American Literature	6
Comp. 27-28	Advanced Writing	6
Total credits		28

GEOGRAPHY

Major adviser.—Professor D. H. Davis.

For curriculum in social studies, see pages 76-77.

Geography as a major subject:

Twenty-eight credits from the following courses:

Course No.	Title	Credits
Geog. 11	Human Geography	5
Geog. 41	Geography of Commercial Production	5
Geog. 43	Political Geography	5
Geog. 47	Geography of Minnesota	3
Geog. 53	Historical Geography of North America	3
Geog. 71	Geography of North America	3
Geog. 101	Geography of Europe	3
Geog. 102	Trade Routes and Trade Centers	3
Geog. 110	Geography of South America	3
Geog. 111	Cartography and Graphic Representation	3
Geog. 120	Geography of Asia	3
Geog. 133	Climatology	3
Geog. 241	Field Course	3
Geog. 251-252-253	Seminar in Geography	3

Five or six additional credits from the following courses in geology:

Geol. 1-2	General Geology (Dynamic and Historical)	6
Geol. 1-3	General Geology (Dynamic and Economic)	6
Geol. 8	Introductory Geology	5

Total credits, minimum

Geography as a minor subject:

Eighteen credits selected from the following courses:

Geog. 11 or 41 (preferably 11), 53, 71, 101, 102, 110, 120

GERMAN

Major adviser.—Professor O. C. Burkhard.

German as a major subject:

Course No.	Title	Credits
Ger. 50-51-52	Composition	6
Ger. 53-54-55	Conversation	3
Ger. 56-57	Essay Writing	6
Ger. 58	German Pronunciation	2
Ger. 68	Survey of German Literature	3
Additional credits in courses numbered above 4		15
Total credits		35

German as a minor subject:

Ger. 50-51-52	Composition	6
Ger. 58	German Pronunciation	2
Additional credits in courses numbered above 4		8
Total credits		16

HISTORY

Major adviser.—Professor A. C. Krey.

For curriculum in social studies, see pages 76-77.

History as a major subject:

Total number of credits	45
At least 18 credits must be in Senior College courses. In the senior year students, if they have maintained to the end of the junior year an honor point average of 1.5 in all work and an average of 2.0 in courses in history taken after the freshman year, may take at least one course numbered above 150; all other majors will take an additional survey course in the senior year, but will not take a course numbered above 150.	

History as a minor subject:

A minimum of 18 credits of which no fewer than 9 are in Senior College courses.

No major recommendation to teach history will be given unless the student has taken at least the general course in American History, Hist. 20-21-22, or equivalent.

JOURNALISM

Minor adviser.—Professor Ralph D. Casey.

Journalism as a minor subject:

Course No.	Title	Credits
Jour. 13	Introduction to Reporting	3
Jour. 41	Editing for Nonmajors	3

Twelve credits in Senior College courses, including Jour. 69 and 82, and 6 additional credits in Senior College courses. Course 55 or 103 is recommended. Ed.T. 74, Teachers Course in Journalism, is also required.

LATIN

Major adviser.—Professor Robert V. Cram.

Latin as a major subject:

Eighteen credits including:

Course No.	Title	Credits
Lat. 73-74-75	Prose Composition	3
Lat. 111-112-113	Advanced Prose Composition	3

Additional courses in Latin including two with numbers between 50 and 100 and two with numbers above 100.

Latin as a minor subject:

Nine credits including Lat. 73-74-75 and any two courses with numbers above 50.

Sequence of courses in Latin.—Students who have had no Latin in high school will take Courses 1, 2, 3, 11, 12, and any course numbered between 50 and 100. Students entering the University with one year of high school Latin will take Courses 3, 11, 12, and any course numbered between 50 and 100. Students entering with two years of Latin will take 11, 12, and any course numbered between 50 and 100. Students entering with three years of Latin will take 12, and any course numbered between 50 and 100. Students with four years of high school Latin will take 73-74-75 and any two courses numbered between 50 and 100.

MATHEMATICS

Major adviser.—Associate Professor A. L. Underhill.

Mathematics as a major subject:

Prerequisite courses: Solid Geometry (entrance credit or its equivalent);† Higher Algebra taken either in high school or college. Mathematics 20 (The Mathematics of Investment) is strongly recommended as an elective.

Course No.	Title	Credits
Math. 6	Trigonometry	5
Math. 7	College Algebra	5
Math. 30	Analytic Geometry	5
Math. 50	Calculus I	5
Math. 51	Calculus II	5
Additional credits in courses numbered over 51.....		8
Total credits		33

Mathematics as a minor subject:

Prerequisite courses: Solid Geometry (entrance credit or its equivalent);† Higher Algebra taken either in high school or college.

Course No.	Title	Credits
Math. 6	Trigonometry	5
Math. 7	College Algebra	5
Math. 30	Analytic Geometry	5
Math. 50	Calculus I	5
Additional credits in courses numbered over 50.....		3
Total credits		23

PHYSICS

Major adviser.—Professor J. W. Buchta.

For curriculum in natural science, see pages 58-59.

Physics as a major subject:

Course No.	Title	Credits
Phys. 7-8-9	General Physics	15
Phys. 52	Laboratory Arts	3
Phys. 107-109-111	Modern Physics	9

Additional credits selected from the following:

Phys. 110-112	Modern Experimental Physics (3 or 4 cred. per qtr.).....	} 6
Phys. 124	Pyrometry (3 cred.)	
Phys. 134	Experimental Optics (3 or 4 cred.).....	
Phys. 144	Electricity Measurement (3 cred.).....	
Total credits		33

† 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 General Extension Division in night school or by correspondence study; (2) by passing a college entrance examination or a special examination given by the Department of Mathematics.

Physics as a minor subject:

Phys. 7-8-9	General Physics	15
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Additional credits selected from the following:

Phys. 52	Laboratory Arts (3 cred.)	} 6
Phys. 107-109-111	Modern Physics (3 cred. a qtr.)	
Phys. 134	Experimental Optics (3 or 4 cred.)	
Phys. 144	Electricity Measurements (3 cred.)	

Total credits	21
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POLITICAL SCIENCE

Major adviser.—Professor E. M. Kirkpatrick.

For curriculum in social studies, see pages 76-77.

Political Science as a major subject:

Thirty-six credits including:

Course No.	Title	Credits
Pol.Sci. 1-2-3	American Government and Politics	9

Additional courses in Political Science to the extent of 27 credits, including 7 or 15 or 25 and 12 credits in Senior College courses.

Political Science as a minor subject:

Eighteen credits including:

Course No.	Title	Credits
Pol.Sci. 1-2-3	American Government and Politics	9

Additional courses in Political Science to the extent of 9 credits, including either 7 or 15 or 25. At least 3 credits must be in Senior College courses.

ROMANCE LANGUAGES

Major advisers.—French: Professor F. B. Barton, Assistant Professor H. E. Clefton.

Spanish: Associate Professor W. T. Pattison.

French as a major subject:

Thirty-five credits in courses numbered above 4 including:

Course No.	Title	Credits
French 70-71-72	Survey of French Literature (or 73-74)	9
	and	
	One other literary course	3 to 9
French 50	French Pronunciation	3
French 53	French Composition	} 7
and		
French 54-55	French Conversation	
or		
French 20	Oral and Written French	5
French 63	Advanced French Composition	3
French 103-104-105	French Syntax and Composition	3

French as a minor subject:

Seventeen credits in courses numbered above 4, including 70-71-72 or 73-74.

For majors and minors in other Romance languages consult adviser.

Spanish as a major subject:

Thirty-two credits in courses numbered above 4 including:

Course No.	Title	Credits
Span. 68-69	Survey of Spanish Literature (or 74-75-76).....	10
	One other literary course.....	3-9
Span. 50	Spanish Pronunciation	3
Span. 53 and Span. 54-55 or Span. 20 Span. 60	Spanish Composition } Spanish Conversation } Oral and Written Spanish	7 5 3
	Advanced Spanish Composition	3

Spanish as a minor subject:

Seventeen credits in courses numbered above 4.

SOCIOLOGY

Major adviser.—Professor Clifford Kirkpatrick.

For curriculum in social studies, see pages 76-77.

Sociology as a major subject:

Thirty-six credits including 1, 6, and 14.

Course No.	Title	Credits
Soc. 1	Introduction to Sociology	5
Soc. 6	Social Interaction	3
Soc. 14	Rural Sociology	3
Additional credits		25

Students majoring in sociology must complete two teaching minors in addition to the required professional courses. Teachers of experience who already hold a teacher's certificate and do not desire further certification may be relieved of this requirement upon petition.

Sociology as a minor subject:

Nineteen or twenty credits including Soc. 1, 6, and 14.

SPEECH

Major advisers.—Professor F. M. Rarig, Associate Professors Bryng Bryngelson, C. Lowell Lees.

For curriculum in speech pathology, see pages 77-78.

Speech as a major subject:*

Course No.	Title	Credits
Speech 1-2-3 or Speech 5-6	Fundamentals of Speech	9 10
Speech 31-32	Introduction to the Theater	6
Speech 55-56	Argumentation and Debating	6
Speech 61	Speech Hygiene	3
Speech 67	Phonetics	3
Speech 81-82	Interpretative Reading	6
Speech 121-122	Advanced Speech Problems	6
Total		39 or 40

* Students are advised to take Psy. 4-5 or 7. Students expecting to major in Speech should consult a major adviser as early as possible in their Junior College course.

Speech as a minor subject:

A minimum of 27 credits including Speech 1-2-3 or 5-6; and fifteen additional credits chosen in conference with the adviser. Differential sequences are recommended according to whether the student is primarily interested in general speech, the theater, or speech pathology.

All students majoring or minoring in Speech must present satisfactory evidence of interest and effective participation in one or more activities, such as debating, dramatics, oratory, public reading, or public speaking. Speech majors are required to have two minors.

Because of the close relation between English and speech in the high schools in Minnesota, students majoring in Speech must have one of their minors in English.

Students intending to take further work in speech correction, specializing in that field of speech alone, should include in their undergraduate course Physiology 4.

Students majoring in speech register for methods and directed teaching in Ed.T. 88A-B-C and do part of their work in English.

ZOOLOGY

Major adviser.—Professor J. E. Wodsedalek.

For curriculum in natural science, see pages 58-59.

Zoology as a major subject:

Course No.	Title	Credits
Zool. 1-2-3	General Zoology	10
Zool. 52	Introductory Entomology	5
Zool. 53	Faunistic Zoology	5
Zool. 75	Nature Study	3
Zool. 83	Introduction to Genetics and Eugenics	3
Physiol. 4	Human Physiology	4

Zoology as a minor subject:

Minimum of 18 credits including Zool. 1-2-3, 53, and 75.

SPECIALIZED CURRICULA

ADMINISTRATION AND SUPERVISION

See statements under Curriculum and Instruction and Educational Administration. See also Bulletin of the Graduate School.

AGRICULTURAL EDUCATION

Major adviser.—Professor A. M. Field.

Students who have completed the required work of the freshman and sophomore years of the Technical Agriculture Curriculum of the College of Agriculture, Forestry, and Home Economics, or equivalent, may prepare to teach agriculture in the public schools by completing the junior and senior years in a combined curriculum of the College of Education and the College of Agriculture, Forestry, and Home Economics.

GENERAL REQUIREMENTS

1. The student must complete the requirements for all students in the College of Agriculture, Forestry, and Home Economics. See all-college requirements on page 10 of the bulletin of that college.

2. This curriculum requires 204 credits for graduation, including 5 credits of observation and supervised teaching.

3. An average honor point ratio of 1.5 is required in 18 courses out of the 24 courses listed, as follows: Agr.Econ. 40, 102, 103; Agr.Eng. 4, 13, 40; Agron. 21, 23, 31; An.Husb. 3, 4, 56, 57, 112; Poul.Husb. 1; Dy.Husb. 1, 101; Ent. 5; Hort. 6; Pl.Path. 1; Soils 9; Vet.Med. 50, 51, 52.

4. Certification requirements for teaching vocational agriculture in Minnesota include a provision that applicants must have lived on a farm until the age of sixteen or have had two full years of farm experience after the age of sixteen.

FRESHMAN AND SOPHOMORE YEARS

The work of the freshman and sophomore years may be completed in one of the following ways, Plan I or Plan II, as listed below.

I. By completing the requirements in the Technical Agriculture Curriculum. See pages 20-22 of the Bulletin of the College of Agriculture, Forestry, and Home Economics.

II. By completing the *recommended curriculum* given below. This curriculum includes most of the freshman-sophomore work of Technical Agriculture but has some additions, omissions, and rearrangements in course sequences to insure programming of required subjects. A few freshman-sophomore subjects are postponed to the junior-senior years.

Freshman Year

Course. No.	Title	Credits
Agr.Ed. 1	Introduction to Agricultural Education	1
Agr.Eng. 13	Gas Engines	3
Agr.Eng. 23	General Physics (Not required of students who present a year of high school physics)	5
Agr. Eng. 40	Mechanical Training	3

COLLEGE OF EDUCATION

Course No.	Title	Credits
Agron. 1	General Farm Crops*	3
An.Husb. 1	Livestock Production	3
Bot. 1	General Botany, and 3 credits to be elected.....	7
Dy.Husb. 1	Elements of Dairying	3
Hort. 6	Fruit Growing	3
Inorg.Chem. 1-2-3	General Inorganic Chemistry }	12 or 10
	or	
Inorg.Chem. 9-10	General Inorganic Chemistry }	5
Math. 1	Higher Algebra† }	
	or	
Agr.Eng. 11	Applied Mathematics }	1
Orient. 1	Freshman Orientation Lectures	
Rhet. 1,2,3	Rhetoric I, II, III	9

Sophomore Year

Course No.	Title	Credits
Agr.Biochem. 4	Introduction to Organic and Biochemistry.....	5
Agr.Econ. 1,2	Principles of Economics I, II.....	8
Agr.Eng. 4	General Woodworking	3
Agron. 31	Principles of Genetics	4
An.Husb. 3	Breeds of Livestock	3
An.Husb. 4	Breeds of Livestock }	2 or 3
	or	
Dy.Husb. 104	Dairy Stock Selection }	5
Bact. 53	General Bacteriology	
Ent. 52	Introductory Entomology }	5
	or	
Ent. 5	Economic Entomology }	3
Pl.Path. 8	Weeds	
Poul.Husb. 1	Poultry Production	3
P.M.&P.H. 3	Personal Health	2
Soils 9,10	Soils I, II	5
Zool. 14-15	General Zoology	6

JUNIOR AND SENIOR YEARS

Students in Agricultural Education will be registered, beginning with the junior year, in both the College of Education and the College of Agriculture, Forestry, and Home Economics.

Special attention of every student is called to the faculty regulations for classification in the junior class, page 11 of the Bulletin of the College of Agriculture, Forestry, and Home Economics.

It is recommended that the student keep in mind the possible completion of majors or minors in some agricultural groups.

Junior Year

Course No.	Title	Credits
Rhet. 51	Exposition	3
	Social Science	10
Ed. 51A	Introduction to Secondary School Teaching.....	3
Agr.Ed. 54	Rural Education and Community Leadership.....	2
Agr.Ed. 81	Teaching Agriculture	3

* May be omitted by students who took vocational agriculture in high school, provided Agron. 132 or 133 will be taken.

† Students will be exempt from Math. 1 if they pass the placement test given by the Department of Mathematics requiring the equivalent of Math. 1, Higher Algebra. For any exemption the student will be required to substitute an equivalent number of credits, mathematics, or electives, as approved by his adviser.

From the following courses the student will be required to take those courses designated and approved by his adviser :

Course No.	Title	Credits
Agr.Biochem. 6	Animal Biochemistry	5
	or	
Agr.Biochem. 5	Plant Biochemistry	3
Agr.Econ. 40	Principles of Marketing Organization	
Agr.Econ. 102	Farm Organization	3
Agr.Econ. 103	Farm Operation	3
Agron. 21	Grain Crops	4
An.Husb. 56	Livestock Feeding	3
An.Husb. 57	Livestock Feeding	3
	or	
Dy.Husb. 103	Dairy Stock Feeding	5
Pl.Path. 1	Plant Pathology	
Rhet. 22	Public Speaking	3
Vet.Med. 50-51-52	Anatomy, Physiology, and Hygiene of Domestic Animals	9

Senior Year

Course No.	Title	Credits
Agr.Ed. 81,82	Methods in Teaching Agriculture	5
Agr.Ed. 90	Observation and Participation	2
Agr.Ed. 91	Supervised Teaching Experience	3
Agr.Ed. 101	Part-time School Instruction	2
Agr.Ed. 102	Evening School Instruction	3
Agr.Ed. 103	Facilities and Materials	3
Agr.Ed. 104	Planning Programs	2

From the following courses the student will be required to take those designated and approved by his adviser :

Agr.Eng. 12	Agricultural Machinery	3
	or	
Agr.Eng. 3	Mechanical Drawing	4
Agron. 23	Forage Crops	
An. Husb. 112	Animal Breeding	3
	or	
An.Husb. 113	Livestock Management	5
Dy.Husb. 101	Milk Production	
For. 10	Farm Forestry	3
	or	
Hort. 21	Plant Materials, Fall and Winter Aspects	
	or	3
Hort. 22	Plant Materials, Spring and Summer Aspects	
Soc. 14	Rural Sociology	3

RECOMMENDED ELECTIVES

It is suggested that electives to complete the 204 credits required for graduation be chosen from the following :

Course No.	Title	Credits
Agr.Ed. 56	Rural Youth Leadership	3
An.Husb. 51	Meat Selection	3
Dy.Husb. 3	Testing Dairy Products	2
Hort. 32	Vegetable Growing	3
Pub.&Rur.Jour. 53	Publicity	3
Ed.Ad. 133	Guidance in Secondary Schools	2
Ed.Psy. 120	Basic Principles of Measurement	3
Ed.Psy. 159	Personality Adjustments in Education	3

ART EDUCATION

Major adviser.—Professor Ruth Raymond.

The College of Education offers a course in art education which students may enter at the beginning of the freshman year.

The curriculum in Art Education is based upon the assumption that "art is a way of life" appropriate to everybody and to all areas of living. It is planned to arouse the individual student to the possibilities of esthetic experience in the world today, to develop his ability to enjoy discriminatingly, to select judiciously, and to organize all kinds of materials creatively. Certain courses emphasize the acquiring of *art skills* that experience may be shared adequately with others. In the junior year *professional* courses in preparation for art teaching begin.

Successful completion of the four-year curriculum leads to the B.S. degree and makes the graduate eligible for the Minnesota "high school standard special" certificate for teaching art in elementary and high schools. At least one teaching minor is required.

Five college years devoted to art education offer opportunity for more general academic education and more adequate preparation for the teaching and supervision of art from grades one through twelve than can be included in a four-year program.

The completion of a fifth year of study gives an advantage for placement and when the work has met the requirements listed on page —, including the examination and quality standard, it is recognized with the professional degree M.Ed.

The fifth year includes additional work in the academic minor, in technical courses in design and representation, in educational psychology, in curriculum construction, and in supervision.

Opportunity in the fifth year will be given for a quarter of combined internship and seminar. Opportunities will also be extended for the study of special problems which have developed in the field. The program is somewhat flexible and should meet needs of student groups whose major interest is one of the following: (1) art teaching at selected levels, (2) art supervision, (3) research in one or more aspects of the problem of art education in the public schools.

MINIMUM REQUIREMENTS FOR THE B.S. DEGREE WITH A MAJOR IN ART

A balanced selection from the various types of experience which follow:

1. Art courses:

- Group A at least 15 credits in design
- Group B at least 12 credits in handcraft
- Group C at least 15 credits in drawing and painting
- Group D at least 9 credits in Introduction to Art Education
- Group E at least 3 credits in Philosophy of Art Education
- Group F at least 12 credits in student teaching and special methods

2. A teaching minor chosen from one of the academic departments and fulfilling the credit requirements as designated by that department. (See pp. 24-30.)

3. Professional education courses:

Course No.	Title	Credits
61 A-B-C	Introduction to Elementary School Teaching	9
or		
51 A-B-C	Introduction to Secondary School Teaching	4
	Special methods in the academic minor	4
	Selection from the professional courses listed on pages 22-23	5

4. Required supporting courses:

Course No.	Title	Credits
Comp. A-B-C or Comp. 4-5-6	Freshman English Freshman Composition (or exemption) Additional English courses	} 18
Hist. 1-2-3*	European Civilization .....		12
Soc. 1	Introduction to Sociology	5
Psy. 1-2	General Psychology	6
Fine Arts 1-2-3	Introduction to Art	9
	Physical Education	3 or 5

Additional academic electives selected from: science, languages, speech, English, social studies, etc. Recommended: continuation of a language begun in high school; speech arts for use in teaching and to lead to play production; courses in philosophy, history, sociology, and psychology; courses in sports and the dance; courses for the appreciation of music, literary classics, and the stage. Attendance upon concerts, exhibitions, and plays is urged as part of art education. Available electives may be spent profitably in the various art courses beyond the minimal requirement.

5. Quality standard: C average outside of major; C+ average in the major.

MINIMUM REQUIREMENTS FOR A FIFTH YEAR LEADING TO THE M.ED. DEGREE

	Credits
1. Academic electives in minor or related fields	12
2. Art education major	24
3. Education courses	9
4. Quality standard: B average in fifth year work.	
5. Final examinations: (1) written comprehensive in the major; (2) written comprehensive in the education courses taken; (3) certification of demonstrated competence in teaching by director of student teaching, including an examination in methodology; (4) oral examination by Graduate Committee of College of Education and representatives from Art Education Department.	

MINIMUM REQUIREMENTS FOR A MINOR IN ART

Twenty-seven credits, selected from the courses listed below, in a balanced distribution which recognizes the necessity of typical experiences in the following groups:

Group	No.	Title	Credits
A. Design	ArtEd. 17-18-19 or 54-55-56	Art for Elementary Teachers Fundamental Experiences in Art	} 9 or 6
	B. Handcrafts	ArtEd. 31		Orientation in Handcraft Processes ..... 3
C. Drawing	ArtEd. 29-30 or 4-6-8	Drawing and Painting Rhythmic Sketch	} 2 or 6
	D. Appreciation	ArtEd. 14-15-16		Introduction to Art Education .....	9
		ArtEd. 14A-15A-16A	Introduction to Art Education Laboratory .....	6
E. Professional Aspect	ArtEd. 84	Teaching of Art in the Elementary Grades	3

* If European history was not taken in high school.

A RECOMMENDED PROGRAM

FOR THE FIRST FOUR YEARS OF THE FIVE-YEAR CURRICULUM
OR FOR THE B.S. DEGREE

Freshman and Sophomore Years

Course No.	Title	Credits
Academic—63 credits		
Eng. A-B-C or 4-5-6	Freshman English } Freshman Composition }	15 or
Hist. 1-2-3*	European Civilization	12
Soc. 1	Introduction to Sociology	5
Psy. 1-2	General Psychology	6
Fine Arts 1-2-3	Introduction to Art	9
Phys.Ed.	Physical Education	3 or
	English†	3 or
	Electives‡	
Art—30 credits. Required, unless excused		
ArtEd. 1-2-3	Fundamental Experiences in Design	9
ArtEd. 4-6-8	Drawing from Still Life and Pose	6
ArtEd. 14-15-16	Introduction to Art Education	9
ArtEd. 24-26-28	Drawing and Painting from Still Life and Pose.....	6
Art electives		
ArtEd. 20-21-22	Fundamental Experiences in Design	9
ArtEd. 23	Composition Clinic	2
ArtEd. 29-30	Rhythmic Sketch	2
	Minimum total Junior College credits	93-95

Junior and Senior Years

Course No.	Title	Credits
Academic—30 credits		
	Academic electives (from several fields to supplement or continue high school and junior college preparation and to complete an academic teaching minor)	
Art Education—42 credits. Required, unless excused		
ArtEd. 70-71-72	Fundamental Experiences in Design—Color Emphasis	9
	(Unless 20-21-22 has been taken)	
or ArtEd. 52A-B	Design for Home and Furnishing	6
ArtEd. 73	Ceramic Materials and Processes	3
ArtEd. 75B	Bookbinding Processes	3
ArtEd. 76	Textile Materials and Processes	3
Ed.T. 81	Techniques of Puppetry.....	3
ArtEd. 61,62,63	Painting	6
ArtEd. 66,67,68	Painting	6
ArtEd. 86-87-88	Special Methods and Directed Teaching in Art (In elementary and secondary schools)	12
ArtEd. 183E	Philosophy of Art Education	3
Art electives		
ArtEd. 150E,151E	Commercial Design, Industrial Design	3 or 6
ArtEd. 152E	Landscape Design	3
ArtEd. 153-154-155E	Art in Society	3-9
	Courses in handcraft	
	Drawing in other departments to meet student's needs	
	Sculpture in other departments to meet student's needs	
	Metalwork in other departments to meet student's needs	
	House design in other departments to meet student's needs	

* If European history was not taken in high school.

† To total 18 credits in English in freshman and sophomore years. Freshman English cannot be included in the English minor, the requirements for which are listed on p. 24.

‡ Electives should be selected to meet the requirements of a teaching minor. Additional electives may be selected from science, languages, speech, social studies, etc.

Education—18 credits

Course No.	Title	Credits
Ed. 61A-B-C or 51A-B-C	Introduction to Elementary School Teaching } Introduction to Secondary School Teaching }	9
	Special Methods in academic teaching minor.....	4
	Educational electives (see pages 22-23).....	5
	Total Senior College credits	90-93

Fifth Year

Course No.	Title	Credits
Academic electives in minor or related field	Courses numbered over 100.....	12
Art Education major—24 credits chosen from the following:		
ArtEd. 150E, 151E,152E	Advanced Design	3-9
ArtEd. 124-125- 126E	Advanced Painting	2-6
ArtEd. 153-154- 155E	Art in Society.....	3-9
ArtEd. 183E	Philosophy of Art Education.....	3
ArtEd. 185	Types of Art Instruction II.....	3
ArtEd. 189	Application of Esthetic Theory to Public Education.....	3
ArtEd. 290E, 291E,292E	Special Problems in Art Education.....	2-6
Fine Arts 151, 152,153*	Medieval, Romanesque and Gothic Art (3 cred. each).....	3-9
Fine Arts 163- 164-165*	Museum Science and Management.....	3-9
Fine Arts 201- 202-203*	Seminar. Special Problems in American Art.....	9
Arch. DP-IV	Drawing and Painting, Grade IV (Formerly 121,122,123).....	2-6
Arch. DP-V	Drawing and Painting, Grade V (Formerly 221,222,223).....	2-6
Arch. M-III	Modeling (Graduate level).....	2-6
H.E. 120	Art History and Appreciation.....	3
H.E. 125	Advanced Costume Design.....	3
H.E. 180	Home Planning and Furnishing.....	5
Education—9 credits. Suggestions:		
ArtEd. 284E	Reading and Research in Art Education.....	3
ArtEd. 295	Special Problems in Art Education.....	8
Ed.C.I. 119 or 113	Elementary School Curriculum.....	3
	Secondary School Curriculum.....	3
Ed.C.I. 170	Curriculum and Course of Study Construction.....	3
Ed.C.I. 171	Curriculum Laboratory Practice.....	2-6
Ed.C.I. 150 or 266	Supervision and Improvement of Instruction } Supervision of High School Instruction }	3
Ed.Psy. 293-294	Psychology of Learning.....	6 or 3
Ed.Psy. 291	Individual Differences.....	3
Ed.Psy. 180	Esthetics in Education.....	2
Ed.Psy. 120	Basic Principles of Measurement.....	3

COMMERCIAL EDUCATION

Major adviser.—Associate Professor W. S. Carlson.

The curriculum in commercial education is designed to prepare teachers of commercial subjects in secondary schools. It is purposely made much broader in its scope than the present program of the typical high school commercial department, with the idea of paving the way for meeting more effectively than at present the needs of high school students who enter business. Completion of this curriculum leads to the bachelor of science degree and provides the training necessary

* May be used in a History of Art minor.

for the Minnesota "high school standard special" certificate for teaching commercial subjects. By a careful selection of electives it is possible to secure also one or two minors in academic subjects.

The first two years' work, taken in the Junior College, College of Science, Literature, and the Arts, consists of the regular academic requirements of that college, with the foreign language requirement omitted and foundation courses in psychology, economics, statistics, accounting, and secretarial training added.

Students who enter the College of Education from other institutions must substitute for some of their electives such of the Junior College requirements as they have not fulfilled. Graduates from the two-year course in state teachers colleges and transfer students who have not had typing and shorthand may find it necessary to attend an extra Summer Session or an extra year in order to meet all requirements.

Students who have a high school course or experience in bookkeeping may be exempt from Econ. 20 and admitted to Econ. 25 by passing a placement test. Students who have had one year of high school typewriting are admitted to Econ. 33; those who have had two years of high school typewriting are admitted to Econ. 34. Students who have had two years of high school shorthand are admitted to Econ. 40 and are exempt from Econ. 37-38-39.

For the professional requirement in this curriculum, see pages 22-23.

FOUR-YEAR CURRICULUM IN COMMERCIAL EDUCATION

JUNIOR COLLEGE, COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Course No.	Title	Credits
Comp. 4-5-6	Freshman Composition (or Eng. A-B-C or exemption).....	9
	Natural science	10
	Social science, other than economics.....	10 or 12
Econ. 3	Elements of Money and Banking	5
Econ. 5	Elements of Statistics.....	5
Econ. 6-7	Principles of Economics	10
Econ. 20	Elements of Accounting	3
Econ. 25-26	Principles of Accounting.....	6
Econ. 32-33	Secretarial Training: Typewriting.....	2
Econ. 37-38-39	Secretarial Training: Shorthand	9
Psy. 1-2	General Psychology	6
	Physical Education	3 or 5
	Electives, for which the following are especially recommended: continuation of a language begun in high school, speech, philosophy, additional social science.....	4 to 17
Total		95

COLLEGE OF EDUCATION

Junior Year

B.A. 51-52-53	Business Law	9
B.A. 86	Office Organization and Management.....	3
Econ. 40-41-42	Secretarial Procedure	9
Econ. 34	Secretarial Training: Advanced Typewriting.....	1
Ed. 51A-B-C	Introduction to Secondary School Teaching.....	9
	Electives*	14

Senior Year

Ed.T. 73A-B-C	Special Methods and Directed Teaching in Commercial Subjects	9
Econ. 141	Monetary and Banking Policy.....	3
Econ. 161	Labor Problems and Trade Unionism.....	3

* Electives must include 8 credits in education courses as listed on pages 22-23.

Course No.	Title	Credits
Econ. 185	Economics of Marketing	3
B.A. 93	Accounting Practice Laboratory.....	3
B.A. 180	Senior Topics Course: Secretarial Practice.....	3
Geog. 41	Geography of Commercial Production.....	5
	Electives*	16

For the purpose of computing the C+ average (honor point ratio 1.5) the following are considered the major courses: Econ. 6-7, 20, 25, 26; B.A. 51, 52, 53; Geog. 41; Econ. 32-33, 34, 37-38-39, 40-41-42.

CURRICULUM AND INSTRUCTION

Major advisers.—Dean W. E. Peik; Professors Nelson L. Bossing, L. J. Brueckner, Palmer O. Johnson, Dora V. Smith, Edgar B. Wesley; Associate Professors Guy L. Bond, Walter W. Cook.

Graduate students interested in curriculum and instruction may secure a graduate work in the field with special emphasis on elementary, secondary, or higher education. For statement of the general program and requirements leading to the M.A. or Ph.D. degree see the Bulletin of the Graduate School.

FIFTH YEAR FOR ENGLISH TEACHERS

Major adviser.—Professor Dora V. Smith.

English teachers may secure a Master's degree with a major in education or curriculum and instruction and a supporting minor in English under Plan A or Plan B. Courses applicable to the teaching of English from which the student may profitably choose are as follows: Ed.C.I. 113, 122, 133, 169, 293, 294, 296-297; Ed.Psy. 158, 208. The seminar, Ed.C.I. 222-223-224, is required without credit for all students with a major or minor in theory and practice of teaching under Plan A. Programs should be arranged in consultation with a major adviser in the department.

FIFTH YEAR FOR TEACHERS OF SOCIAL STUDIES

Major adviser.—Professor Edgar B. Wesley.

Social studies teachers may secure a Master's degree with a major in education or in curriculum and instruction and a minor in history, economics, political science, geography, or sociology. Courses which are recommended as fitting into this plan are Ed.C.I. 168, 201-202-203, 204, 254, 293; H.Ed. 240-241-242; Ed. Psy. 208. The Seminar, Ed.C.I. 222-223-224, is required without credit for all students with a major or minor in theory and practice of teaching under Plan A. Programs should be arranged in consultation with the major adviser in social studies.

EDUCATIONAL ADMINISTRATION

Major advisers.—Educational Administration: Professor M. G. Neale.
 Secondary School Administration and Supervision: Professors Charles W. Boardman and Nelson L. Bossing.
 Elementary School Administration and Supervision: Dean W. E. Peik, Professor L. J. Brueckner.

The student who wishes to specialize in administration or administration and supervision for any one of the following fields, superintendent of schools, elementary principal and supervisor, secondary school principal and supervisor or other

* Electives must include 8 credits in education courses as listed on pages 22-23.

administrative position, must satisfactorily complete the requirements for the Master's degree. (See Bulletin of the Graduate School.)

The candidate for the Master's degree in administration or administration and supervision should have completed, in his undergraduate years, one of the curricula preparing for secondary school teaching or the four-year curriculum in elementary education.

The work of the student will usually constitute a major in educational administration and a minor in curriculum and instruction or educational psychology, but other combinations with subject-matter departments or a general major in education can be arranged, subject to approval of major adviser.

EDUCATIONAL PSYCHOLOGY

Major advisers.—Professors Palmer O. Johnson, W. S. Miller, C. Gilbert Wrenn; Associate Professors Guy L. Bond, Walter W. Cook, Marvin J. Van Wagenen.

Students who plan to assume certain specialized duties in connection with high school work and students who wish to specialize in the field of educational psychology, statistics, or measurement, may register in the Graduate School and elect a major or minor in educational psychology leading to the M.A. or to the Ph.D. degree.

The training for the Master's degree is intended particularly for students who may perform the duties of counselor, dean, clinical psychologist, or specialist in tests and measurements in connection with their public school work. It is not the purpose of the training for the Master's degree to produce a person with highly specialized training, but to supply a basis for later professional growth as well as some immediate background for handling the problems involved in the several positions indicated.

Programs should be made in consultation with an adviser. For courses and requirements, see the Bulletin of the Graduate School.

ELEMENTARY EDUCATION

CURRICULA IN ELEMENTARY EDUCATION FOR TEACHING, SUPERVISION, OR ELEMENTARY SCHOOL PRINCIPALSHIPS

Major advisers.—Elementary Education, Supervision, or Teaching: Professor L. J. Brueckner; Associate Professor Guy L. Bond.
Nursery School, Kindergarten-Primary, and Parental Education: Professors J. E. Anderson, Josephine C. Foster.

Curriculum IA, Curriculum IB, Curriculum IC, and Curriculum II are for four different groups of students.

Curriculum IA and Curriculum II are for students who expect to work in the elementary schools and entitle the graduate to the Minnesota *elementary school advanced* certificate. These curricula prepare for:

1. General elementary school teaching (all grades: primary, intermediate, or upper grades).
2. Elementary school principalships and elementary school supervisorships in Minnesota, if or when two years of elementary school teaching experience has been completed, *provided* the student has included the necessary courses in administration and supervision in his program.
3. Junior high school teaching when so endorsed after certain modifications, as specified later, have been made.

Curriculum IB prepares for nursery school, kindergarten-primary teaching and entitles the graduate to the Minnesota special *kindergarten-primary* certificate.

Curriculum IC is for students who already hold a Bachelor's degree and who wish to qualify for the Minnesota *kindergarten-primary* certificate.

The three four-year curricula constitute also the first four years of five-year programs for more intensive specialization in elementary teaching, general grade supervisorships, elementary school principalships, critic teaching or supervision of student teaching in teacher training institutions, nursery school and kindergarten teaching, parental education, and for instructors of elementary education in teachers colleges and other institutions.

CURRICULUM IA AND IB (FRESHMAN AND SOPHOMORE YEARS)

For university, college, and teachers college students who will spend the first two years largely or entirely in academic or pre-education junior college work and who wish to qualify for the advanced elementary school certificate for teaching, supervision, or principalships in any or all of the eight grades with or without special endorsement for the junior high school, Curriculum IA; for nursery school, kindergarten-primary certification, Curriculum IB.

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

General Minimum Requirements for Curriculum IA and Curriculum IB

Course No.	Title	Credits
Comp. 4-5-6	Freshman Composition (or Eng. A-B-C or exemption).....	9
Hist. 1-2-3 or 7-8-9	European Civilization or American History or both.....	9 or 12
Geog. 11	Human Geography	5
Sci.	Biological sciences (General Botany, General Zoology, or both), total minimum required.....	10
Sp. 1-2	Fundamentals of Speech.....	6
Soc. 1	Introduction to Sociology.....	5
Pol.Sci. 1-2	American Government and Politics.....	6
ArtEd. 17-18-19	Art for Elementary School Teachers.....	9
Ind. 11	Special-Class Woodwork	2
Mu. 1	Ear Training	2
Mu. 31 or 32 or 33	Music Appreciation	2
Mu.Ed. 50A	Primary Methods	2
Psy. 1-2	General Psychology	6
H.E. 30	Introduction to Nutrition.....	2
Phys.Ed. 1-7	General Course in Physical Education.....	5
Phys.Ed. 23A or 23B	Elementary Games and Folk Dances.....	½
Phys.Ed. 60	Principles of Play.....	2
P.M.&P.H. 3 or 50	Personal Health	2
	Public and Personal Health.....	3
	Electives	1-10
	Total	95

Equivalent courses offered in the General College or equivalent courses taken elsewhere may be substituted in the various fields with the approval of the adviser and of the Students' Work Committee of the College of Education.

Students transferring from teachers colleges with 90 blanket credits will not be held for the Junior College requirements in Comp. 4-5-6, Hist. 1-2-3 or 7-8-9, Geog. 11, Sci. (10 credits), Sp. 1-2, Psy. 1-2, Pol.Sci. 1-2; but they will be held for the other Junior College requirements for Curriculum IA and IB.

Certain deficiencies due to transfer from other schools can be made up after entering the College of Education. Certain substitutions can be made. The aim

is broad functional contacts with cultural fields of knowledge essential for the general education of the teacher and as marginal resources for teaching the common and special subjects of the elementary school.

CURRICULUM IA (JUNIOR AND SENIOR YEARS)

COLLEGE OF EDUCATION

For those who wish to secure the Minnesota elementary school advanced certificate qualifying the holder to teach in any of the grades 1 to 8, inclusive; and when so endorsed, after certain modifications as noted below, also in junior high schools. After two years of successful experience the curriculum qualifies for the Minnesota elementary school principal's and supervisor's certificate, provided the student has chosen electives in the fields of administration and supervision.

- A. **Academic fields.**—Completion of *one regular academic minor* (pages 24-30) and 18 credits of concentration in each of *two additional fields* as listed below. These fields of concentration may include, with approval of major adviser, the Junior College subject-matter courses already completed at the University of Minnesota or elsewhere.

English	A natural science or preferably general science
A foreign language	Mathematics
Geography	Art
History	Music
A social science other than history or geography, or preferably, general social sciences other than history or geography	Library Methods
	Physical Education
	Others by special permission of adviser

Much of the work of the junior year should be in the above academic subjects. A total of 18 credits in academic subjects must be in courses numbered 50 or above.

- B. **General and elementary education.**—A major of 44 or 45 credits.

1. Required of all—39 or 40 credits.

Course No.	Title	Credits
Ed. 61A-B-C	Introduction to Elementary School Teaching.....	9
Ed.Psy. 60	Introduction to Statistical Methods.....	2 or 3
ArtEd. 84	Teaching of Art in the Elementary Grades.....	3
Mu.Ed. 50B	Intermediate Methods.....	2
Ed.C.I. 60	The Teaching of Reading in the Elementary School.....	3
Ed.C.I. 61	The Teaching of the Social Studies in the Elementary School.....	2
Ed.C.I. 62	The Teaching of Arithmetic in the Elementary School.....	2
Ed.C.I. 63	Children's Literature.....	2
Ed.C.I. 64	The Teaching of English in the Elementary School.....	3
Ed.C.I. 65	The Teaching of Science in the Elementary School.....	3
Ed.T. 54A-B	Directed Teaching in the Elementary School.....	8

2. Five or six credits chosen from the following courses:

Ed.C.I. 105	Visual Aids in Teaching.....	2
Ed.C.I. 119	Elementary School Curriculum.....	3
Ed.C.I. 145	Remedial Reading.....	2
Ed.C.I. 150	Supervision and Improvement of Instruction.....	3
Ed.C.I. 181	Foundations of Elementary School Method.....	3
Ed.Psy. 120	Basic Principles of Measurement.....	3
Ed.Psy. 183	Education of Gifted Children.....	2
H.Ed. 162	Significance of Progressive Education.....	2
	Total	44 or 45

The C+ average is based on the 44 to 45 credits in elementary education.

Special examinations.—Students should consult the advisers early in their course about the specific comprehensive examinations which may be required for directed teaching and for graduation. These vary somewhat for those desiring junior high school endorsement.

Junior high school endorsement.—Students pursuing Curriculum IA may secure endorsement for junior high school teaching on the certificate for the elementary school by meeting the following requirements:

1. The completion of a regular minor for teaching in the secondary schools. See list of academic minors, on pp. 24-30 and minors in the special departments.
2. The course Ed.Ad. 167, Junior High School, which is to be substituted for Ed. 61C.
3. A special methods course covering the junior high school level in the minor, which may be substituted for some of the other methods courses on the recommendation of the adviser.
4. Directed teaching or experience in grades 7, 8, or 9.

CURRICULUM IB (JUNIOR AND SENIOR YEARS)

COLLEGE OF EDUCATION

For those who wish to secure the Minnesota special kindergarten-primary certificate qualifying for nursery school, kindergarten-primary teaching.

Course No.	Title	Credits
Ed. 61A-B-C	Introduction to Elementary School Teaching	9
C.W. 80	Child Psychology	3
Ed.T. 55	Principles of Early Childhood Education	3
Ed.T. 56	Permanent Play Materials	2
Ed.T. 57	Plastic Materials	3
Ed.T. 59	Story Telling for Young Children	2
Ed.T. 76A-B-C	Methods and Observation	3
Soc. 49	Social Pathology	3
Ed.Psy. 60	Introduction to Statistical Methods	2 or 3
or 120	Basic Principles of Measurement	3
Phys.Ed. 60	Principles of Play	2
P.M.&P.H. 57	Health of Infant and Preschool Child	2
or 59	Health of the School Child	3
Ed.C.I. 60	The Teaching of Reading in the Elementary School	3
Ed.C.I. 61	The Teaching of the Social Studies in the Elementary School	2
Ed.C.I. 62	The Teaching of Arithmetic in the Elementary School	2
Ed.C.I. 63	Children's Literature	2
Ed.C.I. 64	The Teaching of English in the Elementary School	3
Ed.C.I. 65	The Teaching of Science in the Elementary School	3
Ed.T. 77A-B-C	Directed Teaching in Kindergarten and Nursery School	9
C.W. 170	Parent Education	2
	Electives	24 to 26
	Total	90

The C+ average is based on the following courses: C.W. 80, 170; Ed.T. 55, 56, 57, 59, 77A-B-C; Ed.C.I. 60, 61, 62, 63, 64, 65.

CURRICULUM IC

COLLEGE OF EDUCATION

For students who already have a B.A. or B.S. degree and who wish to receive a B.S. degree with a nursery school, kindergarten-primary certificate.†

† Electives may be substituted for any of these courses or their equivalent, which the student has already taken.

Forty-five credits selected from the following courses in conference with the adviser:

Course No.	Title	Credits
Ed. 61A-B-C	Introduction to Elementary School Teaching.....	9
Ed.C.I. 60	The Teaching of Reading in the Elementary School.....	3
Ed.C.I. 61	The Teaching of the Social Studies in the Elementary School.....	2
Ed.C.I. 62	The Teaching of Arithmetic in the Elementary School.....	2
Ed.C.I. 63	Children's Literature.....	2
Ed.C.I. 64	The Teaching of English in the Elementary School.....	3
Ed.C.I. 65	The Teaching of Science in the Elementary School.....	3
C.W. 80	Child Psychology.....	3
Ed.T. 55	Principles of Early Childhood Education.....	3
Ed.T. 56	Permanent Play Materials.....	2
Ed.T. 57	Plastic Materials.....	3
Ed.T. 59	Story Telling for Young Children.....	2
Ed.T. 76A-B-C	Methods and Observation.....	3
Ed.T. 77A-B*	Directed Teaching in Kindergarten or Nursery School.....	6
H.E. 30	Introduction to Nutrition.....	2
Mu.Ed. 50A	Primary Methods.....	2

CURRICULUM II (JUNIOR AND SENIOR YEARS)

COLLEGE OF EDUCATION

For graduates of the usual two-year advanced normal professional curriculum for elementary teachers in teachers colleges and normal schools, or its equivalent, for which 90 blanket credits (two years' work) are allowed in the College of Education toward graduation:

The curriculum leads to the elementary school advanced certificate and if or when two years of experience in elementary education have been completed, to the Minnesota state principal's or supervisor's certificate as well, *provided* the student has included the necessary courses in administration and supervision in his program. By substituting certain elective courses in the junior high school field the certificate is made legal also for junior high school teaching.

A. **Major in elementary education.**—30 credits in the College of Education as follows:

1. Required of all—11 or 12 credits.

Course No.	Title	Credits
Ed.Psy. 60	Introduction to Statistical Methods.....	2 or 3
Ed.C.I. 119	Elementary School Curriculum.....	3
Ed.C.I. 150	Supervision and Improvement of Instruction.....	3
Ed.Ad. 115	Elementary School Organization (For junior high school endorsement substitute Ed.Ad. 167 for this course).....	3

2. Nine credits in methods to be chosen from the following:

Ed.C.I. 65 or 103	The Teaching of Science in the Elementary School	}..... 3
	Problems in the Teaching of Elementary School Science	
Ed.C.I. 63 or 190	Children's Literature	}..... 2 or 3
	Principles of Selection of Materials for Reading in the Elementary School	
Ed.C.I. 102	The Teaching of the Social Studies in the Elementary School	3
Ed.C.I. 143 or 144	The Teaching of Reading in the Elementary School	}..... 2
	The Teaching of Reading in the Upper Grades and Junior and Senior High Schools	
Ed.C.I. 148 or 149	The Teaching of Primary Grade Arithmetic	}..... 2
	The Teaching of Intermediate Grade Arithmetic	
Ed.C.I. 153	Supervision and Teaching of English in the Elementary Schools	2

* Passing the qualifying examination in English is a prerequisite to this course.

For junior high school endorsement the methods course in the minor must be substituted for 3 or 4 of these nine credits.

3. Education electives—to be chosen from the above or any related courses listed under General Courses or Elementary Education—9 or 10 credits.

NOTE.—Students may be required to take Practice Teaching Ed.T. 54A-B unless evidence of satisfactory experience is presented. This is left to the discretion of the major advisers.

B. **Subject-matter and academic courses.**—60 credits. At least 18 of the 60 credits must be in courses numbered 50 or above.

1. A *regular* minor as listed on pages 24 to 30 or in one of the special fields listed under the specialized curricula. Requirements for minors vary usually from 18 to 36 credits.
2. Eighteen credits in at least one of the following or such other fields as may be approved by the adviser. In each case all 18 credits are to be taken during the third and fourth years and are as a rule to be selected from courses offered in minor and major sequences of the College of Education (see pages 24-30 and Combined Class Schedule). Transfer students must aim to supplement, and not to duplicate, courses taken elsewhere. Credit cannot be allowed for courses that are largely duplication. Child welfare and psychology are not areas of concentration but general electives may be chosen from those fields. The fields are:

English	Mathematics
A foreign language	Art
Geography	Fine Arts
History	Music
A science or general science	Library Methods
A social science or general social sciences (other than history or geography)	Physical Education
	Others by special permission

3. Academic electives—12-24 credits.

At least 18 credits in academic courses must be in courses numbered 50 or above.

Excess quality credits earned in all courses will reduce the general elective credits in academic subjects but cannot be used to meet any specific requirement of the curriculum.

Special examinations.—Students should consult an adviser early in their course about special examinations which may be required for graduation.

Courses in General Extension.—Elementary teachers, taking extension courses, who will ultimately transfer to the College of Education for a degree, should follow the pattern of the curriculum to be certain that the work taken will apply towards graduation. They should consult an adviser in the College of Education early in their course and with regard to any courses not a part of the curriculum.

Junior high school endorsement.—To secure junior high school endorsement on the certificate for elementary school teaching the following requirements must be met:

1. Completion of a regular minor for teaching a subject in the secondary schools. This is the requirement listed under B-1 above.
2. A methods course in the minor covering the junior high school level. This course, usually four credits, is to be included in the nine credits in methods required under A. The qualifying examination in English is prerequisite to this course.

3. The course Ed.Ad. 167, Junior High School. This course is to be substituted for Ed.Ad. 115.

4. Satisfactory directed teaching or experience in grades 7, 8, or 9.

FIFTH YEAR IN THE GRADUATE SCHOOL

ELEMENTARY SCHOOL ADMINISTRATION AND SUPERVISION, TEACHER TRAINING, NURSERY, KINDERGARTEN-PRIMARY EDUCATION, OR GENERAL ELEMENTARY EDUCATION

It is recommended that as a rule students without any teaching experience teach a year or two before taking graduate work. Students will select their advisers according to their specialization, interests, and needs. For the list of advisers see the introductory statement (page 40). For statement of the general plan of graduate work in the College of Education, see the Bulletin of the Graduate School.

HIGHER EDUCATION

Major advisers.—Dean W. E. Peik; Professor T. R. McConnell; Associate Professor Ruth E. Eckert.

Students enrolled in the Graduate School may select courses relating to the field of higher education. Such students will usually have a graduate major in curriculum and instruction, educational administration, or educational psychology. Some of the courses offered are: Ed.C.I. 250, Higher Education in the United States—Curriculum and Instruction; Ed.Psy. 252, Student Personnel Work in College and University; Ed.Psy. 254, Measurement and Evaluation in Higher Education; Ed.C.I. 228-229-230, Problems of College Education; Ed.C.I. 285, Professional Education of Teachers; Ed.C.I. 286, Problems in Teacher Training; Ed.C.I. 287, Instruction and Administration in Teacher Training Institutions.

Unusual facilities are offered for laboratory work in higher education through the co-operation of administrative, research, and service departments, and through the University's experimental educational divisions. Such laboratories include the University Testing Bureau and its associated counseling services, the General College, and the University Committee on Educational Research, through which are co-ordinated the researches on the University's own educational problems.

HISTORY AND PHILOSOPHY OF EDUCATION

Major advisers.—Professor Edgar B. Wesley; Associate Professor Theodore Brameld.

Work in the history and philosophy of education is available at the graduate level. Students should arrange a program in consultation with an adviser in accordance with their special fields of interest. For courses and requirements see the Bulletin of the Graduate School.

HOME ECONOMICS EDUCATION

Major advisers.—Professors Wylle M. McNeal, Clara M. Brown; Assistant Professor Ella J. Rose.

The College of Agriculture, Forestry, and Home Economics and the College of Education co-operate in the preparation of teachers of home economics. Satisfactory completion of the general teaching curriculum will lead to the B.S. degree

and will provide the necessary training for qualification for the Minnesota "high school standard special certificate" for teaching home economics in the secondary school. Completion of this curriculum also qualifies for teaching in federally aided home economics departments.

During the first two years the student is registered in the College of Agriculture, Forestry, and Home Economics. When the student has earned a minimum of 90 credits and at least one honor point per credit (junior classification) and indicated her specialization as the teachers' or the extension teachers' curriculum, she becomes a registrant also in the College of Education. At the end of the sophomore or the beginning of the junior year, the student is required to take the psychological and other examinations given in the College of Education.

Prior to registration for Supervised Teaching, the student must have completed the following requirements:

1. The qualifying examination in English required of all those graduating from the College of Education.
2. Home experience in clothing, foods, and other phases of home economics.
3. Certain specified home economics courses with a grade of at least C.*
4. Home economics courses required in the teaching curriculum with an honor point ratio of 1.5.

In order to be recommended for graduation from the teaching specialization, the student must have (1) 1½ honor points per credit in 40 credits of home economics work required in the curriculum for General Home Economics Teaching selected from the following courses: H.E. 1, 3, 21, 31, 34 (or 170 and 171), 40, 41, 50, 53, 55, 85, 86, 180, 185; (2) an average of 1 honor point per credit in all other courses pursued during the junior and senior years.

By a proper selection of courses, students qualifying for the degree of bachelor of science may qualify for teaching in more than one field. This is desirable since most beginning teachers in public schools are expected to teach another subject in addition to home economics.

GENERAL HOME ECONOMICS TEACHING*

The following courses are required of those preparing for teaching general home economics:

<i>Freshman Courses</i>		
Course No.	Title	Credits
	Freshman Assembly	1
H.E. 1	Choice and Care of Clothing	4
H.E. 10	Introduction to Home Economics	2
H.E. 15	Personal Relationships	2
H.E. 20	Introduction to Related Art	4
H.E. 21,22	Color and Design, I and II	6
H.E. 31	Introduction to Nutrition	3
Rhet. 1,2,3	Rhetoric I, II, III (or exemption)	9
Rhet. 34	Books and Reading	1
Zool. 14-15 and	General Zoology	
Physiol. 4 or	Human Physiology	6-10
G.C. 10A-B	Human Biology	
Dy.Husb. 20	Household Microbiology (or Bact. 53)	4

* For the General Home Economics Teaching specialization a grade of at least C is required for the following courses: H.E. 3, 4, 21, 22, 34 (or 170), 40, 41, 55.

COLLEGE OF EDUCATION

Course No.	Title	Credits
Chem. 1-2 or 6-7 or 9-10 or G.C. 89	General Inorganic Chemistry	5-10
G.C. 88	Physical Science II: The Nature of Chemistry	
G.C. 88 or Agr.Eng. 23 or Agr.Eng. 35	Physical Science I: Energy and Matter	3-5
Soc. 1	General Physics	
Phys.Ed. 1-2-3§	Household Physics	3-5
	Introduction to Sociology	3
	General Course in Physical Education	3

Students who have had one year of high school physics may be exempt from G.C. 88 or Ag.Eng. 23 and substitute Agr.Eng. 35.

Sophomore Courses

Course No.	Title	Credits
H.E. 3,4	Clothing Construction A, B	6
H.E. 34	Nutrition Problems (or 170, 171)	4-6
H.E. 40	Food Preparation	5
H.E. 41	Food Management and Marketing	5
C.W. 40 or H.E.Ed. 90	Child Training	3
Rhet. 22 or 11	Public Speaking } Argumentation }	3
Rhet. 31 or 32	Survey of English Literature I or II (or Rhet. 60)	3 or 5
Bact. 53	General Bacteriology (or Dy.Husb. 20)	5
Agr.Biochem. 4	Introduction to Organic and Biochemistry	5
Agr.Econ. 3 or Econ. 6-7	Principles of Economics } Principles of Economics }	5 or 10
Psy. 1-2	General Psychology	6

Junior and Senior Courses

H.E. 50	Textiles	3
H.E. 53	Advanced Clothing	3
H.E. 55	Related Art Problems	3
H.E. 85	Home Management: Operation and Maintenance, Lectures	3
H.E. 86	Home Management: Operation and Maintenance, Laboratory	4
H.E. 170,171	Nutrition of the Family, Child Nutrition (or H.E. 34)	6
H.E. 180	Home Planning and Furnishing	5
H.E. 185	Family Relationships	2
P.M.&P.H. 52	Health Care of the Family	3
Rhet. 51	Exposition (unless exempted from the course)	3
Rhet. 60	Contemporary Literature (or Rhet. 31 or 32)	3
Ed. 51A-C	Introduction to Secondary School Teaching	6
Agr.Econ. 126	Economics of Consumption	3
H.E.Ed. 90	Child Training (or C.W. 40)	3
H.E.Ed. 91	Observation, Materials, Teaching in Home Economics	5
H.E.Ed. 92	Teaching Problems in Home Economics	2
H.E.Ed. 93,94	Supervised Teaching in Home Economics	6
H.E.Ed. 192	Educational Measurement in Home Economics	2

Additional social science credits beyond those required above, should be taken to meet the 18-credit requirement. These may be selected from anthropology, economics, geography, history, political science, philosophy, or sociology. See All-College Requirements in the Bulletin of the College of Agriculture, Forestry, and Home Economics.

§ May be completed any time during the four years of residence.

Teaching Textiles and Clothing

To the requirements in general teaching add:

Course No.	Title	Credits
H.E. 54	Problems in Clothing Construction	3
H.E. 102	Advanced Textiles	3
H.E. 115	Clothing Economics	2
H.E. 120	Art History and Appreciation	3
Bot. 1	General Botany	4

Teaching Foods

To the requirements in general teaching add:

Course No.	Title	Credits
H.E. 61	Quantity Cookery	4
H.E. 142	Experimental Cookery	3
H.E. 146	Special Food Problems	3
or 147	Special Food Problems	5
Agr. Biochem. 2	Quantitative Methods	5

Teaching Nutrition

Omit from the requirements in general teaching the following courses:

H.E. 3, 4, 21, 22, 53, 55, 180, G.C. 88-89, 101-102, and Agr. Econ. 126.

To the requirements in general teaching add:

Course No.	Title	Credits
H.E. 24	Problems in Home Planning and Furnishing	5
H.E. 75	Dietetics Laboratory	2
H.E. 173	Nutrition in Disease	3
H.E. 179	Readings in Nutrition	2
H.E. 142	Experimental Cookery	3

Home Economics Extension

Those who wish to go into home economics extension teaching should fulfill the requirements of the general teachers' curriculum and add:

H.E. 98	Home Economics Extension	3
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Teaching Related Art

Those interested in teaching Related Art should:

- Select the minimum credit requirement in science when there is an option.
- Omit. Agr. Econ. 126.
- Add the following:

Course No.	Title	Credits
H.E. 23	Advanced Design	3
H.E. 25	Design Applied to Crafts	3
or 26	Decorative Needlework and Other Crafts	3
H.E. 120	Art History and Appreciation	3
H.E. 122	Advanced Interior Design	3
or 125	Advanced Costume Design	3
H.E.Ed. 197	Organization and Methods for Related Art Teaching	1-3

Six credits from the following in Art Education or Architectural Drawing:

Ar:Ed. 4-6-8	Drawing from Still Life and Pose	2 a qtr.
or 29-30	Rhythmic Sketch	1 a qtr.
or		
Arch.DP-I	Drawing and Painting, Grade I	2 a qtr.

INDUSTRIAL EDUCATION

Major adviser.—Professor Homer J. Smith.

The following curriculum has been designed for young men who desire to prepare for teaching, administrative, and supervisory positions in the fields of industrial arts and trade education. The satisfactory completion of the four years of work here specified entitles the student to the bachelor of science degree and provides the training necessary for the Minnesota "high school standard special" certificate.

Minnesota Standards for Graded Elementary and High Schools, page 35, contains the following provision:

From and after July 1, 1929, a certificate to teach general industrial education may be issued only upon a Bachelor's degree in industrial education from an institution accredited for the training of teachers of industrial arts, but the status of industrial teachers holding certificates prior to that date shall not be affected.

Certain courses of the curriculum are acceptable for Smith-Hughes and George-Deen certification, for service in trade schools and classes—day, evening, and part-time as to type. These courses should be selected only upon recommendation of the departmental adviser or the state supervisor of trade and industrial education. The latter assures himself of the vocational competence of those who desire educational courses to complete requirements. Special certificates are issued by the State Department of Education. General industrial certificates and vocational industrial certificates are based upon wholly different preparations and should not be confused.

A bulletin descriptive of the plan and work of this special department will be furnished upon request. It shows the four-year curriculum, explains federal relationships, and suggests available off-campus courses and services. Those interested in credit transfer for advanced standing should confer or correspond with the major adviser.

Graduate work is provided, there being plans for the Master's degree both with and without the thesis project. Courses within the curriculum, numbered 100 to 199, carry graduate credit for students who have not presented them earlier as undergraduate earnings. Other courses, 100-199 in number, and some 200 and above, are available at the Master's level and are not parts of the undergraduate curriculum.

Minnesota graduates enroll immediately in the Graduate School. Others present transcripts of credit from all institutions attended since high school completion and status is then determined with reference to the institution which awarded the first degree and to the pattern of courses of record in the transcripts.

Persons desiring to do work beyond the Master's degree should consult with the major adviser as to status and program.

FOUR-YEAR CURRICULUM IN INDUSTRIAL EDUCATION

Freshman Year

Course No.	Title	Credits
Comp. 4-5-6	Freshman Composition (or A-B-C or exemption).....	9
Math. or Nat. Sci.	(Consult adviser)	15
Ind. 30	Graphic Presentation	2
Shopwork	(Consult adviser)	10
Drawing	(Consult adviser)	6
	Electives (Consult adviser)	3
	Physical Education	3

Sophomore Year

Course No.	Title	Credits
Psy. 1-2	General Psychology	6
Math. or Nat. Sci.	(Consult adviser)	5
Ind. 40	Analysis	2
Ind. 42	Course Organization	2
Ind. 44	Equipment and Management	2
Ind. 60	Philosophy of Vocational Education	2
Ind. 61	Practices in Vocational Education	2
Ind. 80	General Industrial Training	2
Ind. 81	The General Shop	2
Shopwork	(Consult adviser)	10
Drawing	(Consult adviser)	4
	Electives (Consult adviser)	6

Junior Year

Course No.	Title	Credits
Econ. 6-7	Principles of Economics	10
Soc. 1	Introduction to Sociology	5
Ed. Psy. 60	Introduction to Statistical Methods	3
Ed. 51A-B-C*	Introduction to Secondary School Teaching	9
Ed. 73	Educational Sociology	3
Ind. 66	Related Subjects	2
Ind. 70	Methods in Shop Subjects	2
Ind. 75	Methods in Drawing	2
	Electives (Consult adviser)	9

Senior Year

Course No.	Title	Credits
Ed. Ad. 124	Public School Administration	3
Ind. 50A-B-C†	Directed Teaching	6
Art Ed.	(Consult adviser)	6
Ind. 101	Tests in Industrial Subjects	2
Ind. 103	Instructional Aids	2
Ind. 107	Co-ordination	2
Ind. 108	Apprenticeship	2
Ind. 110	Guidance in the Schools	2 or 3
Ind. 170	Day Industrial Schools	2
Ind. 171	Evening Industrial Schools	2
Ind. 172	Part-time Education	2
	Electives (Consult adviser)	14

A degree candidate is privileged to complete his work under the curriculum form which was current when he entered.

The C+ average is based on all courses in Industrial Education. Shop and drawing courses may be included.

The department offers courses other than those named in the four-year curriculum, several of them at the graduate level. Examples: Ind. 11, Special-class Woodwork; Ind. 65, Non-vocational Subjects; Ind. 105, Industrial Education (Administration); Ind. 115, Supervision of Industrial Education; Ind. 250-251-252, Problems in Vocational Education; Ind. 200, Research Problems.

Many of the required and electives courses may be pursued through extension and correspondence study arrangements. All required courses are brought into the summer programs by rotation.

* Equivalent to courses formerly numbered Ed. Psy. 55, EdT. 15, and Ed. Ad. 65 (or 167); also equivalent to Ed. 51-52-53.

† Senior status and passing the qualifying examination in English are prerequisite to this course; also Ind. 80 and either 70 or 75.

The required 20 credits in shopwork and 10 credits in drawing (30 total) may be increased by election to a maximum of 45 credits. All such courses should be selected under advice and may be either extensive or intensive in resultant preparation for teaching. Credits in excess of 45 will be recorded but will not be counted toward the graduation requirements. In addition to shopwork and drawing, the following are appropriate elective areas: art, guidance, physical education, and athletic coaching.

The 20 credits in mathematics or natural science may be earned in any courses within these two fields in any combination, departmental prerequisites being strictly observed. Students who will plan carefully may attain certification in one of these fields in addition to industrial education, at the same time pursuing subject-matter extremely useful in the specialty.

Requirements above are classified as follows: 50 credits in academic subjects, 24 in education, 38 in industrial education, 30 in shopwork and drawing, 6 in directed teaching, 32 elective (15 may be in shopwork and drawing). Total 180 credits plus 3 credits in physical education. Full requirement, 183 credits.

Students should possess, and make constant reference to, more detailed bulletins. They should avail themselves of the help of departmental and college advisers.

FIFTH YEAR LEADING TO THE MASTER OF EDUCATION DEGREE

The College of Education awards the master of education degree (M.Ed.) to those students who satisfactorily complete a fifth year of work in industrial education at the graduate level and who meet all the requirements of the college for the professional degree.

Prerequisites.—The prerequisites are as follows:

1. A baccalaureate degree earned in an accredited university, college, or teachers college.
2. A major in industrial education acceptable to the department in the University of Minnesota.
3. At least 90 quarter credits in academic courses or an amount such that the total will be 90 credits when the academic courses in the fifth year have been added.
4. Not more than 35 credits in general education courses throughout the five-year program. Such courses are those in educational psychology, general methods, philosophy of education, etc., which are fundamental to the entire profession and not applied directly to specialized phases of it.

Plans for the master of education degree.—Two plans are available for arranging programs leading to the master of education degree. The student should choose one of these plans in conference with the adviser and according to his scholastic background and professional interests.

Plan X

	Credits
Industrial Education	21
Education (other than industrial education)	15
Academic subjects	9
Total	45

Plan Y

Industrial Education	18
Education (other than industrial education)	12
Independent study (see page 18)	9
Academic subjects	6
Total	45

Requirements.—All candidates for the master of education degree must meet the following requirements:

1. An average of B (2 honor points per credit) for all courses representing fifth year work.
2. Satisfactory performance on a comprehensive written examination in industrial education.
3. Satisfactory performance on a comprehensive written examination in education.
4. Satisfactory work in two demonstration lessons.
5. Satisfactory oral examination by the committee.

Transfer and additional credits.—Transcript must be presented in duplicate of work completed at all higher institutions attended since high school graduation in order that entrance status may be determined. No transfer of credits is made toward the Master's degree but transcripts of such credits will be used in program planning.

Credits earned in *shopwork* and *drawing*, taken during the time a candidate is pursuing his graduate work, will be entered on the record but will not be counted toward the advanced degree.

Credits earned through extension courses and through correspondence from the University of Minnesota may be entered upon the record but will not be counted toward the advanced degree.

WORK IN THE GRADUATE SCHOOL

Many courses offered by the Department of Industrial Education carry credit in the Graduate School. A student may take work leading to the master of arts degree with a concentration in industrial education *provided* he has met the entrance and general requirements of the Graduate School. (See the Bulletin of the Graduate School.)

LIBRARY METHODS*

Major advisers.—Professor Frank K. Walter; Associate Professor Lura C. Hutchinson.

The following curricula have been arranged in co-operation with the Division of Library Instruction to offer professional library training to persons who desire to do library work in connection with the public schools.

Successful completion of one of the four-year curricula will entitle the student to the degree of bachelor of science. Curriculum A will also entitle the student to receive the Minnesota high school general certificate for teaching academic subjects in junior and senior high schools.

Students qualify for a secondary school certificate by completing requirements for a teaching major or two teaching minors in subjects commonly taught in Minnesota high schools. It will usually be wisest to choose majors and minors in the fields of English, history, and the social studies. Such students are required to take special methods and directed teaching in the teaching major or in one of the

* Prospective students who are interested in the curriculum should obtain the special bulletin issued by the Division of Library Instruction.

The tuition fees for full-time students who are enrolled in this specialized curriculum are \$40 per quarter for residents of Minnesota and \$50 per quarter for nonresidents. Unclassed students, auditors, and others carrying less than full work in library instruction (15 credits per quarter) pay a tuition fee of \$3 per credit for residents and \$3.50 per credit for nonresidents, for all courses under the supervision of the Division of Library Instruction, irrespective of their registration in courses in other subjects.

minors. They are also required to take five credits in education selected from the list of education electives. (See pp. 22-23.)

Students registered in the College of Education are expected to do part of their practice work in the University High School library and part in another approved school library or public library branch doing school library work.

Graduates of the College of Education who already have an elementary or secondary school certificate and who complete an additional year of library training (45 credits) as registered students in the college, will be granted an official certificate on satisfactory completion of a year's work (45 credits) in library methods.

Students who have completed the four-year course in a teachers college and already hold a bachelor's degree and a teaching certificate *must consult the dean* of the College of Education *at the time of entrance* if they expect to become candidates for a degree.

The C+ average is based on the 45 credits of library methods.

FOUR-YEAR CURRICULUM FOR SCHOOL LIBRARIAN WITH A
TEACHER'S CERTIFICATE

JUNIOR COLLEGE, COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Freshman Year

Course No.	Title	Credits
Eng. A-B-C	Freshman English	15
or		
Comp. 4-5-6	Freshman Composition (or exemption from the requirement)	9
Hist. 1-2-3	European Civilization	12
	Language	15
Phys.Ed. 1-2-3	General Course in Physical Education.....	3
	Electives†	<u>3-9</u>
	Total	48

Sophomore Year

Psy. 1-2	General Psychology	6
	Natural Science	10
	Language	5
Phys.Ed. 4-7	General Course in Physical Education.....	2
	Electives†	24
	Total	47

COLLEGE OF EDUCATION

Junior Year

Lib.Meth. 52	Cataloging	3		
Lib.Meth. 54	Classification	3		
Lib.Meth. 62	Reference	3		
Lib.Meth. 57	{ Secondary School Libraries Public Library Administration } any two	6		
Lib.Meth. 58			{ Selection of Books for Adolescents } Library Work with Children.....	3
Lib.Meth. 64				
Lib.Meth. 71	Introduction to Secondary School Teaching.....	9		
Ed. 51A-B-C	Continuation of required elective academic courses†.....	18		
	Total	45		

† Electives should be selected to meet the requirements of one teaching major or two teaching minors. Electives should also include five credits selected from the list of professional courses on pages 22-23.

Senior Year

Special Methods and Directed Teachings§	9
Completion of academic requirements	
Library courses	27
Electives in education†	5
General electives‡	4
<hr/>	<hr/>
Total	45

School Librarians without Teaching Duties

Students who wish to qualify as full-time librarians but *not as teachers* of academic subjects will be required to take 22½ selected quarter hours in education. These 22½ credits shall include Ed. 51A-B-C, Introduction to Secondary School Teaching or Ed. 61A-B C, Introduction to Elementary School Teaching, 9 credits; Lib.Meth. 57, Secondary School Libraries, 3 credits; and Lib.Meth. 61, Library Practice, 4½ credits. The remaining 6 credits are to be selected from the list of education electives. (See pp. 22-23.) Other requirements are the same as in Curriculum A.

Minor in Library Training

Students who complete 18 credits selected from Courses 52, 54, 57, 58, 62, 64, 71, and 72 will satisfy the requirement for a minor in library training.

MUSIC EDUCATION

Major Advisers.—Professors Carlyle Scott, Abe Pepinsky; Instructor Hazel B. Nohavec.

The course in Music Education is a four-year course leading to the degree of bachelor of science, in which the theoretical, practical, and methods courses in music are combined with the study of English composition, psychology, and such subjects as the College of Education demands as a definite requirement. The object is to provide a well-rounded course for candidates for the bachelor of science degree in music education.

For graduation, women students must earn 185 credits and 185 honor points and men students must earn 183 credits and 183 honor points. They must earn 24 credits in Practical Music (11, 27), 18 of which shall be the minimum requirement for their major subject and six of which must be in a second field other than the major. Students not majoring in piano shall be required to take one year of Piano (11 or 11C), 2 credits per quarter, exemption dependent upon entrance examination. Students not majoring in voice shall be required to take one year of Voice (12 or 12C) exemption dependent upon entrance examination. It is recommended that the practical music requirements be met by the end of the junior year.

A teaching minor in one academic secondary school subject is required for graduation of all music education students. English, history, languages, and social studies are suggested. For advice concerning minors, see departmental advisers.

In addition to the practical and theoretical studies in music this course includes such cultural subjects as English, psychology, sociology, and history, and the professional courses which are prescribed by the College of Education. The

† Electives should be selected to meet the requirements of one teaching major or two teaching minors. Electives should also include five credits selected from the list of professional courses on pages 22-23.

§ Passing the qualifying examination in English is prerequisite to this course.

music studies are distributed between the instrumental and vocal courses so that, on graduation, a student is prepared to be an instrumental music instructor, vocal music instructor, or general supervisor of school music.

Observation and directed teaching are required in the Minneapolis and St. Paul grade schools, and in the Minneapolis, St. Paul, and University high schools.

Courses upon which the C+ average is based are Mu.Ed. 4-5-6, 50A-B, 53, 54, 55, 56, 65, 68; Mu. 60, 63.

Following are the specific regulations and requirements applying to this course:

For entrance.—All students wishing to register for the course in Music Education must, upon matriculation, choose a major in applied music, and pass an entrance examination in that major, before a committee of the faculty of the Music Department. Entrance requirements for a major are:

Piano—Any minor or major scale in octaves, thirds, sixths, or tenths, M.M. quarter notes—108; Bach Invention, or dances from one of the suites; a sonata by Haydn or Mozart; a modern composition of equal difficulty with the sonata.

Voice—Sing on pitch with correct phrasing and musical intelligence standard songs in good English (the simpler classics recommended). Demonstrate ability to read a simple song at sight and have a knowledge of the rudiments of music and also have a promising voice. Some knowledge of piano is urgently recommended.

Violin—Major and minor scales, arpeggios; the simple Kreutzer *Etudes*; a sonata by Handel, Haydn, Mozart, or Schubert; a more modern work displaying special technique peculiar to the violin.

Organ—Same as piano.

Students not majoring in piano, will be examined concerning requirements to be met in piano.

Fees.—For statement of special fees see Music and Music Education in the Combined Class Schedule Bulletin.

FOUR-YEAR CURRICULUM IN MUSIC EDUCATION

Freshman and Sophomore Years

Course No.	Title	Credits
Comp. 4-5-6	Freshman Composition	9
Mu. 1,2,3	Ear Training	4
Mu. 4-5	Harmony	6
Mu.Ed. 1	Music Orientation	0
Mu.Ed. 59	Choral Literature and Conducting	1
	Physical Education	3-5
	Practical Music	12-18
Psy. 1-2	General Psychology	6
Mu.Ed. 4-5-6	Applied Instrumental Technique	6
Mu. 34-35-36	History of Music	6
Hist. 11-12-13	Medieval History	9
or 1-2-3	European Civilization	12
Soc. 1	Introduction to Sociology	5
	Physical Education	3 or 5
	Academic electives (minor)	14-19
	Total	93 or 95

Junior and Senior Years

Mu.Ed. 50A	Primary Methods	2
Mu.Ed. 50B	Intermediate Methods	2
Mu.Ed. 52	Technique of Teaching Appreciation.....	1
Mu.Ed. 53	High School Methods.....	3
Mu.Ed. 54	Operetta Production	3
Mu.Ed. 65	Instrumentation	3
Mu.Ed. 70	Accompanying and Sight Reading.....	2
Mu.Ed. 59	Choral Literature and Conducting.....	3
Mu. 60 or 61 or 62 or 63	Instrumental Ensemble } Vocal Ensemble }	2
Mu. 59	Technique of Voice.....	2
Mu. 76	Form and Analysis.....	3
Mu. 40-41-42 or 43-44-45	Orchestra } University Chorus or } Concert Band† }	3
Ed. 51A-B-C	Introduction to Secondary School Teaching.....	9
Mu.Ed. 68	Conducting of Instrumental Music and Survey of Materials....	4
Mu.Ed. 55	Survey and Evaluation of Vocal Materials and Methods.....	4
Mu.Ed. 60-61-62	Music Supervision and Student Teaching.....	9
	Special Methods (Academic minor).....	4
	Practical Music	6-12
	Electives in Education	5
	Academic electives (minor).....	9-18
	Total	90

FIVE-YEAR CURRICULUM IN MUSIC EDUCATION
LEADING TO THE M.ED. DEGREE

The five-year curriculum in music education leading to the master of education degree is designed to give a higher standard of professional competence in music as well as a larger scope of general academic education. It includes about two years of general education, a minor in a teaching field other than music, more adequate training in applied music, advanced phases of musical theory or musicology at the graduate level, work in music education covering both vocal and instrumental music, basic courses in psychology, educational psychology, and education; supervised institutional practice teaching plus one quarter of internship.

The work of the fifth year is definitely integrated with that of the first four years described above. The fifth year will provide opportunity for those interested to concentrate in either vocal or instrumental music if they desire to do so. Encouragement will be given to those students possessing outstanding talents in music and demonstrated scholastic ability.

Students with a Bachelor's degree with a major in music education from other accredited institutions, upon fulfilling the requirements or their equivalents of the five-year course, will receive the master of education degree with a major in music education.

In addition to the honor point requirements for the four-year curriculum (see p. 14) an honor point ratio of 2 (a B average) must be attained in all fifth year work.

The designation "E" after a course number over 100 signifies that the course is of graduate level in the College of Education but does not carry credit in the Graduate School.

Fifth Year Leading to M.Ed. Degree

- I. **Electives in academic major or minor** (or closely related field).—15 to 17 credits. Courses must be numbered 100 or above.

† Music Education majors will be allowed a maximum of 6 credits in Concert Band.

II. Music major.—12 credits elected from the following:

Course No.	Title	Credits
Mu. 209-210-211	Advanced Topics of Musical Analysis	3, 6, or 9
Mu. 225	Advanced Applied Music	6 to 8
Mu. 200-201-202	Basis of Musical Expression	3, 6, or 9
Mu. 205-206-207	Composition in Larger Forms	3, 6, or 9

III. Music Education.—10 credits elected from the following:

Mu.Ed. 101	Tests and Measurements in Music Education	2
Mu.Ed. 220E	Survey and Application of Recent Research in Music Education	3
Mu.Ed. 224E	Seminar and Individual Research Problems in Music Education	3
	Optional Internship and Seminar	8

IV. Education.—6 credits elected from the following:

Ed.Psy. 293	Psychology of Learning	3
Ed.C.I. 113	High School Curriculum	3 or 4
Ed.C.I. 119	Elementary School Curriculum	3
Ed.C.I. 150	Supervision and Improvement of Instruction	3
Ed.C.I. 266	High School Supervision	3
Total for fifth year		45

REQUIREMENTS FOR A MINOR IN MUSIC EDUCATION

A minimum of 25 credits in music and music education to include the following subjects:

Course No.	Title	Credits
Mu. 1	Ear Training	2
Mu. 4	Harmony	3
Mu. 36	History of Music	2
Mu.Ed. 50A	Primary Methods	2
or 50B	Intermediate Methods	2
or 53	High School Methods	3
Mu.Ed. 54	Operetta Production	3
Mu.Ed. 4-5 or 6	Applied Instrumental Technique	2-4
	Practical Music	2-6

The remaining credits to be selected from the following courses:

Mu. 40-41-42	Orchestra	6
or 43-44-45	University Chorus	1-3
Mu. 60,61,62	Instrumental Ensemble	2
or 63,64,65	Vocal Ensemble	2
Mu.Ed. 68	Conducting of Instrumental Music and Survey of Materials	4
or 59	Choral Literature and Conducting	2
or 55	Survey and Evaluation of Vocal Materials and Methods	4

NATURAL SCIENCE

General adviser.—Professor Palmer O. Johnson.

Special adviser.—Botany: Professor F. K. Butters.

Chemistry: Professor Palmer O. Johnson.

Physics: Professor J. William Buchta.

Zoology: Professor J. E. Wodsedalek.

Students preparing to teach science in Minnesota high schools should qualify to give instruction in two or more sciences, since almost all positions open to graduates require teaching in at least two fields. As a matter of fact most Minnesota schools now require instruction in general science, for which the teacher should be trained in both biological and physical sciences. While it is possible to

meet the major and minor sequences in one or more of the sciences as in other academic subjects, the following special curriculum in natural science is recommended for those persons desiring to secure the best preparation for the teaching of high school science. It requires:

- A. The completion of a sequence of a minimum of twenty-nine hours in one of the four natural sciences: chemistry, physics, botany, or zoology. This is referred to as the core subject.
- B. The completion of at least fifteen hours in another science (excepting the one chosen under A) selected from the following: physics, geology, botany, zoology, chemistry.
- C. The completion of at least nine credits in each of the remaining sciences listed under B but not selected to meet requirements A and B. In lieu of 9 credits in geology, 5 credits in geology and 5 credits in astronomy will be accepted. For graduation 10 credits in a social science are also required.
- D. Completion of Ed. 51A-B-C, Ed.T. 68A-B-C, and 8 credits in education electives.

The C+ average is based on the courses in the core subject.

The requirements under A and B for the several sciences are:

BOTANY

- A. Courses 1, 2, 7, 21, 22, 61, and 62, and 7 additional credits.
- B. Course 1, and 12 additional credits chosen from Courses 2, 5, 7, 21, and 22.

CHEMISTRY

- A. Inorganic Chemistry 9, 10, 12 (or 6, 7, 8, and 13 if without entrance credit in chemistry); Analytical Chemistry 7; Organic Chemistry 51-52.
- B. Inorganic Chemistry 9, 10, 12 (or 6, 7, 8, and 13).

PHYSICS

- A. Courses 7-8-9, 52, 107-109-11, and three credits of approved electives.
- B. Courses 7-8-9.

ZOOLOGY

- A. Courses 1-2-3, 52, 53, 75, 83, and Physiology 4.
- B. Courses 1-2-3, 53, and 75.

REQUIREMENTS FOR A MINOR IN NATURAL SCIENCE

The requirements for a minor in natural science are:

1. The completion of at least 15 specified quarter hours in one of the four natural sciences: botany, chemistry, physics, or zoology.
2. The completion of at least 9 quarter hours in each of the remaining sciences listed above under A not selected to meet the requirement in 1. In addition 9 credits in geology, or 5 credits in geology and 5 credits in astronomy, are required.

NURSERY SCHOOL AND KINDERGARTEN EDUCATION

See Elementary Education, pages 40-44.

NURSING EDUCATION AND PUBLIC HEALTH NURSING

Major adviser.—Nursing Education: Professor Katharine J. Densford.
Public Health Nursing: Associate Professor Margaret G. Arnstein.

The following courses are arranged so as to indicate the minimum requirements for students wishing to secure a bachelor of science degree with a major in nursing. They are planned to prepare the student for such public health nursing positions as visiting nursing, school nursing, health teaching, infant welfare, rural and industrial nursing; for administrative, supervising, and teaching positions in schools of nursing and hospitals; and for combined positions in secondary schools involving both nursing and teaching. In the case of those who choose proper subjects and qualify for a teaching minor in the College of Education it entitles the graduates to receive a *high school teacher's* certificate.

I. FIVE-YEAR COURSE LEADING TO THE DEGREE OF BACHELOR OF SCIENCE AND GRADUATE IN NURSING

Open to high school graduates who meet the entrance requirements of the College of Science, Literature, and the Arts.

Part I. During the first five quarters of the course the student is registered in the College of Science, Literature, and the Arts, during which time she must complete required subjects, as listed below.

Course No.	Title	Credits
Eng. A-B-C	Freshman English	15
or		
Comp. 4-5-6	Freshman Composition (or exemption from the requirement).....	9
Science	One of these laboratory sciences: chemistry, bacteriology, human anatomy, human physiology, preferably human physiology	
P.M.&P.H. 3	Personal Health	2
Soc. 1	Introduction to Sociology.....	5
Psy. 1-2	General Psychology	6
Phys. 2	Elements of Physiology.....	5
or 4	Human Physiology	4
or 51	Human Physiology	6

Electives to make a total of 75 credits exclusive of physical education. (For each five honor points in excess of one honor point per credit, the number is diminished by one.) Recommended electives are: zoology, chemistry, political science, history, and other courses in social and natural science.

Physical Education, six quarters. One quarter of this requirement may be completed after registering in the School of Nursing. No credit is granted for physical education courses in the College of Science, Literature, and the Arts; but upon transfer to the College of Education, the student will receive the credits and honor points earned in those courses. Five credits are granted for required physical education courses.

Part II. During the next ten quarters the student is registered in the School of Nursing, taking required subjects and nursing practice as listed in the School of Nursing Bulletin, including Educational Psychology, Ed. 51A, 3 credits, and Social Pathology, Soc. 49, 3 credits. Sixty credits are granted for the work taken in the University of Minnesota School of Nursing.

Part III. (College of Education.) During the last three quarters the student selects one of two majors, Nursing Education or Public Health Nursing.

A. Nursing Education has in addition to the primary pattern two variants, namely: child health, and nutrition. For any one of these three programs the stu-

dent registers in the College of Education. The primary curriculum in Nursing Education prepares for nursing in institutions, administration or teaching in hospitals and schools of nursing. The combination (1) with courses in child care (Institute of Child Welfare) prepares the nurse for service in pediatric work or clinics, work with both well and sick children, or serves as excellent background for nurses who may later seek additional preparation for public health work with children. The combination (2) with nutrition (Home Economics) prepares the nurse for any position in which more than ordinary mastery in this field is desirable.

A. NURSING EDUCATION CURRICULUM (Primary Pattern)

Course No.	Title	Credits
Ed. 51B	Introduction to Secondary School Teaching	3
Ed.T.51A§	Special Methods of Teaching in Schools of Nursing	3
Ed.T.51B	Special Methods of Teaching in the School and Teaching in Schools of Nursing	5
Nurs. 60	Ward Administration	4 or 8
Nurs. 69	Survey of Conditions in Nursing	3
Nurs. 71	Curriculum Making in Schools of Nursing	3
C.W. 40	Child Training	3
	Electives	14 or 18
	Education electives approved by adviser.....	3
	Total	45

VARIANT FOR THOSE INTERESTED IN CHILD HEALTH

Nursing Courses

Nurs. 60	Ward Administration	4
Nurs. 69	Survey of Conditions in Nursing	3
Nurs. 71	Curriculum Making in Schools of Nursing.....	3

Education Courses

Ed.T. 51A§	Special Methods of Teaching in Schools of Nursing.....	3
Ed.51B	Introduction to Secondary School Teaching.....	3

Nursery School Courses

Ed.T. 55	Principles of Early Childhood Education	3
Ed.T. 56	Permanent Play Materials.....	2
Ed.T. 57	Plastic Materials	3
Mu.Ed. 50A	Primary Methods	2
Ed.T. 59	Story Telling for Young Children	2
Ed.T. 75	Methods and Observation in the Nursery School.....	3
Ed.T. 76A-B-C	Methods and Observation	3
	Electives approved by adviser.....	11
	Total	45

VARIANT FOR THOSE INTERESTED IN NUTRITION

Students taking this curriculum must have completed Home Economics 30 (2 cred.) before entering the School of Nursing.

Nursing Courses

Nurs. 60	Ward Administration	4
Nurs. 69	Survey of Conditions and Trends in Nursing	3
Nurs. 71	Curriculum Making in Schools of Nursing.....	3

§ A qualifying examination in English must be passed before registering for Ed.T. 51A.

Education Courses

Ed.T. 51A§	Special Methods of Teaching in Schools of Nursing.....	3
Ed.T. 51B§	Special Methods of Teaching in the School and Teaching in Schools of Nursing.....	5
Ed. 51A-B	Introduction to Secondary School Teaching	6
	Education electives approved by adviser	9

Home Economics Courses

Agr.Biochem. 4	Introduction to Organic and Biochemistry.....	5
H.E. 34	Nutrition Problems	4
H.E. 170	Nutrition of the Family.....	3
H.E. 173	Nutrition in Disease.....	3

Total	45
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B. PUBLIC HEALTH NURSING

This curriculum leads to the bachelor of science degree with a major in public health nursing. By careful selection of courses the student may also qualify for the state high school teacher's certificate. Students who do not wish the teacher's certificate will usually register during these quarters in the Medical School and should see the Bulletin of the Department of Preventive Medicine and Public Health or the Bulletin of the School of Nursing for the list of required courses.

The following courses are required in addition to the requirements listed under Part I.

Social Science Courses

Course No.	Title	Credits
Soc. 49	Social Pathology	3
Soc. 90	Survey of Social Work.....	5
or 129	Principles of Social Case Work.....	3
	Elective in Sociology or Child Welfare.....	3
	Social science other than sociology.....	9

Natural Science Courses

Bact. 53	General Bacteriology	5
or 101	Medical Bacteriology	5
	Science courses (including courses listed in Part I).....	15

Preventive Medicine and Public Health Courses

P.M.&P.H. 53	Elements of Preventive Medicine.....	5
P.M.&P.H. 62-63	Principles of Public Health Nursing.....	6
P.M.&P.H. 65,66,67	Field Practice in Public Health Nursing.....	15-23
P.M.&P.H. 133	Mental Hygiene Aspects of Public Health Nursing.....	3
P.M.&P.M.	Electives, minimum	8
	General electives, any department.....	8

Education Courses

Ed. 51A-B-C	Introduction to Secondary School Teaching.....	9
Ed.T. 50A§	Special Methods and Directed Teaching in Public Health Edu- cation for Public Health Nurses.....	9
	Electives in education.....	8

The C+ average is based on all the preventive medicine and public health courses.

§ A qualifying examination in English must be passed before registering for this course.

II. CURRICULA FOR STUDENTS WHO ARE GRADUATES OF ACCREDITED SCHOOLS OF NURSING

Open to those who meet entrance requirement for specialized curricula of the College of Education (see Bulletin of General Information). Advanced credit for the professional nursing course will be determined by the Committee for the Evaluation of Nursing Credentials which will indicate any additional hospital services to be completed before credit is granted. Forty-five academic credits represent approximately the average advanced standing granted for a satisfactory undergraduate course of study in a school of nursing.

Candidates must conform to the College of Education regulation relative to total credits and honor points and are entitled to the privilege of the quality credit rule. Candidates must also meet the physical education requirements of the College of Education.

To secure a degree in the College of Education students must earn 185 credits and 185 honor points, and in addition must earn 1.5 honor points for each credit in a major field.

Graduate work may be carried and a Master's degree earned by students who meet the requirements of the Graduate School. Programs should be made out in consultation with a major adviser in the department.

The amount and type of college courses to be required of each candidate is to be decided by her major adviser after consideration of a candidate's general education and experience. All programs must also be approved by the Students' Work Committee and the dean of the College of Education. As a rule, however, the following curricula meet the needs of the majority of students. Substitutions may be made by petition upon the recommendation of the major adviser and the Students' Work Committee of the College of Education.

A. NURSING EDUCATION

Courses will correspond in general to Part I and Part III—A (pages 60-62) of the five-year course plus Ed. 51A and Soc. 49 and such electives, recommended by the major adviser, as may be needed to fulfill the total credit and honor point requirement.

B. PUBLIC HEALTH NURSING

Courses will correspond in general to Part I and Part III—B of the five-year curriculum together with such electives, recommended by the major adviser, as may be needed to fulfill the total credit and honor point requirements.

PHYSICAL EDUCATION FOR MEN

Major advisers.—Associate Professors Louis F. Keller, Carl L. Nordly; Assistant Professors Edwin L. Haislet, Ralph A. Piper; Instructors D. C. Bartelma, T. R. Gibson.

Physical Education 1, 2, and 3, Sports Education courses, are required of all freshmen in the College of Education except physical education majors and minors. See Combined Class Schedule for activities and period schedule.

The following curricula have been designed for men who desire to prepare for teaching and administrative positions in the field of physical education. Completion of either curriculum entitles a student to a Minnesota High School Standard Special certificate.

Two plans are included:

1. Four-year curriculum leading to the bachelor of science degree with a major in physical education.
2. Five-year curriculum leading to the master of education degree with a major in physical education.

A. Students who plan to fulfill requirements for the *bachelor of science* degree and the special teacher's certificate must complete the following requirements:

1. Courses listed under Required Courses in Physical Education for the B.S. degree pages 65-66).
2. A total of twenty-six credits in education including methods and directed teaching in physical education, methods in the minor, and Ed. 51A-B-C.
3. At least one teaching minor which may be fulfilled partially in the required curriculum.
4. A methods course in the teaching minor unless two teaching majors are completed.
5. A total of 183 credits at least ninety of which must be in academic (other than education) courses. These courses must be carried with a C average.
6. An average of C+ (1.5 honor points per credit) in designated physical education courses, and a C average in all other courses taken during the junior and senior years.

B. Students with a B.S. degree from the University of Minnesota with a major in physical education who plan to obtain the *master of education* degree must fulfill the following:

1. Eighteen additional credits in courses numbered above 100 in physical education.
2. Additional credits* from the courses listed under Requirements in Education (p. 66) so that a minimum and maximum of thirty-five credits are completed in education including the following:
 - a. Ed. 51A-B-C, Introduction to Secondary School Teaching, 9 credits.
 - b. Phys.Ed. 53,54,55, Methods and Materials in Physical Education, 4 credits.
 - c. Phys.Ed. 73,74,75, Directed Teaching, 6 credits.
 - d. Any other methods course or courses excluding Phys.Ed. 83, School Health Education Method and Content, Phys.Ed. 66A-B, Methods and Techniques of Officiating, and athletic coaching courses.
3. A minor in a teaching field *with the special* methods course in that field or an additional major unless fulfilled in the requirements for the B.S. degree.
4. Additional courses to complete two hundred twenty-eight credits, ninety of which must be in academic (other than education) courses.
5. During the last two years a minimum of forty-five credits with an average of B in courses numbered 100 and above.
6. Examinations
 - a. Each candidate is required to take a written comprehensive examination covering the major in physical education.
 - b. Each candidate is required to take a written comprehensive examination in education.
 - c. Each candidate is required to take the following examinations as a basis for the estimation of his qualifications as a teacher:
 - (1) A formal written examination in methodology.
 - (2) Each candidate is required to teach two demonstration classes. One of these will be at the request of the director of student teaching, the other will be the choice of the candidate.
 - d. Each candidate is required to take an oral examination conducted by the members of the Committee on Standards, by a faculty member of the field in which the candidate is specializing, and by a faculty member selected in the field of the candidate's minor.

C. Students with a Bachelor's degree *with a major in physical education from other accredited institutions* may receive the master of education degree with a major in physical education when the following requirements have been fulfilled:

* Unless fulfilled in the four-year curriculum.

1. Physical Education 101E and 103E.‡
2. Eighteen additional credits in physical education courses numbered above 100.
3. Ed. 51A-B-C, Introduction to Secondary Teaching.
4. A minimum and a maximum of thirty-five credits in transfer and University of Minnesota education credits, including all courses in methods and student teaching exclusive of Phys.Ed. 83, School Health Education Method and Content, Phys.Ed. 66A-B, Methods and Techniques of Officiating, or their approved equivalents, and athletic coaching courses.
5. At least one teaching minor§ or an additional teaching major equivalent to University of Minnesota requirements which include a methods course. The minor or additional major may be fulfilled partially in the required curriculum. For major and minor requirements see pages 24-30.
6. Forty-five credits in courses numbered 100 and above with average grade§ of B.
7. At least ninety transfer and University of Minnesota credits in academic (other than education) courses.
8. The examinations previously indicated under item B.

D. Students with a Bachelor's degree *without a major* in physical education, but with previous work or experience in physical education, may receive the master of education degree when they have satisfied the requirements listed above under C and the following undergraduate work:

	Credits
Science courses—human anatomy, physiology, applied anatomy (Mechanics of Movement, Kinesiology)	9
Physical Education Activities.....	12
Professional physical education courses.....	15
Methods and directed teaching in physical education.....	9
	45

REQUIRED COURSES IN PHYSICAL EDUCATION MAJOR FOR THE B.S. DEGREE

Course No.	Title	Credits
Comp. 4-5-6	Freshman Composition	9
Sp. 1-2	Fundamentals of Speech.....	6
Chem. 6-7	General Inorganic Chemistry.....	10
or 9-10	General Inorganic Chemistry.....	10
Zool. 1-2-3	General Zoology	10
or		
G.C. 10A-B-C	Human Biology	9
Psy. 1-2	General Psychology	6
P.M.&P.H. 3	Personal Health	2
P.M.&P.H. 51	Community Hygiene	3
Physiol. 50	Physiological Chemistry	4
Physiol. 51	Human Physiology	6
Phys.Ed. 4A-B-C*	Fundamentals of Athletic Sports.....	3
Phys.Ed. 5A-B-C*	Physical Education Activities.....	3
Phys.Ed. 6A-B-C*	Intramural Sports	3
Phys.Ed. 7A-B-C*	Physical Education Activities	3
Phys.Ed. 8*	Dual Spring Sports.....	1
Phys.Ed. 9*	Rhythms	1
Phys.Ed. 25†	First Aid	1
Phys.Ed. 50	Human Anatomy	4
Phys.Ed. 51	Mechanics of Movement.....	3
Phys.Ed. 53,54,55	Methods and Materials in Physical Education	4
Phys.Ed. 56	Nature and Function of Play.....	2
Phys.Ed. 57	Operation and Conduct of Play Centers	3
Phys.Ed. 60	Prevention and Care of Injuries.....	2
Phys.Ed. 63	Organization and Administration of Physical Education	3
Phys.Ed. 67,69	Coaching of Athletic Sports (Football, Track).....	4

* Students must complete the course or demonstrate proficiency to qualify for exemption and credit.

† Offered in the Department of Physical Education for Women.

‡ Unless fulfilled in the student's undergraduate curriculum.

Phys.Ed. 73,74,75	Directed Teaching	6
Phys.Ed. 83†	School Health Education, Method and Content	3
Phys.Ed. 101E	Principles of Physical Education	3
Phys.Ed. 103E	Physical Examination and Adaptation of Activities.....	3

Eighteen credits are required from the following group in physical education to obtain the master of education degree:

Phys.Ed. 111E†	Advanced Course in Methods of Teaching in Physical Education	3
Phys.Ed. 112E†	Supervision of Physical Education	3
Phys.Ed. 113E†	Physical Education in the Elementary Schools	3
Phys.Ed. 114E†	Health Administration in the School	3
Phys.Ed. 133E	Special Administrative Problems in Physical Education	3
Phys.Ed. 134E	The Secondary School and College Curriculum in Physical Education	3
Phys.Ed. 135E	Tests and Measurements in Physical Education	3
Phys.Ed. 136E	Leadership in Community Recreation	3
Phys.Ed. 137E	Recent Literature and Research in Health Education, Physical Education, and Recreation	3
Phys.Ed. 237E	Problems in Health Education, Physical Education, and Recreation	Ar

ELECTIVES IN PHYSICAL EDUCATION

Phys.Ed. 61	History of Physical Education	2
Phys.Ed. 66A-B	Methods and Techniques of Officiating	4
Phys.Ed. 68,72§	Coaching of Athletic Sports (Basketball, Baseball)	4
Phys.Ed. 78	Elements of Scout Leadership.....	2
Phys.Ed. 79	Campercraft and Camp Administration	2

REQUIREMENT IN EDUCATION

A minimum and maximum of thirty-five education credits for the M.Ed. degree, including Ed. 51A-B-C, methods and student teaching courses (exclusive of Phys.Ed. 83, School Health Education, Method and Content, Phys.Ed. 66A-B, Methods and Techniques of Officiating, or their approved equivalents, and athletic coaching courses.)

Courses from which balance of required education credits may be elected.

P.M.&P.H. 59	Health of the School Child	3
H.Ed. 73	Educational Sociology	3
H.Ed. 178	Education and Problems of American Democracy	2
H.Ed. 179	Critical Thinking for Teachers	2
H.Ed. 180	The School and the Social Order	2
Ed.Ad. 124	Public School Administration	3
Ed.C.I. 104	Adult Education	2
Ed.C.I. 105	Visual Aids in Teaching	2
Ed.C.I. 107-108	Radio in Education	4
Ed.C.I. 113	High School Curriculum	4
or 119	Elementary School Curriculum	3
Ed.C.I. 150	Supervision and Improvement of Instruction	3
or 266	Supervision of High School Instruction	3
Ed.C.I.169	Extra-curricular Activities	2
Ed.Psy. 133	Guidance in Secondary Schools	3
Ed.Psy. 158	Psychology of Adolescence	3
or 159	Personality Adjustments in Education	3

Other educational electives may be included in this group to meet the needs of students.

Candidates for the Bachelor's degree are required to have 8 credits in education electives which may be selected from the list on pages 22-23.

† Offered in the Department of Physical Education for Women.

§ Students without varsity squad experience will be required to take the course or courses.

REQUIREMENTS FOR A MINOR IN PHYSICAL EDUCATION FOR MEN

A total of 29 credits is required as follows:

Group A.—All required.

Phys.Ed. 5C	Physical Education Activities.....	1
Phys.Ed. 7A-B-C	Recreational Games and Sports.....	3
Phys.Ed. 53,54,55	Methods and Materials in Physical Education.....	4
Phys.Ed. 57	Operation and Conduct of Play Centers.....	3
Phys.Ed. 60	Prevention and Care of Injuries.....	2
Phys.Ed. 63	Organization and Administration of Physical Education.....	3
Phys.Ed. 83†	Health Education, Method and Content.....	3
Phys.Ed. 101E	Principles of Physical Education.....	3

Group B.—Four credits required.

Phys.Ed. 67	Coaching of Athletic Sports (Football).....	2
Phys.Ed. 68	Coaching of Athletic Sports (Basketball).....	2
Phys.Ed. 69	Coaching of Athletic Sports (Track).....	2
Phys.Ed. 72	Coaching of Athletic Sports (Basketball).....	2

Group C.—Three credits required.

Phys.Ed. 5A-B	Physical Education Activities.....	2
Phys.Ed. 6A-B-C	Intramural Sports.....	3
Phys.Ed. 8	Dual Spring Sports.....	1
Phys.Ed. 9	Rhythms.....	1

PHYSICAL EDUCATION FOR WOMEN

Major advisers.—Professor J. Anna Norris; Associate Professors Gertrude Baker, May Kissock.

The Department of Physical Education for Women offers the following curricula in physical education:

1. Four-year curriculum leading to the bachelor of science degree with a major in physical education.
2. Five-year curriculum leading to the master of education degree with a major in physical education.
3. Curriculum for a teaching minor in physical education.

GENERAL REQUIREMENTS FOR TEACHING PHYSICAL EDUCATION

The curricula offered by the Department of Physical Education for Women are designed to prepare graduates for the responsible direction of physical education and to provide the training necessary to meet the certification standards of the state of Minnesota for teaching physical education in the elementary and high schools.

Students desiring to register for any of the above curricula should consult with the major advisers. The following qualifications are desirable for the teaching of physical education:

Freedom from organic disease or serious functional disorder.

Motor skill above the average, including at least elementary skill in swimming. (Students who cannot pass the elementary swimming test at entrance should do so during their freshman year.)

Keen sense of rhythm.

Voice adapted to speaking in public.

Qualities of personality which will win the co-operation of others.

Good posture and carriage.

Training in the sciences.

† Offered in the Department of Physical Education for Women.

As physics is a prerequisite to Phys.Ed. 51 (Mechanics of Movement) it will be necessary for entrants into the four- or five-year curricula to have a unit of high school physics or to take a unit of physics in the University.

Students are required to provide themselves with suits and other equipment in accordance with uniform standards of the department.

Students who have a grade lower than B in posture at the end of the sophomore year must take a course in orthopedic gymnastics in the fall quarter of their junior year.

FOUR-YEAR CURRICULUM LEADING TO A BACHELOR OF SCIENCE DEGREE WITH A MAJOR IN PHYSICAL EDUCATION

An average of C+ (honor point ratio of 1.5) in all the physical education courses and a C average (honor point ratio of 1) in the remaining courses taken during the junior and senior years must be attained. In addition the student must have a C average for all courses taken during the four years of work.

Freshman Year

History 1-2-3	European Civilization	12
Eng. A,B,C or Comp. 4-5-6 or G.C. 61-62-63	Freshman English	15
Zool. 1-2-3	Composition	9
Soc. 1	Writing Laboratory†	9
Phys.Ed. 7	General Zoology	10
Phys.Ed. 21-23	Introduction to Sociology	5
Phys.Ed. 25	Lectures in Health and Physical Education	1
	Elementary Physical Education	3½
	First Aid	1
	Electives (Consult adviser)	

Sophomore Year

Chem. 1-2	General Inorganic Chemistry	8
Sp. 1-2	Fundamentals of Speech	6
Psy. 1-2	General Psychology	6
Phys.Ed. 41-48	Intermediate Physical Education	9
Phys.Ed. 50	General Anatomy	4
Phys.Ed. 51	Mechanics of Movement	3
	Electives (Consult adviser)	

Junior Year

Ed. 51A-B-C	Introduction to Secondary School Teaching	9
Physiol. 50	Physiological Chemistry	4
Physiol. 51	Human Physiology	6
P.M.&P.H. 50 or 51	Public and Personal Health	3
Phys.Ed. 60	Community Hygiene	3
Phys.Ed. 61,63,64, 65,67,73	Principles of Play	2
Phys.Ed. 62	Teaching Techniques in Physical Education	10½
Phys.Ed. 66,69	Physical Examination	2
	Advanced Physical Education	1
	Electives (Consult adviser)	

Senior Year

Ed.Psy. 158	Psychology of Adolescence	3
Phys.Ed. 74A-B	Advanced Fundamentals of Movement	1

† Writing Laboratory must be carried with a percentile rank of 50 or better in order to receive credit.

Phys.Ed. 81	Trends in Physical Education	2
Phys.Ed. 82	Principles of Physical Education	3
Phys.Ed. 83	School Health Education, Method and Content	3
Phys.Ed. 84	Problems in Physical Education	2
Phys.Ed. 85A-B	Remedial Gymnastics	3
Phys.Ed. 95A-B	Administration of Physical Education	3
Phys.Ed. 90A-B-C¶	Student Teaching	7
	Education electives	7
	Electives (Consult adviser)	

FIVE-YEAR CURRICULUM LEADING TO A MASTER OF EDUCATION
DEGREE WITH A MAJOR IN PHYSICAL EDUCATION

Students who plan to obtain the master of education degree with a major in physical education should make this decision upon the completion of their second year as majors in physical education in order that their next three years may be properly integrated and directed.

Students with a bachelor of science degree with a major in physical education from other accredited institutions upon fulfilling the requirements for the fifth year may receive the master of education degree with a major in physical education.

At least one teaching minor should be completed at the undergraduate level in order to have partially fulfilled the credit requirements for work in the minor at the graduate level. The department recommends that all fifth year students have two graduate minors if possible. Consult adviser about choice of minors.

Courses in physical education numbered over 100 may be taken either in the Department of Physical Education for Women or in the Department of Physical Education for Men.

Fifth Year

	Credits	
General academic field	6-12	
Education	6-12	
Suggested courses: Ed.Psy. 158; Ed.C.I. 119, 160		
Physical Education	24	
Course No.	Title	Credits
Phys.Ed. 111E*§	Advanced Course in Methods of Teaching in Physical Education	3
Phys.Ed. 112E*	Supervision of Physical Education	3
Phys.Ed. 113E*	Physical Education in the Elementary Schools	3
Phys.Ed. 114E*	Administration of the School Health Education Program	3
Phys.Ed. 115E*	Recent Literature and Research in Mechanics of Movement	3
Phys.Ed. 133E†	Special Administrative Problems in Physical Education	3
Phys.Ed. 134E†	Curriculum in Physical Education	3
Phys.Ed. 135E†	Tests and Measurements in Physical Education	3
Phys.Ed. 136E†	Leadership in Community Recreation	3
Phys.Ed. 136E†	Recent Literature and Research in Physical Education	3

REQUIREMENTS FOR M.ED. DEGREE WITH A MAJOR IN PHYSICAL EDUCATION

- I. Students who have the equivalent of a major in physical education from an accredited institution may be accepted as candidates for the M.Ed. degree.

* Offered in the Department of Physical Education for Women.

† Offered in the Department of Physical Education for Men.

§ The designation "E" after a course number over 100 signifies that the course is of graduate level in the College of Education but does not carry credit for Plans A and B in the Graduate School.

¶ For a four-year major in physical education 7 credits are required in student teaching. If a student is continuing the fifth year, 4 credits in student teaching are required during the fourth year and 3 credits during the fifth year.

The requirements of such a candidacy are the following courses or their equivalent:

1. Physiol. 51 Human Physiology
2. Phys.Ed. 51 Mechanics of Movement
- Phys.Ed. 60 Principles of Play
- Phys.Ed. 61 Technique of Teaching Sports
- Phys.Ed. 63 Technique of Teaching Folk Dancing
- Phys.Ed. 64 Technique of Teaching Group Gymnastics
- Phys.Ed. 67 Technique of Teaching Swimming
- Phys.Ed. 73 Technique of Teaching Rhythm
- Phys.Ed. 74 Advanced Fundamentals of Movement
- Phys.Ed. 82 Principles of Physical Education
- Phys.Ed. 83 School Health Education, Method and Content
- Phys.Ed. 84 Problems in Physical Education
- Phys.Ed. 85 Remedial Gymnastics
- Phys.Ed. 95 Administration of Physical Education
3. Education 51A-B-C, Introduction to Secondary School Teaching, 9 credits, plus 10 additional credits in education exclusive of practice teaching.

II. Candidates for the M.Ed. degree must meet the following requirements:

1. Average skill in at least 2 areas of physical activities or better than average skill in at least one area (opinion of experts in the field).
2. Total of 45 credits in courses numbered above 100—distributed as follows:
 - a. 24 credits in physical education courses numbered above 100; of these the following are required:
 - Phys.Ed. 111E Advanced Course in Methods of Teaching in Physical Education
or
One quarter of student teaching
 - Phys.Ed. 112E Supervision of Physical Education
 - Phys.Ed. 113E§ Physical Education in the Elementary Schools
 - Phys.Ed. 114E Administration of the School Health Education Program
 - Phys.Ed. 134E The Curriculum in Physical Education
 - Phys.Ed. 137E Recent Literature and Research in Physical Education
 - b. 6 to 12 credits in education courses numbered above 100.
 - c. A minimum of 9 credits in courses numbered above 100 in the minor field.
 - d. 6 to 12 credits, free choice.
3. The general requirements and standards of the College of Education for the completion of the work for the M.Ed. degree. See page 16.

REQUIREMENTS FOR A MINOR IN PHYSICAL EDUCATION FOR WOMEN

	Credits
I. Physical Education Skills Courses	7
NOTE.—This includes 5 credits in physical education required for graduation from the College of Education plus two additional credits which should be chosen from skills courses in the major curriculum in physical education for women. Consult your adviser for above courses.	
II. Technique Courses (minimum of 3 credits)	3
III. Health Courses (minimum of 2 credits)	2
Phys.Ed. 83 School Health Education, Method and Content (required) 2 cred.	
IV. Physical Education Courses	7
Phys.Ed. 95A Administration of Physical Education	2 cred.
Phys.Ed. 84 Problems in Physical Education	2 cred.
Phys.Ed. 65 Integration of Special Methods	2 cred.
Phys.Ed. 90 Student Teaching	1 cred.

§ Possible substitution if student has had extensive experience in elementary field.

	Credits
V. Electives*	7
Phys.Ed. 60 Principles of Play.....	2 cred.
Phys.Ed. 81 Trends in Physical Education.....	2 cred.
Phys.Ed. 54 Camp Leadership	2 cred.
Phys.Ed. 48 Lifesaving and Water Front Safety.....	1 cred.
Phys.Ed. 136E† Leadership in Recreation.....	3 cred.
Soc. 57 Leisure in the Modern World.....	3 cred.
Gen.Col. 129 Survey of Recreational Activities	3 cred.

RECREATIONAL LEADERSHIP

Major advisers.—Assistant Professors E. L. Haislet, Carl L. Nordly, Elizabeth Eckhardt May.

This curriculum leads to the degree of bachelor of science with a major in recreation. It was revised recently following two years of experimentation and conferences with recreation field workers. The college reserves the right to make major changes in the curriculum as experience may dictate. Such changes will, of course, protect the programs of students registering under present provisions. Only a limited number of major students are admitted each year.

The professional curriculum begins with the junior year. Students are selected for entrance to that year in terms of the following criteria:

1. Ninety college credits, exclusive of required physical education courses, distributed as indicated below.
2. Minimum of C average over all college work taken.
3. Entrance examination in recreation.
4. Evidence of leadership qualities upon basis of extra-classroom experience during high school and college, health examination, and personal interview.

FRESHMAN AND SOPHOMORE YEARS

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Lower division courses may be selected from offerings in the College of Science, Literature, and the Arts, the General College, or the four-year curricula in Physical Education, Music Education, Art Education, and Industrial Education. Students registered in the lower division of the various colleges and curricula should seek their advisers for this curriculum as follows:

College of Science, Literature, and the Arts: Mr. Nordly, Mrs. May.
 General College: inquire at 200 Westbrook Hall
 Physical Education: Mr. Haislet
 Music Education: Mrs. Nohavec
 Art Education: Mr. Ziegfeld
 Agricultural Education: Mr. Harden

The pattern of lower division courses is designed to provide an "education for leisure." Such a program as this provides a nucleus of education experience that will enable one to live more satisfyingly in a world that increasingly demands social understanding and rich inner resources of creative expression. Course G.C. 129 has been planned for those who are considering the field of recreation as a profession or those who wish to know about leisure problems and opportunities for their personal satisfaction. For the convenience of all students of the Univer-

* Consult the adviser in your minor for choice in electives.

† Offered in the Department of Physical Education for Men.

sity a variety of skills courses are listed on page 76. *Suggested courses* in various fields for the freshman and sophomore years are indicated below. Specific requirements for entrance to the recreation leadership major in the junior years are italicized.

Group A: Biology, Psychology, Botany, Zoology.—*Sixteen credits required, representing three of these fields.*

Suggested Courses

G.C. 10A-B	Human Biology	6
Bot. 1	General Botany	4
Psy. 1-2	General Psychology	6
Zool. 1-2-3	General Zoology	10

Group B: Physical sciences including Chemistry or Physics, Geology, and Astronomy.—*Fifteen credits required, representing three of these fields.*

Suggested Courses

G.C. 90	Physical Science III—Sound, Astronomy, and Technology.....	5
	Technology	5
or		
Ast. 11	Descriptive Astronomy	5
G.C. 89	Physical Science II—The Nature of Chemistry.....	5
Geol. 8	Introductory Geology	5
Phys. 1-2	Introduction to Physical Science	6

Group C: Social Sciences: Sociology, Political Science, History, and Economics.—*Fifteen credits required, representing three of these fields.*

Suggested Courses

Soc. 1	Introduction to Sociology	5
Pol.Sci. 1-2	American Government and Politics.....	6
Hist. 17	Social and Economic History of Modern Europe	5
Econ. 1	Introduction to Economics	5

Group D: English Composition and Speech.—*Fifteen credits required.*

Required Courses

Comp. 4-5-6	Freshman Composition (or Comp. A-B-C or exemption).....	9
Sp. 1-2	Fundamentals of Speech.....	6
or 5-6	Fundamentals of Speech.....	10

Group E: Skills and Their Appreciation.—*Thirteen credits required.*

Required Courses

G.C. 120-121	Art Today II and III (Laboratory section).....	6
or		
Art.Ed. 14-15 or 16	Introduction to Art Education	6
G.C. 122-123 or 123-124	Music Today	4
or		
Mu. 31-32 or 32-33	Music Appreciation	4
Phys.Ed. 1-2-3*	Sports Education (Men).....	3
or		
Phys.Ed. 1,2,3,4,5,6,7†	General Course in Physical Education (Women).....	5

Group F: G.E. 129.

G.C. 129	<i>Survey of Recreation Activities</i>	3
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Group G: Electives.

Electives	Electives in Groups A through E	13*
	Total	90*

* The College of Education requires for graduation: men, Phys.Ed. 1,2,3, Sports Education for Men, 3 credits; women, Phys.Ed. 1,2,3,4,5,6,7, General Course in Physical Education, 5 credits. These courses are included in the 93 credits required for men and the 95 credits required for women for entrance in the College of Education. Since they are included in Group E requirement, men students may elect three additional credits and women five additional credits.

† Physical education courses followed by a dagger are in the Department of Physical Education for Women. All other physical education courses are in the Department of Physical Education for Men.

MAJOR IN LEADERSHIP IN RECREATION

Students transferring from other institutions who desire to major in recreation will be permitted some deviation from the lower division pattern listed above and will be exempted from the specific course requirement Group F above, but they must take the entrance examination provided for in (3) above.

Upper division transfers from other institutions desiring to major in recreation may register in that curriculum in the fall quarter, but with the provision that this is a tentative registration only. During the fall quarter they will be asked to submit evidence of leadership qualities and will be required to take the entrance examination in recreation. A study of these data and of the lower division records of the students so registered will enable the committee responsible for the curriculum to select those who will be permitted to remain in the curriculum after the fall quarter. Only those students whose own examination of their lower division work give them some assurance that they have met the requirements under (1) and (2) above are encouraged to register.

Those university students who wish to enter the major curriculum in their junior year should make application to a major adviser in recreation before the completion of the work of the sophomore year to afford time for their examinations, interviews, and a study of the quality of their university work. Application should be made only when the student has some assurance of meeting the requirements under (1) and (2) above.

This major is designed to enable a student to secure the teaching certificate, if desired, as well as to meet graduation requirements for the College of Education. The teaching certificate should include preparation in one teaching minor *and special methods and practice teaching in the minor*, as well as in recreation.* A student cannot qualify for a teacher's certificate without methods and practice teaching in a minor. *A second minor is recommended.* Possible minors are physical education, music education, art education, or social studies. With careful program planning a student should be able to meet the requirements of the curriculum as well as the requirements for a teaching certificate in the normal period of six quarters. Students should consult Dr. W. S. Carlson, director of student teaching, to arrange for practice teaching. The following are the requirements for the junior and senior years in the College of Education.

COLLEGE OF EDUCATION

Junior and Senior Years

PSYCHOLOGY AND EDUCATION

A minimum of 20 credits is required.

Course No.	Title	Credits
Group A.—Required courses.		
Ed. 51A-B-C	Introduction to Secondary School Teaching	9
Phys.Ed. 56	Nature and Function of Play.....	2
or 60	Principles of Play.....	2
Ed. 104	Adult Education	2
Psy. 140	Social Psychology	3
Group B.—One course required.		
Ag.Ed. 54	Rural Education and Community Leadership.....	3
Ed.C.I. 169	Extra-curricular Activities	2
Phys.Ed. 82†	Principles of Physical Education.....	2
or 101	Principles of Physical Education.....	3

* Students should consult certification laws of the state in which they wish to teach.

† Offered in the Department of Physical Education for Women.

Group C.—One course required.

C.W. 80	Child Psychology	3
C.W. 82	Later Childhood and Adolescence	3
Psy. 72	Psychology of Fine Arts	3
Psy. 130	Vocational Psychology	2
Ed.Psy. 158	Psychology of Adolescence	3
Ed.Psy. 159	Personality Adjustments in Education	3

SOCIOLOGY AND GROUP WORK

A minimum of 12 credits is required.

Group A.—Required courses.

Soc. 57	Leisure and the Modern World	3
Soc. 146	Community Organization and the Social Setting of Recreation	3
Soc. 147	Group Leadership and Organization	3

Group B.—One course required.

Soc. 101	Social Organization	3
Soc. 110	Rural Organization	3
Soc. 114	Rural Social Institutions	3

RECREATION ADMINISTRATION

A minimum of thirteen credits is required.

Group A.—Required courses.

Phys.Ed. 57	Operation and Conduct of Play Centers	3
Phys.Ed. 136	Leadership in Community Recreation	3
Soc. 148	Supervisory Problems in Recreation	3

Group B.—One course required.

Phys.Ed. 66A-B	Methods and Techniques of Officiating	2
Ag.Ed. 56	Rural Youth Leadership	3
For. 143	Forest Recreation	3
Phys.Ed. 135	Tests and Measurements in Physical Education	3
Phys.Ed. 78	Elements of Scout Leadership	2
Phys.Ed. 54†	Camp Leadership	2
or 79	Camp Craft and Camp Administration	2

ADVANCED SKILLS AND THEIR APPLICATION

A minimum of sixteen credits is required.

Group A.—Six credits in physical education skill and first aid.**Required Courses for Men**

Phys.Ed. 7A-C	Recreational Games and Sports	2
Phys.Ed. 9	Rhythms	1

Required Courses for Women

Phys.Ed. 21A-B-C†	Freshman Team Sports	2
Phys.Ed. 23A-B†	Elementary Folk Dances and Games	1

Required Courses for Men and Women

Phys.Ed. 25†	First Aid	1
or 60	Prevention and Care of Injuries	2

Two additional credits required in physical education skills and their application upon consent of adviser. (See physical education courses on pages 107-113.)

Group B.—Ten credits in skills fields other than physical education.**Required Courses**

Sp. 31	Introduction to the Theater	3
ArtEd. 31	Orientation in Handcraft Processes	3

Four additional credits in advanced skills and their application chosen in consultation with adviser.

† Courses offered in the Department of Physical Education for Women.

PRACTICE AND FIELD WORK

A minimum of fifteen credits is required.

Ed.T. 85A-B-C	Practice and Field Work in Recreation Leadership	6
and		
Special Methods and Student Teaching in Minor§		9

CAMPUS ACTIVITIES

Participation in, and Learning from, Campus Activities	0
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ELECTIVES

General electives	14
Total credits	90

MINOR IN LEADERSHIP IN RECREATION

The minor is provided for students who wish preparation for discharge of recreation responsibilities as a supplementary phase of their teaching or other work. It counts as a minor for a teaching certificate and as a minor for graduation. All students who expect to assume responsibility for extra-classroom activities in school or any form of community recreation leadership, or who may anticipate lay recreation leadership, should find this minor profitable. All students who expect to obtain this minor should consult major advisers in recreation as soon as possible.

CONTROLLED ELECTIVES

Select one of the following :

Course No.	Title	Credits
Phys.Ed. 56	Nature and Function of Play	2
Phys.Ed. 60†	Principles of Play	2
Ed. 104	Adult Education	2
Ed.C.I. 169	Extra-curricular Activities	2

SKILLS

Skills and Their Application (with consent of major advisers in recreation)	12
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Students who have a major and minor in non-recreation fields must select 12 credits among at least two fields but five points must be in physical education. Students with a major or minor in a recreation field must select their credits from two fields other than the major or minor.

REQUIRED COURSES

Phys.Ed. 25†	First Aid	1
or 60	Prevention and Care of Injuries	2
Phys.Ed. 57	Operation and Conduct of Play Centers	3
Phys.Ed. 136	Leadership in Community Recreation	3
Soc. 57	Leisure in the Modern World	3
Soc. 146	Community Organization and the Social Setting of Recreation }	3
or 147	Group Leadership and Organization }	
Psy. 140	Social Psychology	3
Ed.T. 85A-B-C	Practice and Field Work in Recreation Leadership	3

CAMPUS ACTIVITIES

Participation in, and Learning from, Campus Activities	0
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Total credits required	33
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† Courses offered in the Department of Physical Education for Women.

§ Minor requirements may be fulfilled partially in the required curriculum.

SKILLS COURSES OF VALUE TO ALL STUDENTS IN EDUCATION

See also courses listed under requirements for both upper and lower divisions.

Drawing, Painting, and Modeling.—Art Ed. 4-6-8, 24-26-28, 29, 30; Arch. DP-I, II; Arch. M-I; Arch. I HP-I and II.

Dramatics and Speech.—Speech 32-33, 91-92-93, 111-112-113, 131; G.C. 127, 168, 70-71-72.

Handcrafts and Design.—H.E. 21-22, 24, 25, 26, 56A-B, 120; Ag.Eng. 4, 40; ArtEd. 1-2-3, 8, 20-21-22, 70-71-72, 73-74-75, 75M, 75B, 76-77-78; Ed.T. 57, 81; Ind. 11; M.E. 1, 3.

Horticulture.—Hort. 24, 176, 10, 11; G.C. 163, 164, 165, 166.

Music.—Mu. 1, 4-5; Mu.Ed.54, 59, 64, 40-41-42, 43-44-45; G.C. 125.

Photography.—G.C. 160-161-162; Phys. 35.

Physical Education Activities.—Individual and Team Sports, Rhythms, Self-testing Activities, Social Recreation.

Department of Physical Education for Women.—Phys.Ed. 21A-B-C, 22A-B-C, 23A-B, 42A-B, 43, 47A-B, 61A-B-C, 63, 67, 68.

Department of Physical Education for Men—Phys.Ed. 4A-B-C, 5A-B-C, 6A-B-C, 7A-B-C, 8, 9.

SOCIAL STUDIES

Major adviser.—Professor Edgar B. Wesley.

The secondary teacher of the social studies is seldom given an opportunity to devote his entire schedule to one special subject. Prospective teachers are therefore urged to take some work in each of the social studies. The following programs are designed to furnish a diversified preparation. The social studies program outlined below covers both the major and the minor. According to the regulations of the State Department of Education a major or a minor (18 credits) is required for teaching history in high school. Those who take a social studies major are strongly urged to gain experience in some extra-curricular activity. A minor in science, a foreign language, or mathematics constitutes a valuable addition to one's preparation in the social studies.

Major.—The course requirements for a major in the social studies are prescribed under A and B below:

- A. The student must select one of the five fields listed and must complete the course requirement indicated. This is referred to as the core subject.
 1. Economics, 30 credits including Courses 6-7, 3, 103-104, 141, 161, and at least 3 credits chosen from the following: 160, 154, 54, 149, 176, and 191-192.
 2. Geography, 28 credits, composed of Courses 11, 41, 53, 71, 101, 110, 111, and 120.
 3. History, 36 credits, 18 of which must be from the Senior College.
 4. Political Science, 30 credits.
 5. Sociology, 30 credits.
- B. In addition to the requirements set forth under A the student must complete courses in other subjects as follows:
 1. With economics, geography, political science, or sociology as the core subject. In addition to the requirements for the core subject the student must secure 18 credits in history and 18 credits in other subjects listed under A. Note the following limitations: Not fewer than 5 credits may be chosen from any one field, and the field selected under A as core subject may not be used to meet the B requirement.
 2. With history as the core subject. In addition to the requirements in history set forth above, the student must secure 30 credits in at least three other subjects listed under A.

No fewer than 5 credits may be chosen from any one field and courses in history may not be used to meet the requirement.

The C+ average is based on the 28-36 credits in the core subject.

Minor.—Those who major in some subject or field other than the ones listed under A, may secure a minor in the social studies. The course requirements for a minor in the social studies are 36 credits, 18 in history and 18 divided between at least two other subjects selected from the five listed under A above. Not fewer than 5 credits in any one subject will be counted toward the requirement of 18 credits in other subjects.

SPEECH PATHOLOGY

Major adviser.—Associate Professor Bryng Bryngelson.

This program of study has been arranged for those students who are interested in children with speech disorders. The training in this specialized field is designed to qualify students for professional work in speech correction in schools, hospitals, private clinics, and child guidance clinics.

The program is arranged for five years of study. The required courses are listed below. Students interested in this field should consult the major adviser before registering. All electives selected to complete the work for a degree should have the approval of the adviser. Junior, and senior electives should be selected from the following: Psy. 84; Soc. 52, 49; C.W. 40, 82, 90, 170; P.M.&P.H. 57 or 53.

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Freshman and Sophomore Years

Course No.	Title	Credits
Comp. 4-5-6	Freshman Composition (or English A-B-C or exemption).....	9
Phys.Ed. 1-7	General Course in Physical Education.....	5
Zool. 1-2-3	General Zoology.....	10
Psy. 1-2	General Psychology.....	6
Sp. 1-2-3	Fundamentals of Speech.....	9
Psy. 4-5	Introductory Laboratory Psychology.....	4
Zool. 83	Introduction to Genetics and Eugenics (optional).....	3
Zool. 21	Histology (optional—recommended for those minoring in zoology).....	5
Physiol. 2	Elements of Physiology.....	5
HumanAnat. 3	Elementary Anatomy.....	3
	Physical Education.....	3 or 5
	Electives.....	31-33
	Total	95

COLLEGE OF EDUCATION

Junior and Senior Years

Course No.	Title	Credits
Sp. 61	Speech Hygiene.....	3
Sp. 67	Phonetics.....	3
Sp. 162-163	Speech Pathology.....	6
Psy. 144-145 or 113	Abnormal Psychology.....	6 or 3
Psy. 151-152	Animal Psychology.....	6
or 52	Genetic Psychology.....	3
Ed.Psy. 60	Introduction to Statistical Methods.....	2-3
Ed.Psy. 142	Construction and Use of Individual Aptitude Tests.....	3
Ed. 61A-B-C	Introduction to Elementary School Teaching.....	9
or 51A-B-C	Introduction to Secondary School Teaching.....	9
Ed.C.I. 145	Remedial Reading.....	2

Ed.C.I. 174-175-176*	Clinical Methods and Practice in Speech Pathology.....	9
C.W. 80	Child Psychology	3
	Elective in Child Welfare	3

The C+ average is based on the following courses: Sp. 61, 67, 162-163; Ed.Psy. 60, 142; Ed.C.I. 174-175-176; C.W. 80.

Graduate School (Fifth Year)

The fifth year of this curriculum is devoted to graduate work. See Graduate School Bulletin for detailed requirements. Only those having at least a B average in undergraduate work will be considered for graduate study. The major, consisting of at least 18 credits, should be selected on approval of the major adviser from the following:

Sp. 121-122, 141-142, 261-262-263; Psy. 114, 125-126; Zool. 170-171; Ed.Psy. 149-150, 146-147, 291; C.W. 130.

A minor selected from courses in education, psychology, zoology, child welfare, or physiology is recommended.

STUDENT PERSONNEL WORK

Major adviser.—Professor C. Gilbert Wrenn.

Work leading to the M.A. or Ph.D. degree can be taken with a concentration in this field. Preparation is possible for either technical or administrative positions at either the secondary school or college level. A major in educational psychology is most frequently advised with a minor in either psychology, education, or sociology. A major in education is also possible with a minor in psychology. The Plan A type M.A. program is the almost universal recommendation for students desiring only the first graduate degree.

In this field heavy stress is laid upon training leading to an adequate understanding of the individual student. Emphasis is also placed upon clinical practice or internship experience in active school, university, or social agency guidance programs, provided for under Ed.Psy. 281, Practice in Personnel Work. Basic courses are Ed.Ad. 133; Ed.C.I. 135; Ed.Psy. 120, 141, 158, 159, 225, 233; and Ed. 252. In addition, students are advised to become familiar with curriculum and administrative problems at either the public school or higher educational level, to take certain courses in psychology and sociology, and, if doctorate candidates, to take advanced courses in statistics and measurement, and to probe research problems in the student personnel field.

TEACHERS OF SUBNORMAL CHILDREN

Major adviser.—Associate Professor Guy L. Bond.

Students who complete the freshman and sophomore years of this course, who have had two years of teaching experience in elementary schools, and who complete a minimum of 20 credits in approved courses of the junior and senior years, will qualify for a special teaching certificate required of teachers of subnormal children, in special classes for which state aid is received. All students who have not had the equivalent previously must take the courses in directed teaching and handwork to qualify them for this special certificate.

Unclassed students with proper prerequisites may pursue courses for which they are qualified in the junior and senior years, on the basis of previous training and experience.

* Passing the qualifying examination in English is prerequisite to this course.

The C+ average is based on Ed. 61A-B; Ed.Psy. 142, 184; Ed.T. 53A-B; Ed.C.I. 133, 145; C.W. 80; Soc. 49, 60.

FOUR-YEAR CURRICULUM FOR TEACHERS OF SUBNORMAL CHILDREN
JUNIOR COLLEGE, COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Freshman Year

Course No.	Title	Credits
Eng. A-B-C or Comp. 4.5-6	Freshman English	15
ArtEd. 1-2-3	Freshman Composition (or exemption from the requirement)....	9
Zool. 1-2-3	Fundamental Experiences in Design	9
Soc. 1	General Zoology	10
	Introduction to Sociology	5
	Physical Education	3
	Electives*	6-12

Sophomore Year

Course No.	Title	Credits
Psy. 1-2	General Psychology	6
Psy. 4.5	Introductory Laboratory Psychology.....	4
Hist. 1-2-3	European Civilization	12
Ind. 11	Special-Class Woodwork	2
ArtEd. 17-18-19	Art for Elementary School Teachers	9
Phys.Ed. 23A or B	Elementary Folk Dances and Games.....	1/2
Sp. 1-2	Fundamentals of Speech	6
	Physical Education	2
	Electives*	6

COLLEGE OF EDUCATION

Junior Year

Course No.	Title	Credits
Ed. 61A,B,C	Introduction to Elementary School Teaching.....	9
Ed.C.I. 60	The Teaching of Reading in the Elementary School.....	3
Ed.C.I. 61	The Teaching of the Social Studies in the Elementary School	2
Ed.Psy. 60	Introduction to Statistical Methods.....	2.3
Ed.Psy. 158 or C.W. 82	Psychology of Adolescence	3
Ed.Psy. 184	Later Childhood and Adolescence	3
Phys.Ed. 60	Education of the Slow Learning Child.....	2
Soc. 49	Principles of Play.....	2
Soc. 60	Social Pathology	3
C.W. 80	Social Protection of the Child.....	3
	Child Psychology	3
	Electives*	9 or 10

Senior Year

Course No.	Title	Credits
Ed.C.I. 62	The Teaching of Arithmetic in the Elementary School.....	2
Ed.C.I. 63	Children's Literature	2
Ed.C.I. 64	The Teaching of English in the Elementary School.....	3
Ed.C.I. 65	The Teaching of Science in the Elementary School	3
Ed.C.I. 145	Remedial Reading	2
Ed.T. 53§	Directed Teaching of Subnormal Children	5
Ed.Psy. 120	Basic Principles of Measurement.....	3
Ed.Psy. 142	Construction and Use of Individual Aptitude Tests.....	3
Ed. 133	Guidance in Secondary Schools.....	2.3
Soc. 90	Survey of Social Work	3
	Electives*	17 or 18

* Electives should be chosen upon recommendation of the major adviser.

§ Passing the qualifying examination in English is prerequisite to this course.

VISITING TEACHERS

Major adviser.—Professor Edgar B. Wesley.

The work of the visiting teacher is social work in the schools for the development of the individual child through adjustment of school-home problems. This work utilizes accurate and extensive psychological knowledge of the pupil, knowledge of, and experience in, the school, knowledge of and training in social work. It is assumed that to the four-year program outlined below there should be added experience in teaching and graduate work in the field of social work. This four-year undergraduate program will permit a student to teach in the field of social sciences in secondary schools as well as to perform elementary visiting teacher duties if such are in demand, but a fully trained visiting teacher must have further professional training. The curriculum below provides undergraduate preparation for graduate work in the field of social work as well as the basic training for teaching in the social science field.

FOUR-YEAR CURRICULUM FOR VISITING TEACHERS

JUNIOR COLLEGE, COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Freshman Year

Course No.	Title	Credits
Eng. A-B-C	Freshman English	15
or		
Comp. 4-5-6	Freshman Composition (or exemption).....	9
Hist. 1-2-3	European Civilization	12
G.C. 10A-B-C	General College Human Biology.....	9
Soc. 1	Introduction to Sociology.....	5
Phys.Ed. 1-2-3	General Course in Physical Education.....	3
	Electives	4-10
	Total	48

Sophomore Year

Course No.	Title	Credits
Econ. 6-7	Principles of Economics.....	10
Hist. 20-21-22	American History	9
Pol.Sci. 1-2-3	American Government and Politics.....	9
Soc. 6	Social Interaction }	3
or 14	Rural Sociology }	
Soc. 49	Social Pathology	3
Psy. 1-2	General Psychology	6
	Physical Education	2
	Electives	5
	Total	47

COLLEGE OF EDUCATION

Junior Year

Course No.	Title	Credits
Ed. 51A-B-C	Introduction to Secondary School Teaching.....	9
Ed.Psy. 60	Introduction to Statistics.....	2
Ed.Psy. 158	Psychology of Adolescence	
or		
C.W. 82	Later Childhood and Adolescence }	3
Ed.Psy. 146-147	Child Guidance	4
Ed.Psy. 184	Education of the Slow Learning Child.....	2
Soc. 146	Community Organization and the Social Setting of Recreation	3
P.M.&P.H. 50	Public and Personal Health.....	3
P.M.&P.H. 59	Health of the School Child.....	3
	Electives†	16
	Total	45

Senior Year

Course No.	Title	Credits
Ed.T. 69A-B-C*	Special Methods and Directed Teaching in History and Social Studies	9
Ed.Psy. 159	Personality Adjustments in Education.....	3
Ed.Psy. 120	Basic Principles of Measurement.....	3
C.W. 140	Behavior Problems	2
Soc. 53	Elements of Criminology.....	3
Soc. 60	Social Protection of the Child.....	3
Soc. 90	Survey of Social Work.....	3
Soc. 91	Field Observation of Social Work.....	2
Econ. 161	Labor Problems and Trade Unionism.....	2
	Electives†	15
	Total	45

* Passing the qualifying examination is prerequisite to this course.

† Electives should be chosen in consultation with the adviser.

DESCRIPTION OF COURSES

Junior College courses, primarily for freshmen and sophomores, are numbered from 1 to 49; Senior College courses, primarily for juniors and seniors, are numbered from 50 to 99; courses numbered from 100 to 199 are primarily for seniors and graduates; courses numbered above 200 are for graduate students only. Courses designated with a capital "E" are at a graduate level and carry credit toward the master of education degree, but do not carry credit in the Graduate School.

An asterisk (*) after graduate course numbers indicates courses that may be taken for independent work under Plan B for the Master's degree.

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

GENERAL COURSES

- Ed.51A-B-C.†† Introduction to Secondary School Teaching. Objectives, organization, curricula, and methods of secondary schools and instruction with special reference to the fundamental facts of psychology involved therein. A combination and integration of topics commonly treated in courses in educational psychology, principles of education, and general secondary school methods. Unit A, psychological fundamentals; Unit B, methods of instruction; Unit C, organization, objectives, materials.
- Ed.61A-B-C.†† Introduction to Elementary School Teaching. Objectives, organization, curricula, and methods of elementary schools and instruction with special reference to the fundamental facts of psychology involved therein. A combination and integration of topics commonly treated in courses in educational psychology, principles of education, and general elementary school methods. Unit A, psychological fundamentals; Unit B, organization, objectives, materials; Unit C, methods of instruction.
- Ed.W. Professional Preparation for Teaching. This classification is designed for students already holding a Bachelor's degree who desire to complete their preparation for teaching and qualify for a state teacher's certificate. Such students should consult the adviser as to their eligibility and outline a program covering at least three quarters of study and totaling not less than 45 credits. Courses must be selected so as to meet all requirements for major, minor, and professional training. The entire program must be approved by the adviser and the entire 45 credits must be completed successfully before credit is allowed for any of the courses taken.

AGRICULTURAL EDUCATION

- Agr.Ed.1. Introduction to Agricultural Education. An orientation course for students who are interested in exploring the opportunities for employment and service as teachers of agriculture. Qualifications of teachers and a survey of preparatory offerings.

† The entire course including the final examination covering all units must be successfully completed before credit is received for any quarter.

‡ A fee of \$1 per credit is charged for this course.

- Agr.Ed.51. Educational Psychology. The main facts and principles of educational psychology and the fundamental principles upon which education is based. Emphasis is placed on those phases which are most closely related to vocational education.
- Agr.Ed.54. Rural Education and Community Leadership. The rural school as a community center, and ways and means of organizing education and recreational activities, such as clubs, festivals, fairs, and other desirable features of rural community life.
- Agr.Ed.56. Rural Youth Leadership. A lecture, demonstration, and laboratory course in co-operation with leaders and specialists in the various fields and problems of rural youth leadership with emphasis on 4-H clubs, Future Farmers of America, and extension activities.
- Agr.Ed.81. Teaching Agriculture. Organization and administration of the program for teaching agriculture in the secondary school. Relationships to other rural programs; planning farm practice activities, guidance for rural youth, and the use of the home farm and community in teaching agriculture.
- Agr.Ed.82.‡ Methods in Teaching 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 school agriculture.
- Agr.Ed.83.‡ Advanced Methods in Teaching Agriculture. (Continuation of Agr. Ed. 82)
- Agr.Ed.90.‡ Observation and Participation. Observation of agriculture departments in operation, including facilities, classes, and supervised practice. Individual reports and class discussions of observations.
- Agr.Ed.91.‡ Supervised Practice 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.
- Agr.Ed.101. Part-time School Instruction. Instructional programs for rural young men not regularly enrolled in school. Analysis of rural youth situations and placement problems.
- Agr.Ed.102. Evening School Instruction. Instructional programs for adult farmer groups. Organization of courses, teaching procedures, follow-up work, community programs of adult education.
- Agr.Ed.103. Facilities and Materials. A study of the physical arrangement for departments of vocational agriculture. Building facilities, room fixtures, references, equipment, visual aids, illustrative materials.
- Agr.Ed.104. Planning Programs. Long-time and annual plans for departments of vocational agriculture. Schedule of activities, analysis of results.
- Agr.Ed.137. Course of Study Construction in Agriculture. A lecture and clinical laboratory course designed to aid teachers in constructing courses of study appropriate to the needs of local communities. Consideration of principles for the selection, distribution, and organization of the subject-matter for the integrated course of study in agriculture.
- Agr.Ed.141.‡ Supervised Practice in Vocational Agriculture. A special methods course dealing with the selection, planning, supervising, and summarizing of the practical work in agriculture. Special emphasis on the problem method of teaching and the use of the farm and community for teaching purposes.
- Agr.Ed.145. The Integrated Course of Study in Agriculture. A presentation of the problems of organization, administration, and teaching in departments of

‡ A fee of \$1 per credit is charged for this course.

- agriculture in the secondary schools. Special emphasis on planning programs for individual students.
- Agr.Ed.221,222,223. Graduate Problems. Making investigations, gathering data, and formulating plans regarding agricultural education.
- Agr.Ed.232. Research in Agricultural Education. Introduction to investigational work in problems of teaching agriculture in high schools. Experience in selecting problems, preparation of bibliographies, analyzing and interpreting data, and preparing manuscripts.
- Agr.Ed.237. Adult Education in Agriculture. The organization, objectives, and techniques for conducting evening schools and part-time schools for farmers and out-of-school youth.
- Agr.Ed.238. Planning and Evaluating Programs of Agricultural Education. Surveying community needs and the establishment of objectives and goals to meet those needs. Developing long-time and annual programs in agricultural education with suggestions as to means of accomplishment and the evaluation of outcomes.
- Agr.Ed.247.‡ Foundations of Methods in Teaching Agriculture. A study of the progressive philosophy which forms the basis for the current trends in the organization and methods of procedure in teaching agriculture in the secondary schools. Emphasis on the problem of co-ordinating farm practice and the course of study activities of individual students. Critical evaluation of procedures in the adaptation of the learning activities to the level of the individual needs, abilities, and interests of the students. Evaluation of the results of learning, diagnosis of student difficulties, and planning remedial measures.
- Agr.Ed.286. Special Problems in Agricultural Education. Analysis and discussion of special problems of individual teachers. Opportunity for intensive study of specific problems related to local school programs.

ART EDUCATION

GROUP A—DESIGN

- ArtEd.1-2-3. Fundamental Experiences in Design. Simple problems in construction with relation to the home, school, commerce, and industry; emphasis on relationships of line, texture, area; the nature, qualities, and uses of various media; experience in the integration of art elements.
- ArtEd.14-15-16. See Group D.
- ArtEd.14A-15A-16A. Introduction to Art: Laboratory. Experiences in problem-solving in art built out of the needs of contemporary society as developed in ArtEd. 14-15-16.
- ArtEd.17-18-19. Art for Elementary Teachers. A course providing for prospective elementary, kindergarten, and preschool teachers a background of the art experiences necessary for effective co-operation in the educational programs of today and tomorrow. Laboratory work in 17 emphasizes representation, in 18 design and simple crafts, in 19 there is a synthesis of these types of experience into larger projects based on art problems significant in contemporary life.
- ArtEd.20-21-22. Fundamental Experiences in Design—Continued. Design with especial emphasis upon light and color. Discussion of color theories; manipulative experiences planned to develop sensitiveness to the possibilities of color in costume, public school design problems, and handcrafts.

‡ A fee of \$1 per credit is charged for this course.

- ArtEd.52A-B. Art Problems of the Home. A study of the art problems of the contemporary home. All aspects of the house unit—the plan, the interior, the exterior, and the garden—are considered as integral parts of one unit. Lectures, laboratory activities, readings, and visits to places of interest.
- ArtEd.54-55-56. Fundamental Experiences in Art. Primarily for nonmajors. Manipulative experience related to fundamental design problems at the level of maturity demanded in meeting school and community needs.
- ArtEd.70-71-72. Fundamental Experiences in Design—Continued—Color Emphasis. Manipulation of material on the level of 20-21-22 but demanding more knowledge and maturity in order (1) to relate these experiences to industry and the stage, or (2) to use them in community service for recreative and therapeutic values.
- ArtEd.150E. Commercial Design. A study of the function of art in printing, advertising, and publicity. Lectures, discussions, and problem solving.
- ArtEd.151E. Industrial Design. A study of the relationship of function, materials, and appropriate machine and tool processes to the designing or redesigning of products for quantity production. Lectures, discussions, and problem solving.
- ArtEd.152E. Landscape Design. (See also courses in Agriculture and Architecture.) See also ArtEd. 153-154-155E, page 86.

GROUP B—HANDCRAFTS

ArtEd.31. Orientation in Handcraft Processes. A course offered primarily to demonstrate to prospective social workers, elementary school teachers, and other non-art majors the recreational and therapeutic possibilities in handcrafts. It includes lectures with demonstrations and some manipulation of material to discover the possibilities and limitations of materials. Suggestions as to design appropriate to these materials will be helpful in purchasing the products of industry.

For courses in wood work see Industrial Education.

Art education majors are expected to be able to design in terms of materials. Projects involving three-dimensional construction will form part of ArtEd. 1-2-3 and ArtEd. 20-21-22. At the senior level this experience should be supplemented by more intensive work.

ArtEd.73-74-75.‡ Ceramic Materials and Processes. Gives opportunities for thoro study of ceramics.

73.‡ Hand-building processes, simple glazing, and incised line decoration.

74.‡ Hand building continued, working on the wheel; engobes and underglazing.

75.‡ Continuing hand building and work on the wheel; elementary casting and pouring; engobes, underglazes, and glazes continued; overglazes and inlays.

ArtEd.76-77-78.‡ Textile Materials and Processes. Give opportunities for thoro study of textiles, including manipulative experience with textile processes of weaving and printing. Emphasis may be placed (1) upon seeing the relation to modern textile-production processes in industry or (2) upon skills to be applied in recreative or educational activities in the home, school, and community.

‡ A fee of \$1.50 per credit is charged for this course.

GROUP C—DRAWING AND PAINTING

Courses emphasizing the development of creative ability and technical skills in the fields of drawing and painting. Instruction consists chiefly of studio work. These courses are useful also for developing appreciation, interests, and hobbies.

ArtEd.4,6,8. Acting Drawing. Study of figure proportion and figure construction, both with and without a model; problems in still life and landscape. Analysis and comparison with work of historical masterpieces; emphasis on organization, form, and movement. Mediums—charcoal, pencil, crayon, pen, etc.

ArtEd.24,26,28. Drawing and Painting from Still Life, Pose, and Landscape. Continuation of 4, 6, 8 with handling of more difficult mediums, water color, gouache. Methods of drawing from graphic processes.

ArtEd.61,62,63. Drawing and Painting—Advanced. Experience in the art of painting from the human head and figure and from objects in various mediums—charcoal, gouache, oil, dependent on degree of proficiency of the individual student.

ArtEd.66-67-68. Advanced Painting. A continuation of 61, 62, 63.

ArtEd.124E,125E,126E. Advanced Drawing and Painting. Study of the plastic means at the disposal of the painter. Compositional organization stressed. Experiment with various mediums. Creative projects completed.

GROUP D—APPRECIATION

ArtEd.14-15-16. Introduction to Art Education. Lectures, discussions, tours, and readings aimed to develop an interpretation of art as an important aspect of all activities which the individual experiences in providing for his personal and social needs.

ArtEd.14A-15A-16A. Introduction to Art Laboratory. Experiences in problem solving in art built out of the needs of contemporary society as developed in ArtEd. 14-15-16.

ArtEd.52A-B. See under Group A, page 85.

ArtEd.57-58. Art and Leisure. Participation in the cultural advantages of Twin City galleries and auditoriums, particularly our University Art Gallery. Tours and tutorial conferences arranged.

For History of Art see offerings under Fine Arts and Home Economics.

ArtEd.153,154,155E. An advanced course in appreciation designed to develop student awareness of the relations that have existed between the artist and his product and the society which produced both. The home, costume, and plastic arts approached as evidences of the psychological temper of various times, with art as the objective record of man's consciousness.

ArtEd.153. The Home.

ArtEd.154. Personality and Its Expression in Costume.

ArtEd.155E. The Plastic Arts.

Contact with excellence, study of achievement in the arts, is an integral part of all courses. Tours to stores and galleries are arranged.

GROUP E—PROFESSIONAL COURSES

ArtEd.84.‡ The Teaching of Arts in the Elementary Grades. The place of art in the curriculum of the modern elementary school with methods for securing maximum educational returns from art activities. The findings of the Owa-

‡ A fee of \$1 per credit is charged for this course.

- tonna Art Education Project are utilized to emphasize the contributions art can make, both as a general and special subject, toward enriching the lives of all.
- ArtEd.86-87-88.‡ Special Methods and Directed Teaching in Art. Actual experience under public school conditions. Techniques required in fulfilling these conditions. Informal discussions and conferences to generalize specific experience.
- ArtEd.183E. Problems in Art Education. The developing by each individual of an art philosophy integrated in a wider philosophy of life. A course in which teaching experience and professional education courses are synthesized in the light of the dynamic characteristics of life and art today.
- ArtEd.185E. Types of Art Instruction. A study of current practices in art teaching at the secondary level, as they relate to various types of art activities and the attainment of objectives. Laboratory experience with a variety of mediums and techniques and their use in the classroom. Special emphasis will be laid on the expressed problems of the students in the light of modern educational theory and practice.
- ArtEd.189. Application of Esthetic Theory to Public Education. A scrutiny of the varying claims made for art in its wider functional aspect; the validity of the claims tested in everyday living; findings applied to education.
- ArtEd.284E. Recent Literature and Research in Art Education and Related Fields. Reading and reports.
- ArtEd.290E-292E. Special Problems in Art Education. Nine to fifteen hours' credit. The content of the courses is determined by the individual specialization and the creative projects selected. (Registration by special permission of the major adviser.)

CHILD WELFARE

- C.W.10. Introduction to Child Study. Introduction to general survey of modern movement for child study, including the child development, nursery school, parent education, and mental hygiene approaches.
- C.W.40. Child Training. A study of the physical and mental development of the child followed by a discussion of the problems of training of young children. Observations in the Nursery School, lectures, and reports. (Not open to majors in the Nursery School-Kindergarten Curriculum.)
- C.W.80. Child Psychology. A survey of child development with special reference to nursery school and kindergarten education.
- C.W.82. Later Childhood and Adolescence. Growth, social adjustment, emotional, mental, and personality development. Training and guidance in leisure time activities.
- C.W.130. Motor, Linguistic, and Intellectual Development of the Child. Lectures, readings, and reports.
- C.W.131. Personality, Emotional, and Social Development of the Child. Lectures, readings, and reports.
- C.W.133-134. Measurement of Child Personality. Developmental records, mental tests, ratings, controlled observations, etc., used in the study of children. Practical exercises and problems on institute records and data.
- C.W.140. Behavior Problems. Nature and origin of behavior difficulties. Emphasis upon young children and the relation between early behavior trends and later maladjustment.

‡ A fee of \$1 per credit is charged for this course.

- C.W.141-142. Practicum in Behavior Problems. Clinic and field work in the study and treatment of behavior problems.
- C.W.170. Parent Education. History and survey of programs, materials, and methods. Administration and organization. Lectures, discussions, and reports.
- C.W.190. Principles of Mental Measurement of Young Children. Mental test methods and their interpretation. Lectures, demonstrations, readings, and reports.
- C.W.230-231-232. Seminar in Recent Literature. Reviews of current literature, discussion of fundamental problems, and reports on research. Meetings in alternate weeks.
- C.W.233-234-235. Research in Child Development.
- C.W.236-237-238.* Seminar in Human Development. Fall, prenatal and infant development; winter, early and middle childhood; spring, adolescence. Surveys and discussion of research findings.
- C.W.250-251-252. Seminar in Nursery Education. Discussion of historical background and current practices, fundamental problems and theory, problems of administration and organization and of materials and techniques.
- C.W.260. Seminar in Physical Growth. Survey of the growth of the human body and its systems from early fetal life to maturity. Same as Anatomy 160. Credit cannot be received for both Anatomy 160 and C.W. 260.
- C.W.261-262-263. Statistical and Laboratory Work on Physical Growth. Same as Anatomy 161-162-163. Credit cannot be received for both.
- C.W.270-271-272.* Readings in Child Development. Independent readings and reports in any field such as physical growth, health problems, mental development, social behavior, nursery school theory, parent education, etc., which meets the approval of the listed instructors.
- C.W.273. Technique of Parent Education. Methods of teaching adults. Organization and administration of study groups. Demonstration lessons and observations.
- C.W.274. Field Work in Parent Education. Lesson plans, observations, and field work.
- C.W.290-291. Mental Examination of Preschool Children. A study of the methods used in testing young children together with practice.

CURRICULUM AND INSTRUCTION

NOTE.—All courses listed under Curriculum and Instruction carry a fee of \$1 per credit.

GENERAL COURSES

- Ed.C.I.104.‡ Adult Education. This is a survey course of the field of adult education. It deals with agencies, programs, philosophies, history, and trends. Each student will be given opportunity to devote a part of his time to the field of his special interest.
- Ed.C.I.105.‡ Visual Aids in Teaching. A study of the characteristics, advantages, limitations, and practical schoolroom use of visual aids of both non-projection and projection types. Gives specific laboratory practice in operation of usual projection machines. Provides information on sources of materials available for all grade levels and includes demonstrations of practical uses of visual aids in various school subjects. Is intended as a definite means of working out solutions to individual visual aid problems.

‡ A fee of \$1 per credit is charged for this course.

- Ed.C.I.107.‡ Radio in Education. The major purpose of the course is to assist teachers and prospective teachers in making the most effective use of radio in the classroom. This necessitates consideration of such aspects as production, techniques of classroom use, selection of equipment, teaching appreciation, and the administration of radio in the schools. Field trips, demonstrations, activities, and concrete examples are used wherever possible. Each individual's needs and interests are met by permitting him to select for intensive study one of the several units into which the course is divided.
- Ed.C.I.107‡-108.‡ Radio in Education. (Same content as Ed.C.I. 107 but expanded somewhat and offered during two quarters in alternate years.)
- Ed.C.I.114.‡ Methods and Materials in the Field of Adult Education.
- Ed.C.I.145.‡ Remedial Reading. A study of the remedial practices in reading that are useful to both the classroom teacher and the reading specialist in the light of contributions of research, projects, and observations of remedial techniques.
- Ed.C.I.171.‡ Curriculum Laboratory Practice. A practice course in the analysis and construction of units, courses of study, and curricula; class projects and individual projects according to needs, interests, level, and specialization.
- Ed.C.I.174-175-176.††§ Clinical Methods and Practice in Speech Pathology. Case history and analysis; testing and diagnosis of speech defects; techniques and work programs for treatment; practical clinical work with children in public schools and with adults in the University Speech Clinic.
- Ed.C.I.207.*‡ Problems in Radio Education. Individual problems for graduate students whose work in Ed.C.I. 107 has indicated a special aptitude and interest in the field. Each student selects a problem, studies it intensively, outlines the proposed procedure, and carries it through to completion under the guidance of the instructor. Meetings of the class are called from time to time to provide opportunity for group discussion and criticism of the individual problems.
- Ed.C.I.271.*‡ Problems in Curriculum Construction. Special problems in the field of the student's individual choice.
- Ed.C.I.273.*‡ Problems in Reading. A survey of recent problems, issues, studies, and findings. Intended for those who have had previous training in reading, who have a special problem, or who wish to survey the most recent literature.

ELEMENTARY EDUCATION

- Ed.C.I.60.‡ The Teaching of Reading in the Elementary School.
- Ed.C.I.61.‡ The Teaching of the Social Studies in the Elementary School.
- Ed.C.I.62.‡ The Teaching of Arithmetic in the Elementary School.
- Ed.C.I.63.‡ Children's Literature. A study of the varied purposes of reading in the elementary school. Bases of selecting materials for extensive reading. Analysis of studies of children's interests. Extensive critical survey of old and new materials for children's reading.
- Ed.C.I.64.‡ The Teaching of English in the Elementary School.
- Ed.C.I.65.‡ The Teaching of Science in the Elementary School.
- Ed.C.I.119.‡ Elementary School Curriculum. A study of the principles underlying the selection and organization of subject-matter for courses in the elementary school and a survey of the methods, problems, and findings of research by subjects.

‡ A fee of \$1 per credit is charged for this course.

§ Passing the qualifying examination in English is prerequisite to this course.

- Ed.C.I.119T‡-120T.‡ Elementary School Curriculum. (Same as above, for teachers in service.)
- Ed.C.I.130.‡ Problems of Childhood Education. Lectures, demonstrations, readings upon current kindergarten and primary methods, the needs of five-, six-, and seven-year-old children and the philosophy of primary instruction.
- Ed.C.I.143.‡ Teaching of Reading in the Elementary School. A study of the objectives, the materials, and the teaching procedures in lower and intermediate grades in the light of the contributions of research; survey of current practices and curricula; class and individual projects; observation of reading techniques and materials in the demonstration school.
- Ed.C.I.144.‡ Teaching of Reading in the Upper Grades and Junior and Senior High Schools. A study of the teaching procedures, objectives, and materials, with special consideration for the teaching of reading in the various subject-matter fields.
- Ed.C.I.146.‡ Current Developments in Language Expression in the Elementary School. A general course in the function and development of language power in connection with all the experiences of the school day; materials, methods, and current philosophies of language in the elementary school.
- Ed.C.I.148.‡ Teaching of Primary Arithmetic. Functions of arithmetic; curriculum studies; preparation of informational units; tests of arithmetic readiness; organization of materials; teaching methods.
- Ed.C.I.149.‡ Teaching of Intermediate Grade Arithmetic. Function of arithmetic instruction; curriculum studies; development of socialized units; measurement and diagnosis; experimental research on methods of arithmetic instruction; literature on arithmetic.
- Ed.C.I.150.‡ Supervision and Improvement of Instruction. An analysis of the functions and duties of a supervisor as related to the improvement of instruction; specific supervisory technique; objective analysis of classroom activity; concrete applications to present-day problems; class studies.
- Ed.C.I.151.‡ Diagnostic and Remedial Instruction. Objective evaluation of the results of teaching; diagnosis of pupil difficulty; remedial work; tests as aids to teaching; following up a testing program.
- Ed.C.I.152.‡ Supervision: The Adjustment of Schools to Individual Differences. The adaptation of the school, the curriculum, and classroom procedures to the abilities and interests of pupils.
- Ed.C.I.153.‡ Supervision and Teaching of English in the Elementary Schools. Improvement of instruction in language, grammar, spelling, and handwriting; the results of scientific investigation; use of standardized and informal tests; remedial work.
- Ed.C.I.156.‡§ Practice Supervision—Group Problems and Field Work. Instructional and supervisory problems studied with the help of direct classroom visitation in university demonstration schools and schools in the Twin Cities, followed by conferences with teachers and supplemented with research in the literature.
- Ed.C.I.157.‡§ Practice in Supervision. Individual research on special supervisory problems; especially intended for supervisors in service.
- Ed.C.I.160.‡ Supervision of Elementary Subjects. An overview course for giving

‡ A fee of \$1 per credit is charged for this course.

§ Passing the qualifying examination in English is prerequisite to this course.

- supervisor and superintendent information as to recent trends in elementary education.
- Ed.C.I.170A.‡ Curriculum and Course of Study Construction. A study of the principles and methods for the selection and organization of units, courses of study, and curricula at the elementary school level.
- Ed.C.I.181.‡ Foundations of Elementary School Methods. A survey of the current philosophy and research which form the bases for improvement of elementary school instruction. Observation in the demonstration school.
- Ed.C.I.181T‡-182T.‡ Foundations of Elementary School Methods. For teachers in service.
- Ed.C.I.190.‡ Principles of Selection of Materials for Reading in the Elementary School. An advanced course in reading and selection of materials suitable for the elementary school with emphasis upon curriculum needs, principles of child development, and scientific determination of reading difficulty.
- Ed.C.I.224-225-226.‡ Seminar in Elementary School Problems.
- Ed.C.I.255.‡ Supervision and Teaching of Arithmetic. Locating supervisory needs; enrichment of instruction; selection, organization, gradation of the curriculum; diagnostic and remedial teaching; recent trends and research.
- Ed.C.I.259.*‡ Supervision and Teaching of Reading. The improvement of instruction and supervision of reading by teachers, principals, and supervisors.
- Ed.C.I.261.*‡ Special Problems in School Supervision. Intended primarily for graduate students majoring in supervision and others qualified to make intensive studies of specific problems related to school supervision. Fall, surveys of instruction; winter, construction of tests for measuring the extent to which objectives are achieved; spring, problems in the evaluation of teaching.
- Ed.C.I.263.*‡ Research in Arithmetic Instruction. A study of recent research in curriculum, gradation of subject-matter, methods, materials, and supervision of arithmetic.
- Ed.C.I.264.*‡ Research in Educational Diagnosis. A study of recent research in the methods of diagnosis in education, and the techniques of preventive and remedial teaching.
- Ed.C.I.265.*‡ Recent Literature in Supervision. A study of recent research on problems of elementary school supervision.

SECONDARY EDUCATION

- Ed.C.I.113.‡ High School Curriculum. A study of viewpoints and curriculum issues; reorganization trends; typical research findings by subjects and the analyses of selected state and local curricula.
- Ed.C.I.121.‡ Educational Advising of Women and Girls. A course designed to acquaint students with the problems of educational advising of girls and young women, particularly those of high school age. Open to seniors and graduates.
- Ed.C.I.122.‡ Literature for Adolescents. Background for pupil guidance in extensive reading in junior and senior high schools; analysis of studies of adolescent choices in literature; principles of selection; critical reading in broad fields of literary, biographical, historical, scientific, and vocational interests of boys and girls.
- Ed.C.I.135.‡ Teaching of Occupations and Group Guidance. Problems of group work in guidance in the secondary schools. Content and materials for home

‡ A fee of \$1 per credit is charged for this course.

- room groups, occupations classes, and other guidance courses in junior and senior high school.
- Ed.C.I.144.‡ Teaching of Reading in the Upper Grades and Junior and Senior High Schools. A study of the teaching procedures, objectives, and materials, with special consideration for the teaching of reading in the various subject-matter fields.
- Ed.C.I.168.‡ Current Developments in the Social Studies. A survey of contemporary literature, curricular trends, the commission report, and recent development of integration.
- Ed.C.I.169.‡ Extra-curricular Activities.
- Ed.C.I.170B.‡ Curriculum and Course of Study Construction. A study of the principles and methods for selection and organization of units, courses of study, and curricula at the secondary school level.
- Ed.C.I.188.‡ Advanced Course in Methods of Teaching Modern Languages. An advanced course of the seminar type in methods of teaching modern foreign languages. Designed primarily for experienced teachers and graduate students. Lectures, readings, discussion.
- Ed.C.I.191.‡ Advanced Course in the Teaching and Supervision of Secondary School Mathematics. Evaluation of the present practices in methods, content, and administration of junior and senior high school mathematics.
- Ed.C.I.198.‡ Recent Literature in Methods and Curriculum in English.
- Ed.C.I.199E.‡ Internship. Directed teaching and practice work at the graduate level for candidates for the master of education degree.
- Ed.C.I.201-202-203.*‡ Problems in Teaching the Social Studies.
- Ed.C.I.204.‡ Social Studies Curriculum.
- Ed.C.I.222-223-224.‡ Current Problems in Techniques of High School Instruction.
- Ed.C.I.225.*‡ Special Problems in Supervision of Instruction in Secondary Schools. Study of special problems in supervision primarily for graduate students and supervisors in schools who are qualified to make intensive studies. Consult instructor before registering.
- Ed.C.I.254.‡ Supervision and Teaching of the Social Studies. The scientific work being done on the course of study in geography, history, science, and related fields; improvement of instruction in social studies.
- Ed.C.I.266.‡ Supervision of Instruction in the Secondary Schools. Modern concepts of the nature, scope, and functions of supervision; functions and responsibilities of supervisors; organizing for the improvement of instruction; procedures for developing a program for improving instruction; methods and procedures in improving instruction. Third part of a three-quarter sequence. (See Ed.Ad. 264-265.)
- Ed.C.I.287.‡ Advanced Course in the Teaching of Science. A study of recent developments in the teaching of science and a critical evaluation of the investigations dealing with science teaching.
- Ed.C.I.293.*‡ Foundations of Secondary School Methods. A study of the investigations which form the bases of the technique of high school instruction and the application of their results to subject-matter and to classroom procedure. Each member will work primarily in the field of his teaching choice, with a final synthesis by the class as a whole.
- Ed.C.I.294.*‡ Advanced Course in Methods of Teaching English. Evaluation of present practices in methods and content of junior and senior high school

‡ A fee of \$1 per credit is charged for this course.

English courses in the light of the known results of scientific investigations in that field.

Ed.C.I.296-297.*‡ Special Problems in Techniques of Secondary School Instruction. Special research problems in the field of the student's individual choice.

HIGHER EDUCATION

Ed.C.I.184.‡ Supervision of Student Teaching. Primarily for teachers engaged in the direction of practice teachers in secondary education.

Ed.C.I.228-229-230.*‡ Problems of College Education. Problems of student personnel, of college curricula and instruction, of organization and administration.

Ed.C.I.250.‡ Higher Education in the United States. A survey of the historical development of institutions of higher education and a consideration of the following topics: the functions of higher education in a democracy; types of higher institutions; the articulation of secondary and higher education; readjustments in organization and administration, curriculum and instruction; the control of higher education; the evaluation of higher institutions by accrediting agencies. This course is designed as an introduction to the sequence of courses in higher education and is also designed for graduate students in academic fields who wish a survey of the problems of colleges and universities.

Ed.C.I.285.‡ Professional Education of Teachers. A study of the present status of teacher education and of the problems that relate to the institutional training of teachers for public schools and higher education.

Ed.C.I.286.*‡ Problems in Teacher Training. Individual problems for those who have a special interest in this field. An intensive study of specific problems. Consult instructor before enrolling.

Ed.C.I.287.‡ Instruction and Administration in Teacher Training Institutions. Historical development; curricula; instructional organization; personnel management; administrative procedures; student teaching; trends and innovations.

EDUCATIONAL ADMINISTRATION

GENERAL COURSES

Ed.Ad.124. Public School Administration. The organization, administration, and general support of public schools in states and local school districts.

Ed.Ad.125. Techniques in Administration. Standard practices regarding child accounting problems, records and reports; procedures having to do with personnel and school board relations and rules and regulations; standard office practices, including textbook and supply management.

Ed.Ad.144. Organization and Administration of Adult Education in Public and Private Agencies.

Ed.Ad.205. Problems in Adult Education.

Ed.Ad.210.* Financial Aspects of Public School Business Administration. Financial program planning, budgeting, accounting, cost finding, income and expenditure control; and the preparation and analysis of financial reports.

Ed.Ad.226. School Plant Planning and Management. Plant program planning and financing, including operation and maintenance of public school buildings.

Ed.Ad.228.* Special Problems in Educational Administration. This course is designed primarily for superintendents and principals qualified to make intensive studies of specific problems related to the administration of a school system.

‡ A fee of \$1 per credit is charged for this course.

- Ed.Ad.230.* Public Relations for Schools. Theory and practice of educational interpretation. Principles involved; machinery and personnel; the teacher's contacts with the community; the role of the pupil; professional and lay organization.
- Ed.Ad.235-236-237. Seminar in Educational Administration. Enrolment limited to candidates for Master's degrees under Plan A and candidates for Ph.D. degrees in educational administration.

ELEMENTARY EDUCATION

- Ed.Ad.115. Organization of the Elementary School. Problems relating to the organization for instruction and classification of pupils in elementary schools with critical examination of current practices.

SECONDARY EDUCATION

- Ed.Ad.133. Guidance in Secondary Schools. Basic principles and current practices in education and vocational guidance in junior and senior high schools. Application of principles through case discussions.
- Ed.Ad.167. Junior High School.
- Ed.Ad.218-219-220. Current Problems in Secondary School Education.
- Ed.Ad.264-265. Administration of the Secondary School. Status and responsibilities of the principal; implications of educational philosophy for administration; selection and organization of the staff; teaching load; curriculum organization; organization for instruction; guidance; extra-curricular activities; pupil control and personnel problems; internal finance and accounting; forms, records, and reports; school costs; public relations; housing and equipment. Two parts of a three-quarter sequence. (See Ed.C.I. 266.)
- Ed.Ad.270.* Special Problems in Secondary Education. A course designed for those qualified to undertake research.
- Ed.Ad.280.‡ Practice in High School Administration. Field study of problems and practices in school administration relating to high school organization, housing, pupil personnel and control, administration of the curriculum, guidance, staff problems, internal finance, forms, records, reports, etc.

HIGHER EDUCATION

- Ed.Ad.253. Administration in Higher Education. Control, faculty and employee personnel administration, budget making and administration, financial accounting and reporting, protection of college funds, public relations.
- Ed.Ad.287. Instruction and Administration in Teacher Training Institutions. Historical development; curricula; instructional organization; personnel management; administrative procedures; student teaching; trends and innovations.

EDUCATIONAL PSYCHOLOGY

GENERAL COURSES

- Ed.Psy.60. Introduction to Statistical Methods. This course includes a study of measures of central tendency, variability, and correlation.
- Ed.Psy.116-117. Statistical Methods in Education. A course designed to lay the foundations of statistical theory and develop the craftsmanship necessary to put

‡ A fee of \$1 per credit is charged for this course.

- theory to application, with special reference to educational and psychological problems. Primarily for graduate students.
- Ed.Psy.120. Basic Principles of Measurement. Principles of measurement applied to the construction and evaluation of educational and psychological tests and to the interpretation of scores.
- Ed.Psy.133. Guidance in Secondary Schools. Basic principles and current practices in educational and vocational guidance in junior and senior high schools. Application of principles through case discussions.
- Ed.Psy.138-139. Experimental Educational Psychology. A laboratory course designed to train students in the use of experimental methods in the study of educational problems, particularly in the field of the psychology of learning.
- Ed.Psy.140. Tests and Measurements in Elementary and Secondary Education. A study of the use of tests and measurements in elementary and secondary schools.
- Ed.Psy. 141. Group Aptitude Testing. A study of group aptitude tests for all school levels with special emphasis on their reliability and validity as instruments for educational and vocational guidance.
- Ed.Psy.142. Individual Aptitude Testing. A study of methods and practice in the administration of individual mental tests.
- Ed.Psy.143. Individual Mental Testing Laboratory. A practice course in the administration of individual mental tests.
- Ed.Psy.149-150-151. Psycho-educational Clinic. Conducted in co-operation with existing clinics and agencies in the Twin Cities. Students will receive practice in giving psychological examinations, in case study, and in interpretation of case records.
- Ed.Psy.159. Personality Adjustments in Education. A survey course for educational workers, particularly teachers and counselors. Emphasis on an understanding of the factors involved in personality development and on the preventive rather than the remedial phases of mental hygiene. Attention given to the various types of maladjustments as well as to the conditions under which a teacher or counselor can safely attempt remedy or treatment.
- Ed.Psy.180. Esthetics in Education. An objective approach to the existence, causes, and methods of dealing with individual differences in esthetic abilities.
- Ed.Psy.189. The Human Organism. The development of the human organism in relation to educational practice.
- Ed.Psy.201-202-203. Seminar in Educational Psychology. A research course for graduate students. Required of all students writing theses in educational psychology. Does not carry credit as course work.
- Ed.Psy.208.* Methods in Educational Research. A study of the methods employed in the investigation and reporting of educational problems. Designed to aid students in the preparation of theses. Suggested for all candidates for graduate degrees.
- Ed.Psy.216-217-218. Statistical Methods in Education. A course at the graduate level designed to lay the foundations of statistical theory and to develop the craftsmanship necessary to put theory to application, with special reference to educational and psychological problems.
- Ed.Psy.225.* Diagnosis and Counseling in a Student Personnel Program. An advanced course, requiring recent background in both psychological measurement and the principles of guidance. Stress on skill in interpreting diagnostic material rather than on theory. Attention to techniques for collecting information regarding a student, the making of a diagnosis, and the techniques of

counseling and interviewing. Case studies used as problems and visits made to several guidance clinics.

- Ed.Psy.233.* Problems in Guidance and Personnel Work. During the fall and winter quarters this course is designed only for those who have research problems upon which they wish assistance or who desire to do advanced reading in certain areas of the general field. There are no class meetings. During the spring quarter this class meets as an advanced seminar for those who are well along in their Master's or Doctorate program in personnel work.
- Ed.Psy.240.* Problems in Measurement. Intensive study and individual research in problems of educational and vocational measurement.
- Ed.Psy.243. Problems in Statistics for Students in Education and Psychology. A seminar devoted to recent developments in statistical science with special reference to the applications to educational and psychological problems.
- Ed.Psy.253-254-255.* Research Problems.
- Ed.Psy.281. Practice in Personnel Work. Designed to give properly qualified students experience in the use of psychological and related methods in dealing with individuals.
- Ed.Psy.290. Original Nature of Man. Advanced work in genetic psychology, man's unlearned behavior, and inherited capacities.
- Ed.Psy.291. Individual Differences. A study of group and individual differences and their relations to educational practice.
- Ed.Psy.292.* Recent Literature in Educational Psychology. Readings and reports on problems in educational psychology.
- Ed.Psy.293-294.* Psychology of Learning. A systematic study of theories and research in human learning, and their implications for curriculum and instruction.
- Ed.Psy.293T. See Ed.Psy. 293. Section for teachers and administrators.
- Ed.Psy.297-298-299. Problems in Subnormality. Phases of subnormality studied intensively. Review of important literature and original investigation. Students required to make report on assigned topics and submit papers on special problems at the close of the quarter.

ELEMENTARY EDUCATION

- Ed.Psy.113-114-115. Psychology of Elementary School Subjects. A discussion of the research studies in the field of psychology of elementary school subjects.
- Ed.Psy.146-147.† Child Guidance. The understanding and treatment of all forms of behavior problems in children of school age. Lectures, reading, and presentation of clinical case records.
- Ed.Psy.157. Psychology of Child Development. The physical, mental, social, and emotional development of children from birth to adolescence.
- Ed.Psy.182. Education of Handicapped Children.
- Ed.Psy.183. Psychology of Gifted Children. A study of the abilities and characteristics of intellectually gifted children and adults.
- Ed.Psy.184. Education of the Slow Learning Child. A study of the physical and mental traits of intellectually subnormal children and methods of adjusting the school program to their needs.

SECONDARY EDUCATION

- Ed.Psy.158. Psychology of Adolescence. A study of changes characterizing the transition from childhood to adult life. Implications for guidance during the period of secondary education.

HIGHER EDUCATION

- Ed.Psy.252. Student Personnel Work in College and University. An advanced course for students who have had at least one earlier course in higher education, and who wish to become familiar, as college personnel workers or college teachers, with student personnel functions. The philosophy underlying student personnel work, specific personnel services with particular regard to the work of the counselor and the faculty adviser, and student personnel administration.
- Ed.Psy.254. Measurement and Evaluation in Higher Education. A consideration of the examination program in American institutions of higher learning; principles of examination at the college level; the design of investigations and the critical evaluations of investigations in higher education.

HISTORY OF PHILOSOPHY OF EDUCATION

GENERAL COURSES

- H.Ed.71. Brief Course in History of Education. Current school problems and educational theories in the light of their history. Emphasis upon 18th and 19th centuries and education in the United States.
- H.Ed.73. Educational Sociology. A study of the effects of recent social trends upon American educational institutions and of the chief problems in educating individuals for their associations and in directing educative forces of society.
- H.Ed.75. Public Education in the United States. A survey of historical factors influencing public education in the United States, followed by a study of the development of educational theory and the rise of state systems. A course in the history of education.
- H.Ed.76. Philosophy and American Education. An introduction to the basic controversies in current educational theory from the standpoint of their philosophic principles. Major attention will be given to the progressive, traditional, and radical viewpoints together with their effects upon educational practice in American life.
- H.Ed.101. Historical Foundations of Modern Education. Historical analysis and interpretation of the more important elements in modern education derived from the Greeks, Romans, Ancient, Hebrew, Middle Ages, and Renaissance.
- H.Ed.102. History of Modern Secondary and Higher Education. A historical study of the origin, aims, growth of existing types of American and European secondary schools.
- H.Ed.103. History of Modern Elementary Education. The development of educational theory and the evolution of the common school. Not open to students who have had H.Ed. 71.
- H.Ed.129-130. Educational Classics. An intensive study of selected writings of educational leaders from ancient times to the present day.
- H.Ed.131. Comparative School Systems. A survey of the existing school systems in foreign countries including France, England, Germany. Emphasis upon present problems.
- H.Ed.162. Significance of Progressive Education. A critical survey of the progressive education movement in terms of its basic philosophy and its effects on educational practices.
- H.Ed.176. Conflicting Issues in Modern Education. A critical survey of major philosophies of education in their social setting.
- H.Ed.177. Philosophic Foundations of Modern Education. Emphasis will be placed on the essential derivations of current educational philosophy with a

view to placing the latter in clearer relation to modern life and society, and with some effort to frame a satisfactory educational philosophy for prospective teachers.

- H.Ed.178. *Education and Problems of American Democracy.* A study of the conflicts and tensions in current American life as these affect the program of the public schools and colleges. Concern will be given such issues as the role of education in social reconstruction, the function of teacher organizations in political life, and the meanings of academic freedom and indoctrination in relation to democracy.
- H.Ed.179. *Critical Thinking for Teachers.* Through the practical examination of typical educational materials, this course will aim to increase the ability of prospective teachers to think more logically, to read and listen more critically, and to convey something of this ability to their own students. Besides this constructive feature, emphasis will be placed also on the detection of common fallacies and propanganda devices as these appear in educational literature, pressure groups, and in the schools.
- H.Ed.180. *The School and the Social Order.* This course will consider the cultural and social setting within which schools function today. Such problems will be weighed as the relation of education and the state.
- H.Ed.181. *Tutorial Work in Educational Sociology and Philosophy.* Work on an individual basis for students who have developed special interest in problems raised by previous courses in educational philosophy and sociology.
- H.Ed.211-212-213. *Seminar in History of Education.* Historical investigation of educational problems.
- H.Ed.231.* *Problems in Comparative Education.*
- H.Ed.241-242-243.* *Problems in the History of Education.*
- H.Ed.276.* *Problems in Educational Philosophy and Sociology.*

ELEMENTARY EDUCATION

- H.Ed.103. *History of Modern Elementary Education.* The development of educational theory and the evolution of the common school. Not open to students who have had H.Ed. 71.

SECONDARY EDUCATION

- H.Ed.102. *History of Modern Secondary and Higher Education.* A historical study of the origin, aims, growth of existing types of American and European secondary schools.

HOME ECONOMICS EDUCATION

COURSES FOR UNDERGRADUATE STUDENTS

- H.E.Ed.90. *Child Training.* A brief study of the physical and mental development of the child is followed by a discussion of the problems of training small children. Emphasis is placed on the preschool child. Lectures, observations in the Nursery School, and reports.
- H.E.Ed.91.‡§ *Observation, Material, Teaching in Home Economics.* The psychological bases for teaching; investigation and collection of facts on teaching situations through observation and participation in school activities; study of teaching materials and method.

‡ A fee of \$1 per credit is charged for this course.

§ Passing the qualifying examination in English is prerequisite to registration in this course.

- H.E.Ed.92. Teaching Problems in Home Economics. Reports, discussion, conferences on the planning of units, teaching procedures, illustrative materials, and equipment.
- H.E.Ed.93.‡ Supervised Teaching in Home Economics. Observation, participation, and actual teaching experience under supervision in different home economics situations and on different age levels. The student must have received a grade of C or higher in H.E. 3, 4, 21, 22, 34 (or 170), 40, 41, 55, and must have completed Home Experience in Clothing, and other phases of home economics, and must have passed the qualifying examination in English.
- H.E.Ed.94.‡ Supervised Teaching in Home Economics. A continuation of H.E.Ed. 93. To receive credit for this course students must have completed H.E.Ed. 93.
- H.E.Ed.192. Educational Measurement in Home Economics. Study of the techniques of measurement applicable in home economics; construction and evaluation of objective devices; review of published tests and scales.
- H.E.Ed.193. Home Economics Curriculum. A study of the contribution of home economics at various educational levels; evaluation of curriculum practices and techniques employed in curriculum planning and reconstruction.
- H.E.Ed.194a. Adult Education Problems. Objectives of adult education; planning an adult program; teaching procedures; discussion of special problems. This course is planned for high school and extension teachers and supervisors of home economics classes.
- H.E.Ed.194b. Adult Education Problems. Development of unit outlines, illustrative material, and bibliography for use in adult classes. This course is planned for teachers and supervisors of local leader groups or adult classes.
- H.E.Ed.197.‡‡ Organization and Methods for Related Art Teaching. Organization of a related art course and methods of teaching art as applied to familiar objects and processes. The course is planned on an individual problem basis. Permission of the instructor is required.
- H.E.Ed.243. Trends in Home Economics. The place of home economics in the educational program today; the ways in which content and procedures are being modified to meet changing conditions.
- H.E.Ed.292.* Educational Measurement Problems. A continuation of Course 192, with emphasis upon individual problems in the field of measurement.
- H.E.Ed.293.* Special Studies in Home Economics Education. Designed to meet the needs of advanced students for opportunity to do independent study. Readings, oral and written reports are required.
- H.E.Ed.294.* Research Problems. A study of the methods used in collection, treatment, and interpretation of data in the field of home economics; the writing of a technical report.
- H.E.Ed.295.* Current Problems. Discussion and reports on present-day problems in the field of home economics education.

INDUSTRIAL EDUCATION

Shop and drawing courses.—Courses of a manipulative or laboratory nature are offered at the University in great number and variety. (See bulletins and schedules on Architecture and Fine Arts, Drawing and Descriptive Geometry, Mechanical Engineering, and Agricultural Engineering.) Students may arrange to take shop, drawing, and related courses, day or evening, at the William Hood

‡ A fee of \$1 per credit is charged for this course.

Dunwoody Industrial Institute without fees other than those paid to the University, except \$1 which is subject to refund.

All shop and drawing courses should be selected under advice and may be either extensive or intensive in resultant preparation for teaching. Twenty credits in shopwork and ten credits in drawing are required. It is recommended that the twenty required credits in shopwork be distributed with reference to woodworking, metal working, electricity, and printing in equal amounts. Fifteen additional credits in either drawing or shopwork, or in both fields combined, may be elected. A maximum of forty-five credits is strictly enforced, which fact should be noted, particularly by those who transfer to this University or to this special curriculum with advanced standing. Credits in excess of forty-five will be recorded but they will not be counted toward the graduation requirement.

- Ind. 11.‡ Special Class Woodwork. For teachers of art, subnormal and primary work; lectures, demonstrations, and shop practice; not open to those with college credit in woodworking. Not a part of the special four-year curriculum.
- Ind.30. Graphic Presentation. Typical methods of the graphic portrayal of data; use of educational and social facts for drill in construction and interpretation; corrected charts become student property.
- Ind.40. Analysis. Necessity for, and types of, occupational analysis; individual work upon selected fields, for course construction purposes.
- Ind.42. Course Organization. Makes definite use of analyses; content of courses selected and arranged for common and special teaching situations; both general and vocational classes and groups considered.
- Ind.44. Equipment and Management. Sources, purchases, costs, and inventories; installation, upkeep, and safe operation; storage and issue of tools and supplies; financial accounts, bills of material, and disposal of products.
- Ind.50A-B-C.‡§ Directed Teaching. Three quarters or six credits required. (Consult with adviser or critic teacher.)
- Ind.60. Philosophy of Vocational Education. Development and characteristics of vocational training; conservation of human and material resources; social and economic significance; results and weaknesses; current theories.
- Ind.61. Practices in Vocational Education. Plans of organization and control; types of schools and classes; public versus private and corporation training; state and federal aid; teacher preparation; efficiency factors.
- Ind.65. The Nonvocational Subjects. Materials in civics, industrial history, commercial geography, English, and other branches classified by the Smith-Hughes Law as "non-vocational"; the needs of groups, course planning, and special devices. Not a part of the special four-year curriculum.
- Ind.66. Related Subjects. Theories, practices, and problems of related instruction; special reference to mathematics, drawing, science, safety, and other auxiliary and technical information; group study, unit courses, usable techniques of management.
- Ind.70.‡ Methods in Shop Subjects. Conduct of shop classes, with and without reference to production work; plans, demonstrations, drill, grading, reports, and records. General concepts and techniques of method particularized for school shop situations.
- Ind.75.‡ Methods in Drawing. The selection and arrangement of course materials;

‡ A fee of \$1 per credit is charged for this course.

§ Passing the qualifying examination in English is prerequisite to this course.

- methods of presentation, instructional devices, and problems of the drawing room. Not a course in drawing.
- Ind.80. General Industrial Training. Administration of the industrial department for elementary and secondary schools in typical Minnesota towns and elsewhere; aims, offerings, schedules, etc.; consideration of the unifying opportunities within a department, school, or system.
- Ind.81. The General Shop. Types of general shop arrangements and facilities; function, organization, and procedure in keeping with modern practice. Not a shop course.
- Ind.101. Tests in Industrial Subjects. Acquaintance with such available tests of aptitude and achievement as are useful in industrial education; application of selective, classification, remedial, and grading techniques to the work shop and drawing instructors. Evaluation and construction of tests in subject areas to be selected by the individuals enrolled.
- Ind.103. Instructional Aids. Preparation of individual instruction sheets, progress charts, plans of procedure, and other classroom aids. Each student is privileged to work within his own subject field and interest.
- Ind.105. Industrial Education. An overview course for advanced students in the specialty and for principals, superintendents, and others; general and vocational phases, objectives, programs, and practices; laws, rulings, and standards for aid; significant literature; how to judge teachers, courses, and methods. Not a part of the special four-year curriculum.
- Ind.107. Co-ordination. An analysis of the province and duties of co-ordinators in trade schools, part-time programs, and cosmopolitan high schools offering training opportunities. Informational for school administrators and in the nature of guidance and training for those having interest in this new type of school work.
- Ind.108. Apprenticeship. History and recent development of apprenticeship in the United States; trends, practices, organization, laws, and rulings; state plans for vocational education in their varying relationships to apprenticeship.
- Ind.110. Guidance in the School. History of the educational and vocational guidance movement; typical public school means and methods; types and uses of occupational information; duties of the counselor; organization and relationships.
- Ind.115. Supervision of Industrial Education. Supervisory practices and problems in both industrial arts and trade training. Attention to small-town and large-city situations and to the activities of state supervision. Application, to the special field, of devices and techniques common in the more general subjects. Not a part of the special four-year curriculum.
- Ind.170. Day Industrial Schools. National, state, and local organization and types; buildings and equipment; promotion and advertising; co-operative relationships; teaching staff; pupil guidance, training, placement, and follow-up.
- Ind.171. Evening Industrial Schools. Development of the after training of adults; agencies and scope of the movement; national and state legislation; qualifications of instructors; problems and difficulties; records and certification; fees and charges; buildings, equipment, and instruction facilities.
- Ind.172. Part-time Education. A study of the new movement for part-time education; social and economic background; organization of classes; study of special student groups; courses of study; typical schools, comparative state legislation and plans; federal and state reimbursement.

- Ind.200.* Research Problems. For this course, 3-6 or 9 credits at one enrolment; 9 required total. Lectures and conferences paralleling the independent work of candidates for the Master's degree under Plan B, without thesis. Limited to those with full status in the Graduate School.
- Ind.250-251-252. Problems in Vocational Education. Six credits offered. Survey of printed reports; critical analysis; selection of thesis problems; formulation of work plans; reports of progress; organization and presentation. Not a part of the four-year curriculum. Limited to those with full status in the Graduate School.

LIBRARY METHODS

Statement of fees.—The fees for Library Methods are \$3 per credit or \$40 per quarter for residents of Minnesota and \$3.50 per credit or \$50 per quarter for nonresidents.

- Lib.Meth.51. Bibliography. Trade and national bibliography of the United States, Great Britain, and Europe; book ordering methods.
- Lib.Meth.52. Cataloging. Elements of dictionary cataloging. Lecture, problems, and practice.
- Lib.Meth.53. Advanced Cataloging. Continuation of 52, with special attention to difficult books and administrative aspects of a catalog department.
- Lib.Meth.54. Classification. Classification by the Dewey Decimal System, author numbers, shelf and accession records.
- Lib.Meth.55. Advanced Classification. Continuation of 54. Library of Congress and other classifications; classed catalogs; special adaptations of classification.
- Lib.Meth.57. Secondary School Libraries. Administrative methods and problems of school libraries.
- Lib.Meth.58. Public Library Administration. Administration, equipment, finance, and extension work of public libraries.
- Lib.Meth.60. Library Binding. Economics of library binding. Materials, processes, records, book repair.
- Lib.Meth.61. Library Practice. Practice, under supervision, in Minneapolis and St. Paul libraries. The time and character of the practice will be arranged individually to suit student aptitudes, usually in the second and third quarters. Required of all students as prerequisite to a degree in library training.
- Lib.Meth.62. Reference. Reference books and other material with emphasis on methods of search and adaptation of material to needs of users.
- Lib.Meth.63. Advanced Reference. Specialized reference material, public documents, and periodicals. Reference lists and reports on special problems.
- Lib.Meth.64. Selection of Books for Adolescents. Principles of selection and criticism of representative books. Study and preparation of book lists for adolescents in school and public libraries.
- Lib.Meth.67. Library Printing. Preparation of copy, editing, proofreading, layout of library publications. Criticism of typical printed material.
- Lib.Meth.68. Circulation Work. Lending systems and records. Library publicity. Library exhibitions, etc.
- Lib.Meth.69. Current Library Problems. Discussion of typical problems and conditions in American libraries.
- Lib.Meth.70. Current Library Problems. Further discussion of typical library problems, library buildings, library surveys, etc.
- Lib.Meth.71. Library Work with Children. Administration of children's rooms and book selection.

- Lib.Meth.72. Library Work with Children. Further discussion of administration of children's rooms and book selection.
- Lib.Meth.73. Selection of Books for Adults. Principles of selection and criticism of representative books. Criticism and preparation of book lists.
- Lib.Meth.74. Selection of Books for Adults. Further discussion of books and aids to book selection.
- Lib.Meth.75. Selection of Books for Adults.
- Lib.Meth.76. Library Service in Hospitals.
- Lib.Meth.77. Book Selection for Hospital Patients.
- Lib.Meth.78. Reading and the Mental Patient.
- Lib.Meth.79. Medical Reference Work.
- Lib.Meth.80. Hospital Library Practice.
- Lib.Meth.126. Subject Bibliography. Senior or graduate standing and bibliographical or research training or experience are prerequisite to this course.

METHODS AND DIRECTED TEACHING

Honor point average.—C+ average (1.5 honor points per credit) in the major or the subject in which student teaching is done, is required for registration in all special methods and directed teaching courses.

Statement of fees.—For all courses in methods, directed teaching, and special methods and directed teaching combined, a fee of \$1 per credit is charged. Passing the qualifying examination in English and a C+ average in the major are prerequisite to all special methods and student teaching courses. For clinical Methods and Practice in Speech Pathology see Ed.C.I. 174-175-176. For methods and directed teaching in special subjects see department concerned.

GENERAL COURSES

- Ed.T.50.‡§ Special Methods and Directed Teaching in Health Education for Public Health Nurses.
- Ed.T.51A.‡§ Special Methods of Teaching in Schools of Nursing. A study of the problems of nursing education, surveying present conditions. Objectives of nursing education and the making of curricula. Principles underlying clinical and classroom teaching in schools of nursing. Planning instruction.
- Ed.T.51B.‡§ Special Methods of Teaching in the School and Teaching in Schools of Nursing. Observation and study of principles of teaching applied in the nursing school situation. Supervised practice in teaching of nursing subjects.
- Ed.T.52.‡§ Directed Teaching. Teaching under supervision in the University High School and in the Twin City schools. The course calls for one period daily at the school where the work is assigned. Registration in this course is limited to students who have completed special methods courses or have had teaching experience. Practice teaching in academic subjects is normally combined with special methods courses in a one-year teachers' course.
- Ed.T.81.‡§ Techniques of Puppety.
- Ed.T.85A-B-C.‡§ Practice and Field Work in Recreation Leadership. Opportunity for observation of the practice in leadership of recreation activities. Students will be assisted in planning individual programs based on previous experience and professional needs.

‡ A fee of \$1 per credit is charged for this course.

§ Passing the qualifying examination in English is prerequisite to this course.

ELEMENTARY EDUCATION

- Ed.T.53.‡§ Directed 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.
- Ed.T.54A-B.‡§ Directed Teaching in the Elementary School.
- Ed.T.55.‡ Principles of Early Childhood Education. The development, aims, and organization of kindergarten and nursery school education. A consideration of the curriculum and methods.
- Ed.T.56.‡ Permanent Play Materials. A consideration of the various kinds and types of permanent play materials (blocks, dolls, trains, wagons, etc.) and their use by children of different ages.
- Ed.T.57.‡ Plastic Materials. The materials used in constructive work, paper, crayons, paints, clay, woodwork, sewing, sand, etc. The student is given some opportunity for actual use of the materials and will gain considerable knowledge of the abilities of children of different ages.
- Ed.T.59.‡ Story Telling for Young Children. A study of folk, fairy, here-and-now stories and poetry suitable for young children. The principles underlying story telling, the selection of the story, and versions. The educational importance of conversation with the child.
- Ed.T.64.‡§ Teaching of Geography and History in the Elementary School.
- Ed.T.65.‡§ Directed Teaching with Special Methods in the Elementary Schools.
- Ed.T.75.‡ Methods and Observation in the Nursery School. Open only to home economics and nursing education students.
- Ed.T.76A-B-C.‡§ Methods and Observation. Two hours each week will be spent observing in the Nursery School or in the Kindergarten. There will be written reports of the observations and a class discussion of one hour in alternate weeks.
- Ed.T.77A-B-C.‡§ Directed Teaching in Kindergarten or Nursery School.
- Ed.T.78A-B.‡ Methods in the Primary Grades.

SECONDARY EDUCATION

- Ed.T.60A-B-C.‡§ Special Methods and Directed Teaching in Geography.
- Ed.T.61.‡§ Teachers' Course in Norwegian.
- Ed.T.62.‡§ Teachers' Course in Swedish.
- Ed.T.66A-B-C.‡§ Special Methods and Directed Teaching in English. A one-year course. This course is required of all students with a major in English or Speech.
- Ed.T.66Am.‡§ Teaching of Composition in the Senior High School. Objectives of composition; selection of subject-matter and its relation to the problem—project method of assignment; problems of grading composition; problems of teaching grammar, punctuation, and spelling; oral composition. Practice teaching and observation are combined with this course except in special cases.
- Ed.T.66Bm.‡§ Teaching of Literature in the Senior High School. Objectives of literature teaching; differentiated method for appreciation and information; methods of handling different types such as fiction, drama, poetry, and essay; survey courses; home reading; illustrative material. Practice teaching and observation are combined with this course except in special cases.
- Ed.T.67A-B-C.‡§ Special Methods and Directed Teaching in Mathematics. A one-year course required of all students with a major in mathematics.

‡ A fee of \$1 per credit is charged for this course.

§ Passing the qualifying examination in English is prerequisite to this course.

- Ed.T.67Am-Bm.‡§ Teaching of Secondary School Mathematics. Discussion of procedures in selecting and organizing materials and in teaching secondary school mathematics.
- Ed.T.68A-B-C.‡§ Special Methods and Directed Teaching in Secondary School Science. A one-year course required of all students with a major in natural science.
- Ed.T.68Am-Bm.‡§ Methods of Teaching Secondary School Science.
- Ed.T.69A-B-C.‡§ Special Methods and Directed Teaching in the Social Studies. A one-year course required of all students with a major in history or the social studies.
- Ed.T.69Am-Bm.‡§ Methods of Teaching the Social Studies.
- Ed.T.70A-B-C.‡§ Special Methods and Directed Teaching in German. A one-year course required of all students with a major in German.
- Ed.T.71A-B-C.‡§ Special Methods and Directed Teaching in Latin. A one-year course required of all students with a major in Latin.
- Ed.T.72A-B-C.‡§ Special Methods and Directed Teaching in Romance Languages. A one-year course required of all students with a major in French or Spanish.
- Ed.T.73A-B-C.‡§ Special Methods and Directed Teaching in Commercial Subjects. A one-year course required of all students in the specialized curriculum in commercial education.
- Ed.T.74.‡§ Teachers' Course in Journalism. A study of methods and techniques of presenting journalism instruction to students of less than college level. It is required of College of Education students with journalism minors.
- Ed.T.88A-B-C.‡§ Special Methods and Directed Teaching in Speech. A year course involving special methods and directed teaching in speech and English.
- Ed.T.89A-B.‡§ Methods of Teaching the Social Studies. For students with a minor in one of the social studies.

MUSIC EDUCATION

NOTE.—For description of courses in Music and statement of fees see Bulletin of Science, Literature, and Arts. For statement of fees, see the Combined Class Schedule, p. 71.

- Mu.Ed.1. Music Orientation. To provide opportunity for the student to become acquainted with the various divisions of music study; a survey of the offerings in general music and music education.
- Mu.Ed.4-5-6.‡ Applied Instrumental Technique. This laboratory course is divided into three quarters, strings, brass (and percussion), and woodwinds, respectively. It incorporates the theory and technical development of the instruments, and elementary instruction in the playing of the chosen vehicle of expression, with special attention to the routine of class instruction.
- Mu.Ed.50A.‡ Primary Methods. Practical methods for teaching music in the nursery school, kindergarten, grades one, two, and three. Particular attention is given to the child voice; its care and development; rote singing; the transition from rote singing to note reading; new practices and materials. Observation in Minneapolis and St. Paul schools.
- Mu.Ed.50B.‡ Intermediate Methods. Music methods to be used in grades four, five, and six; rhythmic and melodic problems; voice testing, two- and three-part singing; integration. Observation in Minneapolis and St. Paul schools.
- Mu.Ed.52.‡ Technique of Teaching Appreciation. A practical course in the teaching of appreciation of music to children in the elementary grades. Materials

‡ A fee of \$1 per credit is charged for this course.

§ Passing the qualifying examination is prerequisite to this course.

- and methods of presentation will be discussed and demonstrated, using the class as a laboratory.
- Mu.Ed.53.‡ High School Methods. Organization and methods of teaching chorus, glee clubs, and voice classes; appreciation and theoretical music as encountered in the modern junior and senior high school. Particular attention to the changing voice, various voice combinations, helps and materials for public appearances.
- Mu.Ed.54.‡ Operetta Production. How to select, organize, and present an operetta, pageant, cantata, etc. Costuming, make-up, lighting, rehearsals, business management, and scenery are included. All materials and discussions are from the educational point of view.
- Mu.Ed.55.‡ Survey and Evaluation of Vocal Materials and Methods. An analysis and comparison of various techniques of school music teaching. A survey of octavo vocal materials and textbooks in series.
- Mu.Ed.59.‡¶ Choral Literature and Conducting. A laboratory class for intimate contact with vocal materials and actual practice in conducting. The following approaches are used: the class reads much material for contact and evaluation, the music education seniors will rehearse and direct small ensembles from the class, conducting problems will be presented and discussed from the student's as well as the teacher's point of view.
- Mu.Ed.60-61-62.‡‡§ Supervision and Teaching. Practical phases of school music teaching. Actual experience in carrying forward, under supervision, the activities of the elementary music teacher as well as all types of vocal and instrumental activities in the junior and senior high school. Work done in Minneapolis and St. Paul schools and University High School. Special attention given to organization of materials, methods of procedure, lesson planning, and recent approaches.
- Mu.Ed.63.‡ Band Conducting. A course designed to give practical experience in conducting recommended band literature of all grades.
- Mu.Ed.64.‡ Band Organization. A course dealing with the organization, promotion, curriculum, administration, equipment, and other problems of the school band.
- Mu.Ed.65.‡ Instrumentation. This course involves a theoretical study of orchestral and band instruments, in combination. The physics of tone color is explained. Revision of materials suitable for school use, and discussion of capacity and capability of school performance on the various instruments are undertaken.
- Mu.Ed.68. Conducting of Instrumental Music and Survey of Materials. Training of directors of orchestra and band ensembles, and a critical survey of available music materials adaptable to school music purposes. Laboratory practice in the technique of the baton in interpreting worthy instrumental compositions, developing appreciation of better literature. Psychological basis of conducting and consideration of the acoustical properties of auditoriums. Efficient management of rehearsals.
- Mu.Ed.70. Accompanying and Sight Reading. A laboratory course aimed to develop proficiency in the art of accompanying and sight reading.
- Mu.Ed.101. Tests and Measurements in Music Education. Techniques for elementary statistics. To acquaint students with existing tests in the field of

‡ A fee of \$1 per credit is charged for this course.

§ Passing the qualifying examination in English is prerequisite to this course.

¶ Four credits are required in Mu.Ed. 59. The course should be repeated until all four credits are earned.

music education; their reliability, validity, administration, and proper interpretation of the findings.

- Mu.Ed.220E. Survey and Application of Research in Music Education. To include recent books, monographs, and studies. Relative significance of their contributions in respective fields.
- Mu.Ed.224E. Seminar and Individual Research Problems in Music Education. A knowledge of elementary statistics is required. Individual projects; guidance; remedial procedures; interrelationships.
- Mu.Ed.225E.‡ Advanced Applied Music.

NURSING EDUCATION

- Nurs.60. Ward Administration. Principles underlying effective ward management and administration. Lectures, classes, and field visits.
- Nurs. 63. Motion Study.
- Nurs.65. Comparative Nursing Procedures.
- Nurs.69. Survey of Conditions in Nursing. Study of conditions existing in nursing as revealed in literature and various reports. An attempt to define tendencies in nursing with a view to designating those which appear most favorable to social progress.
- Nurs.71. Curriculum Making in Schools of Nursing. General principles of curriculum making; study of the functions of the graduate nurse in the community as determinants of the clinical and classroom curricula of the professional school. Integration of materials into curricula preparing nurses as community health agents.
- Nurs.72. Teaching and Supervision in Schools of Nursing.

For descriptions of other courses, see pages 114-115.

For courses for graduate students see Bulletin of the Graduate School.

PHYSICAL EDUCATION FOR MEN

For statement of fees see Combined Class Schedule.

- Phys.Ed.1,2,3. Sports Education. General course required of all men in the College of Education.
- Phys.Ed.4A. Basketball Fundamentals. Demonstrations and practice in such fundamentals as footwork, passing, dribbling, goal throwing, individual and team defensive tactics.
- Phys.Ed.4B. Football Fundamentals. Demonstrations and practice in football fundamentals for all positions of a football team.
- Phys.Ed.4C. Track Fundamentals. Demonstration and practice in all track and field events.
- Phys.Ed.5A-B-C. Physical Education Activities. A (fall)—conditioning, mimetic and exhibition drills; corrective exercises; story plays; touchball and six-man football; apparatus—stall bars, buck, and mats. B (winter)—marching tactics; fundamental dance steps—folk, square, and gymnastic dances; apparatus—low and high horizontal bars. C (spring)—individual and combination stunts with and without equipment; contests and class races; softball.
- Phys.Ed.6A. Intramural Sports. Soccer, speedball.

‡ One individual lesson per week, 2 credits, \$25; two individual lessons per week, 4 credits, \$50.

- Phys.Ed.6B. Intramural Sports. Ice hockey, handball, and squash.
- Phys.Ed.6C. Intramural Sports. Advanced swimming.
- Phys.Ed.7A-B-C. Recreational Games and Sports. A (fall)—team and non-team games with and without equipment, social games and mixers; progressive game parties, noon-hour activities, volleyball. B (winter)—relays with and without equipment, pyramid building, boxing, wrestling, apparatus—long horse, ropes, side horse, flying rings. C (spring)—badminton, aerial darts, deck tennis, horsehoes, archery, paddle tennis, tether ball, table tennis.
- Phys.Ed.8. Dual Spring Sports. Tennis, golf, etc.
- Phys.Ed.9. Rhythms. Tap and social dancing.
- Phys.Ed.25. First Aid. See Department of Physical Education for Women.
- Phys.Ed.50. Human Anatomy.
- Phys.Ed.51. Mechanics of Movement. Study of the structure of the body and the principles and mechanics of bodily movements.
- Phys.Ed.53,54,55.*‡ Methods and Materials in Physical Education (formerly Phys.Ed. 7,8,9, Advanced Leaders, and 24, 25, Methods in Physical Education). Application of principles of methodology to physical education, analysis and study of the techniques of measurement devices for grading and classifying pupils. Practice in leadership in physical education activities.
- Phys.Ed.56. Nature and Function of Play. A study of the philosophy of play and a survey of types of play, their values, and classification of activities according to age and sex differences.
- Phys.Ed.57. Operation and Conduct of Play Centers. Study of the facilities, programs, leadership, and administration of playgrounds and community centers.
- Phys.Ed.60. Prevention and Care of Injuries. Policies for conditioning of athletes in interscholastic and intercollegiate sports, safety controls, and care and prevention of injuries in physical education activities.
- Phys.Ed.61. History of Physical Education. A study of the influence of social, economic, political, and religious factors in the development of physical education from ancient times to the present. Special treatment will be given to the origin and development of games and sports.
- Phys.Ed.63. Organization and Administration of Physical Education. Problems of organization, administration, and supervision in required and elective courses, intramural and interschool athletics.
- Phys.Ed.66A-B.‡ Methods and Techniques of Officiating. A (fall)—qualifications of officials; officiating ethics; discussion of rules and officiating in touchball, football, basketball. B (winter)—wrestling, boxing, volleyball, gymnastics, swimming, track, softball, and baseball. One hour per week lecture and class discussion, three hours of practice in officiating under supervision.
- Phys.Ed.67. Coaching of Athletic Sports (Football). Study of the theory, strategy, generalship, styles of offense and defense, methods of organizing practice and handling men.
- Phys.Ed.68. Coaching of Athletic Sports (Basketball). Study of theory, styles of offense and defense; the conditioning and handling of players.
- Phys.Ed.69. Coaching of Athletic Sports (Track). Instruction and actual practice in track and field events. Lectures on the conduct of meets, track strategy, and practice schedules.
- Phys.Ed.72. Coaching of Athletic Sports (Baseball). Theoretical consideration of, and actual practice in, batting, base running, and methods of playing each

‡ A fee of \$1 per credit is charged for this course.

position. Special attention is given to "inside baseball" and the development of team play.

Phys.Ed.73,74,75.†¶ Directed Teaching. Six hours of directed teaching per week for three quarters.

Phys.Ed.83. School Health Education, Method and Content. See Department of Physical Education for Women.

Phys.Ed.101E.§ Principles of Physical Education. A study of the aims, scope, and biological aspects of physical education with special treatment of its place in education.

Phys.Ed.103E§ (formerly Phys.Ed. 58). Physical Examination and Adaptation of Activities. The physical educator's responsibility in diagnosis, amelioration, and correction of physical abnormalities.

Phys.Ed.111E.§ An Advanced Course in Methods of Teaching. See Department of Physical Education for Women.

Phys.Ed.112E.§ Supervision of Physical Education. See Department of Physical Education for Women.

Phys.Ed.113E.§ Physical Education in the Elementary Schools. See Department of Physical Education for Women.

Phys.Ed.114E.§ The Administration of the Health Education Program. See Department of Physical Education for Women.

Phys.Ed.133E.§ Special Administrative Problems in Physical Education. Survey of staff organizations in public schools of towns and cities, colleges, universities, and state departments; problems of construction and maintenance of facilities and policies for their use; legal aspects of physical education; special emphasis on intramural and interinstitutional athletic problems. Lectures, discussions, and written reports.

Phys.Ed.134E.§ The Secondary School and College Curriculum in Physical Education. Theory and principles of program construction applied to physical education. Critical analysis of existing programs and evaluation of activities in the light of modern trends. Practical application of principles in the construction of a program for a specific situation.

Phys.Ed.135E.§ Tests and Measurements in Physical Education. Critical analysis of existing testing methods in physical education. Study of current tests from both practical and theoretical standpoints. Use of tests in the administration of physical activity programs. Application of the principles of test construction to specific problems in physical education.

Phys.Ed.136E.§ Leadership in Recreation. A study of problems of leadership in community recreation; finance, co-ordination of existing agencies promoting recreation activities, facilities, and public relations.

Phys.Ed.137E.§ Recent Literature and Research in Health Education, Physical Education, and Recreation. Methods of educational research applied to physical education. Critical analysis of existing studies in physical education. Analysis of methods of gathering and interpreting of data.

Phys.Ed.237E.§ Problems in Health Education, Physical Education, and Recreation. Individual study for those who are interested in solving a problem in physical education.

† A fee of \$1 per credit is charged for this course.

§ The designation "E" after a course number over 100 signifies that the course is of graduate level in the College of Education but does not carry credit for Plans A and B in the Graduate School.

¶ Passing the qualifying examination in English is prerequisite to this course.

PHYSICAL EDUCATION FOR WOMEN

Statement of fees.—All activity courses for which registration is required \$1.75 per quarter. Maximum physical education fee per student \$3.50. For courses for which no fee is charged see Combined Class Schedule.

In addition a fee of \$1 per credit is charged for all methods and student teaching courses as indicated in the footnotes. A laboratory fee of \$2 is charged for Phys.Ed. 50 or Phys.Ed. 51.

COURSES FOR UNDERGRADUATE STUDENTS

Phys.Ed.1,2,3,4,5,6,7,8. General Course in Physical Education. This course, offered by the Department of Physical Education for Women, provides a wide program of sports and other activities to meet the varying interests and needs of all the women students. The program offers an opportunity to take courses for the purpose of body building and conditioning and for the acquisition of personal and recreational skills. This course permits choice, based on guidance of the faculty advisers in the following activities:

Aquatics

Canoe Paddling
Swimming, Beginning, Advanced Beginning,
Intermediate, and Advanced
Diving
Lifesaving

Team Sports and Activities

Baseball
Basketball
Field Hockey
Games and Mixers
Posture and Daily Life Skills
Introductory Course in Sports Skills
Sports and Dance Appreciation (movies,
demonstrations, talks by experts on
sports and the dance)
Volleyball
Lectures in Physical Education and Health

The Dance

Folk Dancing
Recreational Rhythm
Modern Dance, Elementary, Intermediate,
and Advanced
Social Dancing
Tap Dancing, Elementary and Intermediate

Individual Sports and Activities

Archery, Elementary and Intermediate
Badminton, Elementary and Intermediate
Golf, Elementary, Intermediate, and
Advanced
Horseback Riding, Elementary, Interme-
diate, and Advanced
Individual Body Building
Skating, Plain and Figure
Tennis, Elementary, Intermediate, and
Tournament
Rifle Marksmanship

*Recreational Activities for Which No Registration Is Required**Fall*

Field Hockey
Horseback Riding
Volleyball
Swimming
Archery
Tap Dancing
Rifle Marksmanship
Badminton
Fencing

Winter

Basketball
Swimming
Winter Sports
Tap Dancing
Rifle Marksmanship
Badminton
Fencing
Archery

Spring

Baseball
Horseback Riding
Tennis
Golf
Swimming
Archery
Badminton

Phys.Ed.7. Lectures in Health and Physical Education. The essential aspects of personal and community health.

Phys.Ed.21A-B-C. Freshman Major Team Sports. Fall—field hockey, speedball, soccer, field ball; winter—basketball and volleyball; spring—baseball.

Phys.Ed.22A-B.¶ Freshman Major Individual Sports. Fall—golf and archery; spring—tennis and track.

¶ Students must supply their own golf equipment and must pay \$1 for tennis permit.

- Phys.Ed.23A-B. Elementary Games and Folk Dancing. Graded games, singing games, folk dancing, stunts, and self-testing activities for school and playground.
- Phys.Ed.25. First Aid. Lectures, demonstrations, and practice in emergencies and first aid treatment. Special emphasis on care of injuries in physical education. An American Red Cross Standard Certificate in First Aid is received upon successful completion of this course.
- Phys.Ed.41A-B-C. Sophomore Major Team Sports. Further practice in sports included in Phys.Ed. 21A-B-C. Required of students who are exempt from Phys.Ed. 21A-B-C.
- Phys.Ed.42A-B.¶ Sophomore Major Individual Sports. Further practice in sports included in Phys.Ed. 22A-B. Required of all students who are exempt from Phys.Ed. 22A-B.
- Phys.Ed.43. Advanced Folk Dancing. Skill experience in social and tap dancing. Application of elements of rhythm. Principles of progression. Methods of teaching.
- Phys.Ed.44A-B. Group Gymnastics. Danish—Modern Swedish Gymnastics.
- Phys.Ed.45A-B. Sophomore Major Swimming. Instruction in strokes, diving and water safety measures. Analysis of aquatic skills in preparation for teaching swimming. Preparatory for Phys.Ed. 67A-B.
- Phys.Ed.46A-B-C. Modern Dance, Elementary. Elementary techniques and group studies in which the purpose is to learn methods of dance composition.
- Phys.Ed.47A-B. Tumbling, Stunts, and Apparatus. Practical work to develop skill in tumbling, stunts, and apparatus. Principles of progression and methods of teaching.
- Phys.Ed.48 (formerly Phys.Ed. 68). Lifesaving and Water Front Safety. Organization, management, and content of camp or public beach swimming program. Certification in American Red Cross lifesaving requirements. Preliminary review required for Water Safety Instructor's Certificate.
- Phys.Ed.50.‡ General Anatomy. Lectures and demonstration dissections of the muscles, bones, and joints; circulatory and nervous systems; the abdominal, pelvic, and thoracic viscera.
- Phys.Ed.51.‡ Mechanics of Movement. Lectures on the principles of mechanics of movement with laboratory studies involving the kinesiological analysis of sport techniques.
- Phys.Ed.54. Camp Leadership. Practical work in campcraft, organization, and administration of the camp program; responsibilities and duties of a counselor; experience in leadership in camp activities.
- Phys.Ed.60. Principles of Play. A study of the nature and function of play, factors influencing play interests, and a brief consideration of the organization and administration of play.
- Phys.Ed.61A-B-C.‡ Technique of Teaching Sports. Team games and individual sports. Special techniques for each sport and methods of teaching. Organization of extra-curricular activities. Practice in skills and student teaching within the group.
- Phys.Ed.62. Physical Examination. Technique of the detection of common defects and organization of a physical examination.

‡ A fee of \$2 is charged for Phys.Ed. 50 and 51 whether taken as a whole or as a part. A fee of \$1 per credit is charged for 61A-B-C.

¶ Students taking tennis must pay \$1 for a tennis permit. Students taking golf should supply their own equipment.

- Phys.Ed.63.‡ Technique of Teaching Folk Dancing. The racial characteristics and folk arts of people are studied as a background for folk dances.
- Phys.Ed.64.‡ Technique of Teaching Group Gymnastics. A study is made of the principles of progression and methods of teaching gymnastics. Student teaching is done within the group.
- Phys.Ed.65.‡ Integration of Special Methods. In this course the relationship between special teaching techniques in physical education will be studied through a series of observations of public school teachers skilled in each phase of the field. Students will determine problems inherent in each teaching area and will have experience with simple check lists.
- Phys.Ed.66. Modern Dance, Intermediate. Group and individual studies and more advanced techniques than in Phys.Ed. 46A-B-C.
- Phys.Ed.67A-B.‡ Techniques of Teaching Swimming. Description of strokes, diving, stunts, and water safety techniques, methods of teaching swimming, student teaching in class, organization and management of competitive and recreational aquatic activities, essentials of pool control and sanitation, the testing program in aquatic skills.
- Phys.Ed.69. Fundamentals of Movement (formerly Phys.Ed. 22B). Application of the fundamentals of timing, balance, force, and direction to representative recreational activities such as serv-us ball, badminton, shuffleboard, bowling, tetherball, and stunts.
- Phys.Ed.73A-B.‡ Technique of Teaching Rhythm. A study of methods of teaching all types of rhythmic activities and of teaching any other activity through rhythm. Some consideration is given to programs of rhythmic work. Student teaching within the group and also at a nearby school.
- Phys.Ed.74A-B. Advanced Fundamentals of Movement. A summary of fundamental elements in movement with particular reference to the teaching approach in elementary and high school classes.
- Phys.Ed.79. Massage and Therapeutic Exercises. A consideration of the principles of massage and the study of conditions especially applicable to physical education. The practical application of these principles to athletic injuries, foot disorders, paralysis, and certain functional and nervous disorders, etc. Visits to Twin City physiotherapy departments.
- Phys.Ed.80. Principles of Rhythm. Rhythm and the dance are studied in relation to allied arts. The phases of rhythm and the dance taught at the University of Minnesota are analyzed and their place in the physical education program determined.
- Phys.Ed.81. Trends in Physical Education. A survey of historical and contemporary trends in physical education.
- Phys.Ed.82. Principles of Physical Education. Philosophy of physical education and principles underlying curriculum building, methods of teaching, measurement, and outcomes.
- Phys.Ed.83. School Health Education, Method and Content. Study of principles, materials, and problems of health education in preparation for health teaching. Observation in techniques of school health instruction. Allocation and graduation of health subject-matter, study of health needs of school children. Evaluation of school health instruction.
- Phys.Ed.84. Problems in Physical Education. A study of curricular problems in

‡ A fee of \$1 per credit is charged for this course.

the field of physical education carried on by individuals or groups. The emphasis is on the elementary and high school level.

- Phys.Ed.85. Remedial Gymnastics. Principles, techniques, and practice in the correction of postural defects. Exercise for remedial work to follow up physical examination findings or doctor's recommendation.
- Phys.Ed.90A-B-C.‡§ Student Teaching. Student teaching in team and individual sports, orthopedic and remedial work, health, fundamentals of movement and rhythm in Minneapolis elementary and high schools and in university classes.
- Phys.Ed.95A-B. Administration of Physical Education. Standards for construction, equipment, and management of physical education plant; costumes; protection and classification of students; organization of class and extra-curricular programs; appraisal of activities; relation of physical education program to the community; organization of typical departments of health and physical education.

COURSES FOR UNDERGRADUATE AND GRADUATE
MEN AND WOMEN STUDENTS

(For graduate courses in the Department of Physical Education for Men see page 109.)

- Phys.Ed.111E.‡¶ An Advanced Course in Methods of Teaching in Physical Education. The purpose of this course is to give an overview of the activity program in reference to instructional content and procedures. Outstanding results of the course should be increased perspective of the common method problems in the various activities as well as those peculiar to each activity and possible solutions for conspicuous instructional problems today.
- Phys.Ed.112E.¶ Supervision of Physical Education. This course presents a consideration of the function, organization, and administration of supervision in physical education; adaptations of accepted procedures for inspection, guidance, and training of teachers in the field, and problems peculiar to supervision of physical education.
- Phys.Ed.113E.¶ Physical Education in the Elementary Schools. The course deals primarily with the elementary school curriculum, with adaptations of instructional procedures necessary in the elementary grades, with problems of classification and evaluation, and with the influences of modern educational thinking upon problems commonly met at this level.
- Phys.Ed.114E.¶ Administration of School Health Education. Study of various health organizations in city and state in relation to the school health program; organization of the health education programs with the school; construction of the curriculum in school health; evaluation of the school health education program; preparation and requirements for teaching school health education; health supervision and guidance.
- Phys.Ed.115E.¶ Recent Literature and Research in Mechanics of Movement. The technique of research in problems pertinent to physical education which are in need of investigation. The students conduct experiments in a chosen problem and at the same time make a survey of related literature.

‡ A fee of \$1 per credit is charged for this course.

§ Passing the qualifying examination in English is prerequisite to this course.

¶ The designation "E" after a course number over 100 signifies that the course is of graduate level in the College of Education, but does not carry credit for Plans A and B in the Graduate School.

PREVENTIVE MEDICINE AND PUBLIC HEALTH

COURSES FOR UNDERGRADUATE STUDENTS

- P.M.&P.H.2. First Aid. General care and observation of patients; emergencies and first aid treatment. Laboratory demonstrations and practice.
- P.M.&P.H.3.† Personal Health. Elementary principles of normal body function; predisposing and actual causes of disease; ways in which disease may be avoided.
- P.M.&P.H.4.† Health Problems of Adult Life. Personal health and prevention of disease in the family; relation to community health and disease control; important diseases and their prevention.
- P.M.&P.H.50.† Public and Personal Health. Causes of diseases and of physical defects, fundamental principles and working methods of health conservation and disease prevention. Lectures, discussions, and directed readings.
- P.M.&P.H.51. Community Hygiene. Elementary concepts of development, spread, and prevention of preventable diseases; community programs for their control.
- P.M.&P.H.52.† Health Care of the Family. (See Bulletin of College of Agriculture, Forestry, and Home Economics.)
- P.M.&P.H.53. Elements of Preventive Medicine and Public Health. Susceptibility, resistance, and immunity to disease; methods of spread and the prevention of communicable and degenerative diseases; protection of food, water, and milk; school health work; vital statistics. For public health nurses and students in medical social work only.
- P.M.&P.H.55. Nursing and Social Problems in Gonorrhea and Syphilis Control. History, prevalence, and epidemiology of gonorrhea and syphilis, public health control measures; individual and family problems resulting from these diseases. Provision will be made for conferences and case discussions.
- P.M.&P.H.57. Health of Infant and Preschool Child. Maternal and child health in public health program, problems of infant and maternal mortality, growth and development of infant and young child, care and feeding of normal infant; prevention and correction of physical defects.
- P.M.&P.H.58. Maternal and Child Hygiene. (For public health nurses.) The maternal welfare program; importance of breast feeding; conduct of infant welfare clinics in cities and rural communities; consideration of child of preschool and school age as to malnutrition, physical defects, cardiac and nervous disorders.
- P.M.&P.H.59. Health of the School Child. Mental and physical growth; discovery of physical defects; exercise, fatigue, emotional problems; health habits; diseases of school children; practical problems of health supervision and health instruction.
- P.M.&P.H.60. Tuberculosis and Its Control. History of tuberculosis movement and campaign in the United States; early diagnosis and sanatorium treatments; tuberculosis in children; psychology of tuberculosis; supervision of returned sanatoria patients, state program for eradication of tuberculosis; legislation.
- P.M.&P.H.62-63. Principles of Public Health Nursing. History and development of public health nursing; underlying principles of organization, administration, and service in a program of individual and family health supervision; methods of co-operative endeavor with social agencies; health teaching as an essential factor in the promotion of individual and community well-being.

† No student may receive credit for both Courses 3 and 50, or for 50 and 52, or for 50 and 51, or for 51 and 52.

- P.M.&P.H.65.‡‡ Field Practice in School Nursing. (For public health nurses only.) Working with the school nurse the student observes and participates in the activities included in the school nursing program; special attention to organization, relationships, techniques, methods of informal health teaching, provision for handicapped children, and home visiting.
- P.M.&P.H.66.‡‡ Field Practice in County Nursing. (For public health nurses only.) The student accompanies the rural nurse on her rounds and observes and participates in the activities included in a rural nursing program; special attention to problems of organization for rural health work, methods of health teaching, home visiting, and development of community leadership.
- P.M.&P.H.67.‡‡ Field Practice with Family Health Agency. (For public health nurses only.) Lectures, demonstrations, and supervised experience in prenatal and infant clinics and in home visiting. This includes bedside care of all types of cases, with emphasis on promotion of physical and mental health and recognition of social problems.
- P.M.&P.H.68.‡‡ Field Work in Orthopedic Nursing. This course includes lectures and clinics at the curative workshop in Minneapolis; observation of physiotherapy treatments in the workshop and at home; observation of home visits to orthopedic cases and of orthopedic services in hospitals and out-patient departments.
- P.M.&P.H.69. School Nursing. Development, organization, and scope of programs; relationship of school nursing to general public health program, to health education in schools, and to school curriculum.
- P.M.&P.H.70.‡ Special Methods and Supervised Teaching in Health Education for Public Health Nurses. Includes practice in planning instruction and in teaching adults. Class limited to fifteen to twenty.
- P.H.&P.H.76. Nutrition for Public Health Nurses. Fundamental principles of nutrition and their application in the field of public health nursing with special consideration given to low income groups; includes discussion of nutritional needs of each age group, requirements in pregnancy and lactation, and nutritional diseases.
- P.M.&P.H.91. Environmental Sanitation. Public health aspects of water, milk, and food supplies; sewage and waste disposal; swimming pools, industrial establishments; ventilation and illumination of schoolrooms; problem of housing; problems incidental to control of insect vectors of disease.

For courses for graduate students see the Bulletin of the Graduate School.

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

‡‡ A fee of \$3 per quarter is charged for this course.

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The Bulletin of the
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School of Nursing Announcement
for the Year 1940-1941



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UNIVERSITY CALENDAR 1940-41

1940	<i>Fall Quarter</i>		
September	16	Monday	Extension registration first semester begins
September	19	Thursday	Payment of fees closes, except for new students ¹
September	23	Monday	Entrance tests
September	23-24		Registration for Freshman Week for all new students entering freshman class
September	23-27		Examinations for removal of conditions Physical examinations Registration period, ² College of Science, Literature, and the Arts
September	25-28		Freshman Week
September	26-27		Registration days ² for all colleges not included above. Payment of fees closes for new students
September	30	Monday	Fall quarter classes begin 8:30 a.m. ³
October	5	Saturday	First semester extension classes begin ⁴ Last day for extension registration without penalty
October	17	Thursday	Senate meeting, 4:30 p.m.
October	26	Saturday	Homecoming Day
November	5	Tuesday	Election Day; a holiday (except for extension)
November	11	Monday	Armistice Day; a holiday (except for extension)
November	16	Saturday	Dads Day
November	28	Thursday	Thanksgiving Day; a holiday
December	13-14 and 16-19		Final examination period
December	19	Thursday	Commencement Convocation Senate meeting, 4:30 p.m. Fall quarter ends 6:00 p.m. ⁵

Winter Quarter

December	26	Thursday	Payment of fees closes for all students in residence fall quarter ¹
1941			
January	3	Friday	Entrance tests
January	3-4		Registration ² for new students in all colleges except the Institute of Technology. Payment of fees closes for new students at 12:00 noon, January 4
January	6	Monday	Winter quarter classes begin 8:30 a.m. ³
January	27	Monday	Extension registration second semester begins
February	8	Saturday	First semester extension classes close
February	10	Monday	Second semester extension classes begin ⁴
February	12	Wednesday	Lincoln's Birthday; a holiday (except for extension)
February	15	Saturday	Last day for extension registration without penalty

February	20	Thursday	Charter Day Convocation Senate meeting, 4:30 p.m.
February	22	Saturday	Washington's Birthday; a holiday
March 14-15 and	17-20		Final examination period
March	20	Thursday	Commencement Convocation Payment of fees closes for all students in residence winter quarter ¹ Winter quarter ends 6:00 p.m.

Spring Quarter

March	28	Friday	Entrance tests
March	28-29		Registration ² for new students in all colleges except the Institute of Technology. Payment of fees closes for new students at 12:00 noon, March 29
March	31	Monday	Spring quarter classes begin 8:30 a.m. ³
April	11	Friday	Good Friday; a holiday (except for extension)
May	10	Saturday	Mothers Day
May	15	Thursday	Cap and Gown Day Convocation Senate meeting, 4:30 p.m.
May	30	Friday	Memorial Day; a holiday (except for extension)
June	6	Friday	Second semester extension classes close
June 6-7 and	9-13		Final examination period
June	8	Sunday	Baccalaureate service
June	13	Friday	Spring quarter ends 6:00 p.m.
June	14	Saturday	Sixty-ninth annual commencement

Summer Session

June	16-17		Registration, first term
June	18	Wednesday	First term Summer Session classes begin 8:00 a.m.
July	4	Friday	Independence Day; a holiday
July	24	Thursday	Commencement Convocation
July	25	Friday	First term closes
July	28	Monday	Registration and payment of fees for second term close Second term classes begin 8:00 a.m.
August	29	Friday	Second term closes

¹ New students must pay fees on dates announced for registration in the registration instructions. Fees of graduate students are due one week after their registration is approved by the dean of the Graduate School.

² Registration subsequent to the date specified will necessitate the approval of the college concerned. See also privilege fees for late registration, Bulletin of General Information, page 60. No student will be allowed to register in the University after one week from the beginning of the quarter excepting in unusual cases wherein special circumstances shall justify the appropriate committee of the college concerned permitting registration at a later date.

³ First hour classes begin at 8:15 a.m. at University Farm.

⁴ This date does not refer to correspondence study courses, which may be started at any time during the year.

⁵ Extension classes continue to Saturday, December 21, and will resume Monday, January 6, 1941.

FACULTY

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Greta Lassen, R.N., B.S., Instructor in Nursing (a)
Florence E. Leech, R.N., B.S., Instructor in Nursing (a)

* The letters in parentheses indicate the particular agency in which the instructor serves: (a) University of Minnesota Hospitals; (b) Charles T. Miller Hospital; (c) Minneapolis General Hospital; (d) Glen Lake Sanatorium; (e) Community Health Service; (f) Family Nursing Service.

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 Ella Smitka, R.N., Assistant (a)
 Alice Turner, R.N., Assistant (c)

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 Irvine McQuarrie, M.D., C.P.H., Professor of Pediatrics and Head of the Department of Pediatrics
 Mellie F. Palmer, R.N., B.S., C.P.H., Assistant Professor of Preventive Medicine and Public Health and Acting Director of Course in Public Health Nursing
 Cecelia Hauge, R.N., M.A., Superintendent of Nurses, University of Minnesota Hospitals
 Dorothy S. Kurtzman, R.N., Superintendent of Nursing Projects
 Julia M. Miller, R.N., B.S., Superintendent of Nurses, Minneapolis General Hospital

STUDENTS' WORK COMMITTEE

Katharine J. Densford, R.N., M.A., Director of the School of Nursing
 Thelma Dodds, R.N., B.S., Superintendent of Nurses, Charles T. Miller Hospital
 Cecelia Hauge, R.N., M.A., Superintendent of Nurses, University of Minnesota Hospitals
 Julia M. Miller, R.N., B.S., Superintendent of Nurses, Minneapolis General Hospital
 Ruth E. Boynton, M.S., M.D., Director of Students' Health Service and Professor of Preventive Medicine and Public Health

SCHOOL OF NURSING

Anne D. Blitz, M.A., LL.D., Dean of Women
Edward E. Nicholson, M.A., Dean of Student Affairs

ADVISORY COMMITTEE

Ray M. Amberg, Ph.C., Superintendent of University of Minnesota Hospitals
—————,* Superintendent of the Minneapolis General Hospital
Peter D. Ward, M.D., Superintendent of the Charles T. Miller Hospital
Administrative Committee
Students' Work Committee

* To be appointed.

GENERAL INFORMATION

HISTORICAL STATEMENT

The University of Minnesota School of Nursing, authorized by the Board of Regents October 1, 1908, was actually established March 1, 1909, as a result of the efforts of Dr. Richard Olding Beard. It was the first university school of nursing in the world and, as such, led the way for other university schools which followed. The first university school carried a three-year undergraduate curriculum leading to the degree of graduate in nursing until June 9, 1919, at which time it established a five-year program leading to the degree of bachelor of science and graduate in nursing. Since that time it has carried both a three- and a five-year curriculum, and, up to July 1, 1940, has graduated 1,558 with a diploma in nursing, of whom 368 have also received a bachelor of science degree. A distinctive feature of the five-year curriculum has been the requirement of seventy-five university credits before the student matriculates in the School of Nursing proper. As a result, the entire clinical program is made more meaningful than would otherwise be possible.

Another first step was taken December 14, 1920, when the plan of a central school was approved by the University. From the beginning, the University had felt that it should offer the courses it was developing for its own nursing students to other hospitals. The hospitals wishing to take part in such a venture were the Minneapolis General Hospital, the Charles T. Miller Hospital, and the Northern Pacific Beneficial Association Hospital of St. Paul. It was felt that the inclusion of these hospitals would introduce desirable practice fields for the University School of Nursing and would make possible a uniform standard of preparation for the nurses in these hospitals of a higher level than they could achieve individually. The arrangements were completed, therefore, in 1921. Tho no formal contract was made, a memorandum of agreement was drawn and agreed upon by the University and the allied hospitals. On March 30, 1921, the first students in this central school of nursing were admitted to the University.

On February 19, 1925, the curriculum of clinical experience was further enriched by means of an agreement with the Hennepin County Sanatorium Commission whereby university nurse students were to receive six weeks' clinical experience (a shortened period later) at the Glen Lake Sanatorium in the care and treatment of tuberculous patients.

On January 1, 1933, the Northern Pacific Beneficial Association Hospital arranged to staff its entire nursing service with graduate nurses and nonprofessional workers, thereby aiding in the problem of unemployment among graduate nurses.

Beginning March, 1934, all students received six weeks' field experience in public health nursing (most had received it since 1932) in what is now known as the Community Health Service in Minneapolis and the Family Nursing Service in St. Paul. Due to the overcrowding of the public health field, these agencies, beginning fall, 1939, were unable longer to give field

experience to all three-year students. In lieu thereof these students are now receiving four weeks' experience in the Nursery School plus two additional weeks in the outpatient department.

Since Junè, 1934, the Charles T. Miller Hospital has accepted no freshman students for assignment in that hospital. It has instead replaced freshman students with graduate nurses and nonprofessional workers, and has given experience in nursing the private patients to all students of the school.

Beginning March, 1938, trial was made of having three-year students who come directly from high school, together with all three-year students who have less than seventy-five college credits, *enter in the fall quarter only*. Five-year students, together with all three-year students who have seventy-five or more college credits (with one honor point per credit) are admitted to the School of Nursing in both fall and spring quarters.

From its inception, the school has maintained high standards for the professional and personal preparation of its students and for the nursing care of patients in its charge. Graduates of the school have made fine contribution not only to their own school, but also to the profession of nursing both in this country and abroad.

The earlier years of the school's existence were devoted to the establishment of this new type of university education while the later ones have been used for the perfecting of the plan made necessary by the merging of the University with other schools of nursing. Future years should see continued utilization of these early foundations with increasing emphasis on the preventive phases of the nurse's preparation that she may continue to meet adequately the ever increasing and ever broadening demands made upon her.

ORGANIZATION

The School of Nursing functions in the field of medical sciences, the director of the school being responsible to the dean of medical sciences. The administration of the school is conducted largely through three committees, as follows:

1. The Administrative Committee (see page 5), decides all matters of educational policy and general conduct of the School of Nursing.

2. The Students' Work Committee (see page 5), determines the policy as regards the individual student, her acceptance into the school, continuance, discipline, etc.; and makes recommendations concerning the general conduct of the school.

3. The Advisory Committee (see page 6), composed of the Administrative Committee, the Students' Work Committee, and the superintendent or executive officer of each associated hospital, decides matters involving the expenditure of hospital funds.

UNIVERSITY PRIVILEGES

Nurse students enjoy the same university privileges as do other students in so far as their nursing practice will permit. They have representation in such student groups as the All-University Student Council and, in the

case of five-year students, are eligible for membership in honorary and social societies. There are two nursing societies, one open to five-year students and the other open to both five- and three-year students.

Nurse students have free access to the University Library which is located in the main quadrangle of the University. In this library are about 1,125,000 volumes of books and some 14,000 current serials. The nursing library proper is located on the second floor of the building as a part of the biological-medical library. Library hours are from 8:00 a.m. to 10:00 p.m. on week days.

Coffman Memorial Union, the center of student activities on the campus, is open to nurse students as to others. Among the many facilities provided by this modern new building are ballrooms adequate for student social affairs, committee and general meeting rooms for student organizations, the student post office, lounges, restaurant, and cafeteria.

Nurse students are entitled to make use of university tennis courts, golf course, gymnasium, and swimming pool and may buy tickets for all athletic events at student rates.

The Y.W.C.A. of the University is open to all women students as are the student religious organizations sponsored by churches of different denominations.

Perhaps the greatest privilege accorded the students is that of attending lectures and concerts in the University either free or at markedly reduced student rates. Among these are the symphony concerts given by the Minneapolis Symphony Orchestra in the Cyrus Northrop Auditorium; the University Artists Course; and the Thursday morning convocation lectures as well as special lectures in the various departments. Student dramatic organizations present several worth-while plays on the campus each year.

EMPLOYMENT

Students cannot carry on outside employment while in the School of Nursing proper, but may do so while carrying the prenursing curriculum in the College of Science, Literature, and the Arts. For detailed information regarding student employment refer to the General Information Bulletin, page 49, and the bulletin on "University Aids for Student Expenses," or write to the University Employment Bureau.

SCHOLARSHIPS, LOANS, PRIZES

Students in either the five- or three-year course are eligible, after two quarters of satisfactory work in the University, to apply for loans from the university loan funds. Graduate nurses working for degrees are also eligible for the loan after two quarters of satisfactory work. For information regarding the loans write the registrar for the bulletin, "University Aids for Student Expenses."

The following special awards are made to students in the graduating classes of the School of Nursing:

SCHOOL OF NURSING

LOUISE M. POWELL PRIZE

A gift of \$50 annually from the Alumnae Association of the School of Nursing for the establishment of the Louise M. Powell Prize of \$25 to be awarded to that member of the March and June graduating classes in the School of Nursing of the University of Minnesota who has attained the highest degree of efficiency in practical work.

MARION L. VANNIER SCHOLARSHIP

A gift of \$100 annually from the Nurses' Self-Government Association of the University of Minnesota for the establishment of the Marion L. Vannier Scholarship. The recipient of this scholarship must be a graduate of the School of Nursing of the University of Minnesota. The scholarship is to be used for the purpose of higher education only, within two years after recipient's graduation.

RICHARD OLDING BEARD LOAN FUND

The alumnae of the school have made available through the Endowment Fund a sum of \$150 to be used as a loan to graduates of the school for further academic study. The recipient must have had one year of successful nursing experience following graduation.

ALPHA TAU DELTA SCHOLARSHIP

The Alpha Tau Delta, national scholarship society of the five-year nursing course, grants an annual scholarship of \$100 in honor of Esther M. Thompson, class of 1925, to a senior member of the Alpha Tau Delta ranking high in theoretical and practical work. This scholarship is awarded for purposes of study within two years after graduation.

MINNESOTA LEAGUE OF NURSING EDUCATION LOAN FUND

The Minnesota League of Nursing Education has made available the sum of \$500 to be used as a loan to qualified graduate nurses for the purpose of further academic study.

MAINTENANCE SCHOLARSHIPS

A limited number of maintenance scholarships for the first quarter in the School of Nursing (equivalent to \$115) are available to qualified college graduates.

OTHER SCHOLARSHIPS AND LOAN FUNDS

Many of the district and state nursing associations have established scholarships and loan funds for graduate nurses wishing to take up university work. In Minnesota information concerning such a fund, the Sarah T. Colvin Loan Fund, may be had from the Minnesota Nurses' Association, 2642 University Avenue, St. Paul, Minnesota. Certain graduate nurses are also eligible for scholarships of the national nursing organizations. Among these are the Isabel Hampton Robb Memorial Scholarship Fund, under which scholarships are available annually, on a competitive basis, in the spring, and the McIsaac Loan Fund, available any time. Information concerning these may be had from Mrs. Mary C. Eden, The Fairfax, 43rd and Locust Streets, Philadelphia, Pennsylvania.

NURSES' RESIDENCES

Nurse students are housed in the various hospital residences during their period of clinical experience (nursing practice). The Charles T. Miller Hospital has an attractive residence housing 135 persons, all in single rooms. The University of Minnesota Hospitals houses its students in the Louise M. Powell Hall built near the University of Minnesota Hospitals on ground overlooking the Mississippi River. This building houses approximately 300 persons. Students at the Minneapolis General Hospital have a residence adjoining, but apart from, the hospital. The students take their meals in the nurses' dining rooms, which are under the direction of qualified dietitians. Each residence has a qualified director in charge.

Students in the five-year curriculum provide their own maintenance during the first six quarters. They may secure rooms in Comstock or Sanford Hall (the women's dormitories) or in approved rooming houses near the University by request to the Housing Bureau, 119 Administration Building, University of Minnesota. During the time that students carry clinical experience in the school they have maintenance provided for them in the various hospital nursing residences. In the last three quarters of combined academic and nursing work they provide their own maintenance as in the first six quarters. Students in the three-year curriculum provide their own maintenance during the first quarter on the same basis as the five-year students. They have maintenance provided in the various hospital residences after the first quarter.

Assignment of students in the five- and three-year curricula for residence in the various hospitals is made by the Students' Work Committee. Approximately one half of the students are assigned by the committee for residence in the Minneapolis General Hospital for the major portion of the course, the other half being assigned to the University of Minnesota Hospitals.

Students in affiliating and postgraduate curricula are provided maintenance in the nurses' residences during their period of enrolment in the school.

The rules governing the residences are made in accordance with university policies and carried out with the joint approval of the faculty of the School of Nursing and the Council of the Nurses' Self-Government Association.

STUDENT ACTIVITIES

The leading student organization of the School of Nursing is the Nurses' Self-Government Association. This organization assists the faculty in practically all such student affairs as pertain to off-duty hours. Nurse students are admitted to membership at the end of the first six months in the school by passing an examination, conducted by the association, on their constitution, a copy of which is furnished every student when she enters. Students continue in membership so long as they remain in good standing in the school and pay the nominal dues of the organization. They elect a president and governing council of officers so chosen that there are representatives of the council in each of the hospitals. This organization usually sends a representative to the meetings of the American Nurses' Association, the National League of Nursing Education, and the Minnesota Registered Nurses' Association.

One of the activities of the student government is to appoint upper classmen to act as "big sisters" for all entering students to assist them in adjusting themselves to their new environment.

The hospitals have frequent informal teas and parties for the students and the students themselves are encouraged to plan any form of recreation which interests them and which can be wisely undertaken in addition to their nursing duties.

The school is nonsectarian the students are urged to form church affiliations in accordance with their choice and custom. Churches of various denominations are within walking distance of the residences so that it is possible for all students to attend either morning or evening service.

Affiliating and postgraduate students are urged to participate in student activities. Both of these groups make "big sister" appointments to assist incoming students. The postgraduate students have a form of organization for their group.

ORIENTATION PROGRAM

A definitely planned orientation program for freshman students has been developed and is carried on under the direction of a member of the faculty.

SCHEDULE OF HOURS

During the first quarter in the School of Nursing proper, regular undergraduate students carry approximately twenty-four hours of class but have no practical experience in the nursing care of patients.* With the beginning of the second quarter they receive approximately nineteen hours of clinical experience weekly and carry approximately an average of nineteen hours of class.* From the beginning of the third quarter and throughout the remainder of the two and one-half years (in the case of three-year students, three years) the hours of clinical experience are in almost all instances forty-two per week. The hours of class during this same period are approximately six per week with the exception of the Summer Session when the class program is either reduced or omitted. Except in the case of emergencies, the time of the students on full-time duty does not exceed a seven-hour day or an eight-hour night. Assignment of night duty for regular students is for approximately two months (of not more than one month consecutively) during the entire period in the school.

Affiliating students carry approximately forty-two hours per week of clinical experience (as do the undergraduate students) and from three to six hours of correlating class work.

Hours of duty permit the postgraduate students to carry a fairly heavy class schedule during nine months but to be free of classes during three months in which time they have experience in administration. In the course in Operating Technique, Teaching, and Administration the hours are thirty per week during approximately nine months and forty-eight per week during approximately three months. In all other courses the hours are twenty-one per week during approximately three months, thirty-six† during approximately six months, and forty-eight during approximately three months.

* Five-year students usually have fewer class hours because of having carried certain required courses during the prenursing period.

† The period of thirty-six hour duty begins immediately after the close of the fall quarter class schedule.

VACATION

Five-year students have vacations as do other university students during their first five quarters and during the last three quarters. During their hospital residence they receive approximately nine weeks of vacation at their own living expense. Students entering at the beginning of the fall quarter will have approximately one to two weeks at Christmas time, two weeks during the succeeding summer, four weeks the following summer, and two weeks during the last summer. Students entering at the beginning of the spring quarter will have approximately two weeks the first summer, four weeks during the second summer, and two to four weeks during the third year.

Three-year students have practically the same vacation as do the five-year students in their period of hospital residence.

Affiliating students enrolled for less than one year and postgraduate students receive no vacation.

Affiliating students enrolled for one year receive two weeks' vacation.

SUGGESTED HIGH SCHOOL SUBJECTS

Students in high school who are considering the study of nursing are required so to arrange their high school subjects that they meet the entrance requirements of the College of Science, Literature, and the Arts of the University of Minnesota whether they elect the five- or three-year curriculum. By meeting these requirements, students who take the three-year curriculum may later apply their credits in nursing toward a bachelor of science degree, a privilege not open to students who meet only the minimum university requirements.

In the matter of elective subjects students should choose subjects in which they are particularly interested, with the guidance of high school advisers. It is well to avoid "vocational units" so far as possible. Students are advised to take chemistry in high school. *Mathematics is desirable as it is essential that the students have a good working knowledge of arithmetic.* English, history, physics, and social sciences are all recommended, and a foreign language, provided two units can be completed.

PREPARATION AND OPPORTUNITIES

The profession of nursing entails much the same type of requirements and preparation for successful practice as do other professions. Positions for graduate nurses are now open in every field, and for positions requiring advanced preparation it is extremely difficult to find well-qualified personnel. To the good student who is willing to prepare herself rightly, many satisfying opportunities are open in the various fields. Some of these opportunities are for the positions of general duty, head nurse, supervisor, instructor, private duty, industrial nurse, visiting nurse, infant welfare nurse, and school nurse. Graduates of the School of Nursing now hold important positions in all these fields both in this country and in foreign countries.

GENERAL REGULATIONS

NOTE.—Due to social and economic conditions, the University of Minnesota reserves the right to alter any program or policy outlined in this bulletin.

ADMISSION

Each student who wishes to enter the University, either as a freshman or with credits from another institution, must fill out the information called for on pages 1 and 2 of the official application blank. This blank can be obtained from the registrar or from any Minnesota state high school.

The applicant for admission from high school should then give the application blank to the high school principal or superintendent with the request that it be completed and forwarded to the registrar of the University.

The applicant for admission from another college may send the information on pages 1 and 2 direct to the registrar, and in addition, she should request the college last attended to forward to the University of Minnesota an "official transcript of record" and an "honorable dismissal."

The applicant for admission by examination should submit the information on pages 1 and 2 direct to the registrar, who will issue an authorization for the entrance examination.

ADMISSION FROM HIGH SCHOOL

Admission to the freshman class is either by examination or by certificate.

Most students entering the freshman classes of the University are high school graduates. In order to enter without entrance examinations, the applicant must be a graduate of an accredited high school of Minnesota, or of a high school on the approved list of some other recognized state or regional accrediting institution.

For admission to any college of the University which accepts students without preliminary college training an applicant must present a record of at least twelve units completed in Grades X, XI, and XII (senior high school). For definition of units and groups see the Bulletin of General Information, pages 36 to 41.

At least nine of these twelve units must be subjects listed in Admission Groups A, B, C, D, and E. The other three units may be in Group F.

The nine units from Admission Groups A, B, C, D, and E must include a major and two minors, or preferably, two majors and one minor from at least three different admission groups.

Either one major or one minor must be in Admission Group A (English).

From either Admission Group B (foreign languages) or Admission Group D (mathematics) *but not from both*, one unit completed in Grade IX may be used to make a major or minor. If this is done, however, the unit completed in Grade IX may not be counted as a part of the minimum of twelve units required from Grades X, XI, and XII.

In addition to the above requirements, the individual colleges have speci-

fied certain group and subject-matter requirements. Those for the School of Nursing are as follows:

Major in Group A

Major or minor in Group D

Major or minor in Groups B, C, D, E

Those for the College of Education special curricula (required for graduate nurses working for the B.S. degree in nursing education or public health nursing) are as follows:

Major in Group A

Major or minor in each of two of the Groups B, C, D, E

ADMISSION BY EXAMINATION

Applicants who are not graduates of accredited high schools may meet the admission requirements in one of the following ways:

1. By presenting Minnesota State High School Board certificates in the necessary subjects;
2. By presenting similar certificates from examining boards of other states;
3. By presenting certificates representing examinations given by the College Entrance Board; or
4. By passing successfully the University of Minnesota entrance tests as described below.

UNIVERSITY OF MINNESOTA ENTRANCE TESTS

These tests may be taken by any high school graduate whose high school credits do not meet the special requirements of the college she wishes to enter.

They may be taken also by any individual who is not a high school graduate provided she is nineteen years of age or older.

Any applicant who passes these tests will be admitted provisionally subject to one year of satisfactory work at the University.

Most graduates of Minnesota high schools will have taken these tests in connection with the state testing program conducted in the high schools throughout the state each year.

Special tests will be required as supplementary evidence of ability to carry the work in the School of Nursing in the case of students with low entrance ratings.

In order to take the tests at the University, the official application blank should be filed with the registrar according to the instructions on page 14.

Detailed information as to where and when to report for the tests and an authorization for the tests will then be forwarded.

In special cases, arrangements will be made to have the tests given near the applicant's home in order to save the expense of travel to the University. In such cases a \$5 fee is charged. There is no fee if the tests are taken at the University.

These tests are of the objective type, intended to measure aptitudes for college work rather than specific information in high school fields. No special preparation for the tests is practicable.

Each applicant for admission by means of the university entrance tests will be required to take the college aptitude test and an English placement test.

REGULATIONS GOVERNING ADMISSION

Applications for admission should be made in writing to the registrar, University of Minnesota. Information and application blanks can be had upon request to the registrar. *Application blanks and educational credentials must be on file in the registrar's office before the applicant can be given consideration.*

Final acceptance is made at a meeting of the Enrolment Committee of the School of Nursing at which time the general fitness of the applicant for the field of nursing is considered. The committee reserves the right to reject any candidate who seems to the faculty unsuited for the nursing profession. Meetings of the committee are held at the beginning of the fall and spring quarters, at which time students are admitted to the school, *students with 75 or more college credits with C average being admitted in the spring and fall, students with less than 75 college credits being admitted only in the fall. An average of C is required of all students in whatever courses are completed. In addition an average of C must be maintained in the four basic sciences of anatomy, bacteriology, physiological chemistry, and physiology.* Applicants may meet the committee at its meeting six months prior to the date they intend to enter, if they wish, but ordinarily they meet the committee on the date they wish to enter the school. Every precaution is taken to warn applicants in advance if their records seem to indicate that they are not suited to enter the field of nursing. A battery of tests is given during registration week and scores are used for assistance in guidance throughout the course. *A test covering mathematical processes involved in nursing is given during registration week and students whose background is insufficient are required to furnish evidence of study of this subject and to pass a second examination at the end of the quarter.* A sample of this test may be had upon request. Review of arithmetic is advised for all applicants.

FIVE-YEAR CURRICULUM

Applicants for admission to the five-year curriculum must meet the entrance requirements of the College of Science, Literature, and the Arts, as given on page 36 of the Bulletin of General Information. They will register in the College of Science, Literature, and the Arts during the first five quarters of the curriculum.

Acceptance into the School of Nursing is not made until the 75 credits of the prenursing subjects have been completed (see outline of the five-year curriculum, page 25). Students who have taken work in junior colleges or other colleges or universities, may apply the credits toward the five-year curriculum. Official transcripts of such credits should be submitted to the university registrar for evaluation. Students may begin the prenursing portion of the five-year curriculum at the beginning of any quarter, altho the fall quarter is the most satisfactory admission date. The spring quarter

is the most satisfactory time to begin the sixth quarter of the nursing curriculum and applicants having completed 75 or more college credits should arrange their transfer so that their sixth quarter is a spring quarter. The less desirable, the fall quarter also may be the sixth quarter.

CURRICULUM FOR COLLEGE GRADUATES

The state law of Minnesota (like that of many other states) requires the nursing curriculum to be three years in length. Applicants with a Bachelor's degree are admitted directly to the nursing portion of the five-year curriculum, which is two and one half years in length. These students then select special electives during an additional six months. The student may use this time in working toward a degree of bachelor of science in the field of nursing education or of public health nursing, or she may begin work toward a more advanced degree. She may, also, if she desires, spend this period in some special field such as that of psychiatric nursing or outpatient nursing in this school or in other schools.

THREE-YEAR CURRICULUM

Applicants for admission to the three-year curriculum must meet entrance requirements as stated on page 14. Students whose high school records were not good are not advised to enter the field of nursing. In considering the applicants the Enrolment Committee gives preference to those students who ranked in the upper fourth of their high school class. For requirements of physical fitness see Health Regulations, page 21.

To be eligible for registration in the state of Minnesota the nursing school graduate must be twenty-one years of age. Therefore, applicants under eighteen years of age are especially urged to elect the five-year curriculum.

DEGREE CURRICULUM FOR GRADUATE NURSES

Applicants for admission to this course must meet the entrance requirements of the College of Education special curricula (see page 15) and submit evidence of graduation from an accredited school of nursing.

POSTGRADUATE CURRICULA

Applicants for admission to all postgraduate courses must (1) be registered nurses; (2) have had one year of successful experience, preferably in institutional work; (3) have completed college courses in Sociology 1 and in Psychology 1 and 2 with a grade of C, or one year of satisfactory college work, and (4) meet the minimum entrance requirements for admission to the University of Minnesota, including such entrance tests as the English Placement Test, as described below. They should write to the registrar, University of Minnesota, for application blanks. These should be filled out and placed on file in the registrar's office at least one month in advance of the quarter in which the applicant wishes to enter.

Postgraduate students are admitted each quarter in the operating room and fall quarter only in all other courses. They usually enter one week before each regular university registration day in order that adjustment

to clinical experience in the hospital may be made before university classes begin. Only a limited number of applicants can be accepted in any one quarter.

In an attempt to admit only those students who in their undergraduate nursing curriculum already have mastered satisfactorily a basic course in the chosen field, examinations will be given applicants in respective clinical subjects except in the case of the Operating Room course. If the examination is not satisfactorily passed, the applicant will be admitted to the postgraduate course only after offering evidence of successful repetition of the undergraduate basic course in this school or in another school approved by our faculty. For this reason prospective postgraduate students are urged to apply well in advance of the admission date in order that their admission not be postponed until the following year because of necessity for completing the undergraduate basic course. At the time the examination is taken tests of nursing aptitude, interest, and ability will also be administered. A fee of \$1 is charged for these tests.

Proper blanks on which the nursing school credits and high school credits should be sent in can also be had by request to the registrar, University of Minnesota.

COURSES FOR AFFILIATING STUDENTS

By special arrangements with other schools of nursing approved by the State Board of Nurse Examiners, students from these schools are admitted at stipulated times for additional experience and instruction. Such students must meet the requirements of their own school, and must meet also the requirement of high school graduation or its equivalent.

ADMISSION WITH ADVANCED STANDING

Students with partial completion of a full college course are advised to bring their qualifications to those of the five-year curriculum. Since the state law requires that the nursing curriculum be three years in length, it is not possible to shorten the period of three years for students entering with previous college credit. For required courses, however, in which they have already received credit they may, after admission to the school, make substitution of desired electives.

ADMISSION FOR TRANSFERRING STUDENTS

It is not the policy of the School of Nursing to accept students wishing to transfer from other schools of nursing. In almost every case the first two quarters must be repeated and a great deal of time is lost for the student in transfer.

ESTIMATE OF EXPENSES OF NURSING SCHOOL CURRICULUM

Five-Year Curriculum

Estimate of total university required expense would vary from about \$570 for residents who live at home to about \$1,560 for residents who pay liberally for board and room. Nonresidents should add about \$180 to these

sums. Estimates below do not include clothing, incidentals, traveling, and vacation expenses.

Tuition fee.—During the first five quarters the student is registered in the College of Science, Literature, and the Arts, for which the tuition fee is twenty dollars (\$20)‡ each quarter. Registration for the sixth quarter is in the School of Nursing with tuition fee of twenty-five dollars (\$25).‡ During the fifth year the student is registered in the College of Education with tuition fee of twenty dollars (\$20)‡ each quarter. While the student is in hospital residence, there is no tuition fee.

Total tuition fee.....\$185.00

Incidental fee.—An incidental fee of eight dollars and fifty cents (\$8.50) a quarter is charged each student, for which the student receives the privileges of Shevlin Hall, the Health Service, the *Minnesota Daily*, including the Official Daily Bulletin, the university post-office service, and the *University Address Book*. These privileges are received by students of this curriculum for six quarters preceding the period of hospital residence and three quarters during the fifth year.

Total incidental fee.....\$76.50

Matriculation deposit.—At the students' first registration at the University a matriculation deposit of ten dollars (\$10) is required to cover the following charges: locker rental, locker key deposit, laboratory breakages, library fines, or damages to university property.

Laboratory deposit.—A laboratory deposit of five dollars (\$5) is also required of students registered for courses in chemistry to cover cost of materials.†

Public health nursing field practice fee.—Three dollars (\$3).

Condition examination fee.—One dollar (\$1).

Cost of books.—The expense varies with the courses taken. Two- and three-quarter courses often require the purchase of only one book at the beginning of the course. Secondhand books can often be purchased at one of the various bookstores. Approximate annual cost of \$35 for the first two years and approximately \$12 for each of the last three years should represent maximum book expenses.*

Cost of uniforms.‡‡—The student pays for her outdoor coat and for her first complete set of uniforms. The hospital replaces worn out uniforms. This charge of approximately sixty dollars (\$60) is payable at the end of the first month of the sixth quarter at the University when the order is sent to the manufacturer. If the student cancels registration before entering the hospital arrangements are made for the resale of the uniform at only a slight loss to the original purchaser.

Total uniform expense.....\$60.00‡

* Altho sale of textbooks is not recommended it is one method of reducing this expense.

† For detailed information see Bulletin of General Information, page 59.

‡ For nonresidents of Minnesota, tuition fee is \$40.

‡‡ Those students who elect public health nursing as their field of major interest in the fifth year pay approximately \$20 in addition for public health uniforms.

Students may purchase uniforms second hand but cannot have replacement by hospital until such time as sets of new uniforms purchased by classmates require replacement.

At the time uniforms are purchased, students should provide themselves with name tapes for all pieces which are to be laundered. One hundred tapes should be sufficient. These may be purchased through the office of the School of Nursing.

Course fee.—In the case of students repeating courses failed in the School of Nursing, residents pay a fee of \$1 per clock hour and nonresidents a fee of \$1.75 per clock hour.

Miscellaneous expense.—This item of \$35 includes transportation while in the School of Nursing to and from classes at the University and to and from the field when assigned to public health nursing.

Graduation fees.—The student registered in the five-year curriculum receives a diploma in nursing and a bachelor of science degree. The fee for each is \$7.50.

Total graduation fee.....\$15.00

Board and room.—Those students who live within commuting distance do not have this expense since they can live at home during the periods when they are not in hospital residence. There is no charge for board and room while in residence at the hospital. The cost of room and board varies widely.

Comstock Hall,† new residence hall for women, \$125 to \$130 depending upon the room selected, per quarter.

Sanford Hall,† residence hall for women, \$95 to \$120 depending upon the room selected, per quarter.

Co-operative cottages,† in which the students assist with work, \$60 to \$65 per quarter.

Rooming houses† for room per month, \$12 to \$15; for board, per week, \$6 to \$7 for two meals per day.

Some students earn their room and board in return for services given in private families. This may be done while taking academic classes but not while in the School of Nursing proper.

Those who plan to earn part of their expenses may receive information from the Employment Bureau, Room 9 Administration Building, University of Minnesota.

Affiliating students pay no tuition and complete maintenance is furnished them. Books amount to about \$20 for the year. Personal expenses can be determined best by the individual student.

For fee in postgraduate curricula see page 35.

Three-Year Curriculum

Estimate of total required university expense for residents paying for board and room would approximate \$300 and for nonresidents \$320. This estimate does not include personal expenses.

Tuition fee.—For the first quarter's work in the School of Nursing

† For detailed information see Bulletin of General Information, pages 44-47.

the tuition fee is \$25.† No tuition is charged during the period of hospital residence.

Total tuition fee.....\$25.00

Incidental fee.—This fee is the same as for students registered in the five-year curriculum and is charged for only the first quarter.

Total incidental fee\$8.50

Matriculation deposit.—Same as for students registered in the five-year curriculum. Ten dollars (\$10).

Public health nursing field practice fee.—Three dollars (\$3).

Condition examination fee.—One dollar (\$1).

Cost of books.—During the first quarter the cost of books is approximately \$15 as a maximum and during the remainder of the course an annual expense of \$10 would represent a maximum amount. Secondhand books can often be purchased at one of the various bookstores.

Cost of uniforms.—Same as for five-year students but payable at end of first month.

Total uniform expense.....\$60.00

Course fee.—In the case of students repeating courses failed in the School of Nursing, residents pay a fee of \$1 per clock hour and nonresidents a fee of \$1.75 per clock hour.

Miscellaneous expense.—This item of \$35 includes transportation while in the School of Nursing to and from classes at the University and to and from the field when assigned to public health nursing.

Graduation fee.—The student registered in the three-year curriculum receives a diploma in nursing, for which the fee is \$7.50.

Board and room.—Those students who live within commuting distance do not have this expense since they may live at home during the first quarter, but out-of-town students may find facilities in the approved rooming houses near the campus. Expenses vary from \$12 to \$15 a month for room and from \$6 to \$7 a week for board for two meals per day.

HEALTH REGULATIONS†

The University School of Nursing requests each student *before entering* to be vaccinated against smallpox and to be immunized against typhoid fever, diphtheria, and scarlet fever. Compliance with this requirement prevents the necessity of immunizing the student during her first three months, which frequently involves discomfort and loss of time for the student in the period when she most needs to be at her best physically. (Detailed instructions as prescribed by the University Health Service regarding immunization may, if desired, be secured from the School of Nursing by the applicant's physician.) In addition she must present a statement from her dentist that her teeth have been given any necessary treatment.

† The regulations given here apply to postgraduate, as well as undergraduate, students except where otherwise indicated.

‡ For nonresidents of Minnesota, tuition fee is \$40.

Upon entrance the applicant must pass satisfactorily the physical examination given by the University Health Service. Students whose condition needs further observation may be admitted tentatively but must cancel if later findings prove them physically unfit for nursing. The increasing emphasis on maintenance of health and prevention of disease is bringing an equal demand that the nurse herself be physically fit.

All students receive in the respective hospitals an annual physical examination. In addition (a) a Mantoux test is made of all students on entrance and a chest X ray is taken in case of positive reaction. (b) One week preceding the tuberculosis service, a Mantoux test is also taken of students whose Mantoux tests were negative on entrance. All students having a positive reaction are given a chest X ray. (c) Three months after returning from the tuberculosis service, those whose Mantoux tests were negative before entering the tuberculosis service are given another Mantoux test. Those students with positive reactions receive a chest X ray at that time. A complete physical examination is given on completion of the course, including chest X ray for students having positive Mantoux reaction. Mantoux test and chest X rays are made routinely for postgraduate students on entrance only. However, any student will receive a chest X ray as often as necessary for the protection of the students and the hospitals. Through the University Health Service a special examination of feet of students is made and recommendation given for desirable types of shoes and, when indicated, for corrective foot exercises.

Students about whom it is decided that tonsillectomy or other surgery was indicated before admission to the school, or students under care of a private physician for some minor complaint which does not interfere with the practice of nursing but requires continued treatment may be asked to pay for this care at the hands of the physician or surgeon of their choice.

A regular student in the School of Nursing who is disabled by continued illness shall be referred to her home or family as soon as she may be safely discharged from the hospital and permitted to travel; and shall thereafter be eligible for reinstatement under the same rules as apply to any other student. In any case, students must meet the cost of hospital care which is in excess of one month for any one year of residence in the school.

GRADES

Students in the five-year curriculum are governed during the first five quarters by the regulations of the College of Science, Literature, and the Arts, and during the last three quarters by the regulations of the College of Education, in regard to grades, credits, honor points, and so forth. Students receive grades in accordance with the general university plan. The passing grades used are A, B, C, D, in order of excellence. A grade of I (incomplete) is given when work is not completed on time, through no fault of the student, and must be made up within 30 days unless the time is extended by permission of the Students' Work Committee. A grade of E is a temporary grade which may be removed by satisfactorily passing a second examination, for which a fee of \$1 is charged. A grade of F in any

class can be removed only by repeating the course. Students receiving a grade of F (failure) in any part of the clinical experience must repeat enough of the service to secure a passing grade.

CONTINUATION IN SCHOOL

Because of the complicated schedules of clinical experience it is impossible to arrange irregular class schedules for students. For that reason, no student is allowed to register for the second quarter in the School of Nursing who has not satisfactorily completed the work of the first quarter; and no student may register for the third quarter who has not satisfactorily completed the second.

The faculty of the School of Nursing reserves the right to cancel the registration of any student who seems to them unsuited for the nursing profession or to remove any student connected with the school when, in their judgment, the interest of the school requires it.

READMISSION

All students who miss more than a month of their work through illness or leave of absence will have to remain out of the school until such time as the class or clinical schedule can be adjusted to their needs. *Special permission cannot be granted students to remain away for the purpose of caring for sick relatives.*

REQUIREMENTS FOR GRADUATION

The Board of Regents of the University of Minnesota upon recommendation of the faculty of the School of Nursing, confers degrees and certificates as specified below.

BACHELOR OF SCIENCE DEGREE AND GRADUATE IN NURSING

The degree of bachelor of science and of graduate in nursing will be granted those students who have completed satisfactorily the requirements of the five-year curriculum as outlined on pages 25 to 31. They must meet all requirements for the B.S. degree before they may count the three quarters in the College of Education or in the Medical School in their senior year as contributing toward the three-year requirement for the degree of graduate in nursing. In other words, five-year students are not *eligible* for the graduate in nursing degree until they are eligible for the B.S. degree.

GRADUATE IN NURSING

The diploma of graduate in nursing will be granted those students who have completed satisfactorily the requirements of the three-year curriculum as outlined on pages 32-33. See also Class Curriculum and Clinical Experience on pages 26 to 27. They must have credit for the satisfactory completion of three full years in the nursing curriculum.

Students who take the five-year curriculum but do not complete its requirements may change their status to three-year students and receive the graduate in nursing degree upon satisfactory completion of the requirements of the three-year curriculum.

Students who enter as three-year students holding a B.S. or B.A. degree before entering, may count a part of two quarters in the College of Education, Medical School, or Graduate School as a part of the three-year requirement, provided the courses they select have the approval of the faculty of the School of Nursing.

BACHELOR OF SCIENCE DEGREE

The bachelor of science degree will be granted those graduate nurses who have completed satisfactorily the requirements for this degree as outlined on pages 25 to 31.

STATE REGISTRATION

Nursing students completing either the five- or three-year curriculum are eligible at the age of twenty-one years to take the state board examination given by the Minnesota State Board of Nurse Examiners. Successful passing of this examination entitles the nurse to registration in Minnesota and makes her eligible for membership in her alumnae association, and through her district and state association, in the national nursing organizations and the Red Cross Nursing Service. Graduates from the University of Minnesota School of Nursing are also eligible for registration in any part of the United States.

CURRICULA

The School of Nursing administers, with the assistance of certain other schools and departments in the University, the following curricula:

1. Five-year curriculum
2. Three-year curriculum
3. Degree curriculum for graduate nurses
4. Affiliating curricula
5. Postgraduate curricula

FIVE-YEAR CURRICULUM

The five-year combined Nursing and Arts Curriculum leads to a bachelor of science degree and a diploma of graduate in nursing. *Wherever possible, students should elect the five-year in preference to the three-year curriculum, because the preparation given is broader and better, and graduates of the five-year curriculum are in much greater demand than are those of the three-year curriculum.* The curriculum is planned to prepare the student not only for bedside nursing but also for administrative, supervising, and teaching positions in schools of nursing and hospitals; for such public health nursing positions as visiting nursing, school nursing, health teaching, infant welfare, rural and industrial nursing; and for combined positions in secondary schools involving both nursing and teaching.

PART I. COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

(Five quarters)

The student must complete the requirements listed below and must earn an average of one honor point per credit.

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

P.M.&P.H. 3 (Personal Health)

Sociology 1

Psychology 1-2

Physiology 2 or 4 or 51

Physiology 2 (Elements of Physiology) has no prerequisite. Course 4 (Human Physiology) has zoology and chemistry as prerequisites. It is regularly offered in the Summer Session for those who cannot complete it during the academic year. Physiology 51 (Human Physiology) also has zoology and chemistry as prerequisites and is the preferred course.

Electives to make a total of 75 credits exclusive of physical education. (For each five honor points in excess of one honor point per credit the number 75 is diminished by one.)

Recommended subjects are:

	Credits
Child Welfare 40	3§
Sociology 49	3§
Zoology 1-2-3	10
Chemistry 1-2, or 4-5, or 6-7.....	8 or 10
Physiology 50 (preferred to Physiology 1).....	5
Physiology 51 (preferred to Physiology 2 or 4).....	6
Bacteriology 53 (preferred to Bacteriology 1).....	5
Economics 1	5
History 1-2-3	12
Political Science 1-2	6
Home Economics 30 or 32.....	2 or 3
Preventive Medicine and Public Health 3, 4.....	4
Philosophy 3	5
Pharmacology 8	3

Physical Education, six quarters. One quarter of this requirement may be completed after registering in the School of Nursing. No credit is granted for physical education courses in the College of Science, Literature, and the Arts; but upon transfer to the College of Education, the student will receive the credits and honor points earned in those courses.

PART II. SCHOOL OF NURSING

(Ten quarters for five-year students, twelve quarters for three-year students)

Five-year students are admitted to the spring and fall quarters and remain in the School of Nursing ten quarters. Three-year students who have completed 75 or more college credits with an average of one honor point per credit, but who do not have the specific course requirements for entrance to the nursing portion of the five-year curriculum are also admitted in the spring and fall quarters, tho the preferred entrance date to the School of Nursing both for these and the five-year students is the beginning of the spring quarter. All other three-year students are admitted in the fall quarter only. All three-year students remain in the school twelve quarters (three years). Sixty credits are granted for successful completion of Part II.

CLASS CURRICULUM*

First Year—First Quarter

Required subjects are:

Course No.	Title	Class Hrs.	Lab. Hrs.	Total Hrs.	Credits
Anat. 3	Elementary Anatomy	22	22	44	3
P.M.&P.H. 3	Personal Health (three-year students).....	22	.....	22	2
Soc. 49	Social Pathology (five-year students)	33	.....	33	3§
C.W. 40	Child Training (five-year students)	33	.....	33	3§
Nurs. 1	History of Nursing (five-year students)	11	.....	11	1
Physiol. 1†	Elements of Physiological Chemistry.....	33	22	55	4
Physiol. 2†	Elements of Physiology	33	22	55	4
Bact. 1†	Elementary Bacteriology	33	33	66	4
Nurs. 10†	Introduction to Nutrition	11	.....	11	1
Total		231	99	330	25

* Five-year students have fewer class hours or may substitute other courses because of having carried Physiology 2 or 4 or 51 and perhaps certain others of the required courses during the pre-nursing period.

† These four courses have preferred substitutes, namely: Physiol. 50; Physiol. 51; Bact. 53 or 101; Home Econ. 30 or 32 for five-year students.

§ Should be completed before entrance to School of Nursing if possible. Must be completed before end of first quarter in School of Nursing.

First Year—Second Quarter

Course No.	Title	Class Hrs.	Lab. Hrs.	Total Hrs.
Nurs. 11	Foods and Nutrition	11	44	55
Nurs. 14	Introduction to the Medical Sciences.....	22	.....	22
Nurs. 15	Nursing Arts (including metrology).....	66	22	88
Nurs. 18	Principles of Medical and Surgical Nursing.....	44	.....	44
Pharm. 8	Elementary Pharmacology	22	22	44
Total		165	88	253

*First Year—Third and Fourth Quarters**

Course No.	Title	Class Hrs.	Lab. Hrs.	Total Hrs.
Nurs. 16	Advanced Nursing Arts (including bandaging, massage, and metrology)	33	11	44
Nurs. 19	Principles of Medical and Surgical Nursing	44	.....	44
Nurs. 41	Principles of Pediatrics and Pediatric Nursing	33	.....	33
Total		110	11	121

Second Year

Course No.	Title	Class Hrs.	Total Hrs.
Med. 131	Descriptive Neuropsychiatry	33	33
Nurs. 1	History of Nursing (three-year students).....	11	11
Nurs. 20	Principles of Nursing in Conditions of the Skin.....	11	11
Nurs. 25	Principles of Orthopedics and Orthopedic Nursing.....	22	22
Nurs. 35	Principles of Communicable Disease Nursing.....	22	22
Nurs. 39	Principles of Nursing in Conditions of the Reproductive System	11	11
Nurs. 43	Principles of Obstetrics and Obstetric Nursing.....	22	22
Nurs. 45	First Aid	22	22
Nurs. 48	Principles of Care in Ear Conditions.....	11	11
Nurs. 49	Principles of Care in Eye Conditions.....	11	11
Total		176	176

Third Year

Course No.	Title	Class Hrs.	Total Hrs.
Nurs. 36	Principles of Tuberculosis and Tuberculosis Nursing.....	22	22
Nurs. 50	Survey of Professional Field†.....	22	22
Gen.Col. 2	Practical Applications of Psychology (three-year students).....	66	66
Ed. 51A§	Introduction to Secondary School Teaching (five-year students except those in public health nursing not desiring teacher's certificate)	33	33
Total		143	143

* Slight alterations in this program may be necessary as a result of the revision of the curriculum.

† Given for certain groups in junior year.

§ Students pay transportation to and from classes.

CLINICAL EXPERIENCE

The clinical experience of the students begins in their second quarter in the school. They are assigned to the hospitals in the school in the order of their scholarship rank during the first quarter. The hospitals in which the students receive their clinical experience are as follows:

The University of Minnesota Hospitals, situated on the University campus, include the Elliot Memorial Hospital, the Cancer Institute, the Todd Memorial, and the Eustis Children's Hospital. They are supported by state funds and endowments. They care for patients sent in from all parts of the state. The daily average of patients from January 1 to June 30, 1940, was 396.

The Minneapolis General Hospital is supported by taxation, and cares principally for the indigent sick of the city of Minneapolis. It has a large number of accident and emergency cases and a wide variety of acute diseases. The daily average of patients from January 1 to June 30, 1940, was 512.

The Charles T. Miller Hospital, in St. Paul, has 50 beds for free patients and 150 beds for private and semi-private patients. The daily average of patients from January 1 to June 30, 1940, was 192.

The Hennepin County Tuberculosis Sanatorium at Glen Lake, an institution of over 700 beds, caring for all types of tuberculosis, is affiliated with the School of Nursing to give the students experience in the care of tuberculous patients. Students are assigned for this experience in the latter half of their course.

Students are rotated from one hospital to another in order to give them as complete clinical experience as the school has to offer. For instance, all students go to the Minneapolis General Hospital for experience in communicable disease nursing.

In addition, students (all five-year and as many three-year students as the agencies can accommodate) are assigned to the Community Health Service of Minneapolis or the Family Nursing Service of St. Paul for field experience in public health nursing.

PART III. COLLEGE OF EDUCATION

(Three quarters*)

NOTE.—Part III is not required for three-year students.

The student selects one of two majors:

A. Nursing Education, which has in addition to the primary pattern two variants, namely: Child Health, and Nutrition. For any one of these three the student registers in the College of Education. The primary curriculum in Nursing Education prepares for nursing in institutions, for administration, or for teaching in hospitals and schools of nursing. The combination (1) with courses in Child Health (Institute of Child Welfare) prepares the nurse for work in pediatric wards or clinics, work with both well and sick children, or serves as excellent background for nurses who may later seek additional

* All students must spend three full quarters in this portion of the curriculum, regardless of excessive academic work previously carried.

preparation for public health work with children. The combination (2) with Nutrition (Home Economics) prepares the nurse for any position in which more than ordinary mastery in this field is desirable.

Major Adviser: Katharine J. Densford.

A. Nursing Education Curriculum (primary pattern)

No.	Title	Credits
Ed. 51B	Introduction to Secondary School Teaching	3
Ed.T. 51A	Special Methods of Teaching in Schools of Nursing	3
Ed.T. 51B*	Special Methods of Teaching in the School and Directed Teaching in Schools of Nursing	5
Nurs. 60	Ward Organization for Instruction	4 or 8
Nurs. 69	Survey of Conditions and Trends in Nursing	3
Nurs. 71	Curriculum Making in School of Nursing	3
C.W. 40§	Child Training	3
	Electives¶	14 or 18
	Education electives approved by adviser	3
	Total	45

Variant for those interested in Child Health:†

No.	Title	Credits
Nursing Courses		
Nurs. 60	Ward Organization for Instruction	4
Nurs. 69	Survey of Conditions and Trends in Nursing	3
Nurs. 71	Curriculum Making in Schools of Nursing	3
Education Courses		
Ed.T. 51A	Special Methods of Teaching in Schools of Nursing	3
Ed. 51B	Introduction to Secondary School Teaching	3
Nursery School Courses		
Ed.T. 55	Principles of Early Childhood Education	3
Ed.T. 56	Permanent Play Materials	2
Ed.T. 57	Plastic Materials	3
Ed.T. 59	Story Telling for Young Children	2
Ed.T. 75	Methods and Observation in the Nursery School	3
Ed.T. 76A,B,C	Methods and Observation	3
Mu.Ed. 50A	Primary Methods	2
	Electives approved by adviser	11
	Total	45

* Requirements for registration in Ed.T. 51B are as follows:

1. A passing grade in the junior sequence in education.
2. Passing of the qualifying examination in English.
3. Attainment of a scholastic average of 1.5 in the field in which the practice teaching is to be done. A major portion of the work in the teaching field should be completed.
4. The recommendation of the subject-matter department in the major field.
5. Passing of the required speech test.

† The requirements for registration in Ed.T. 51B as indicated above must also be completed before students register for the last 30 credits in the Child Health Curriculum.

§ This course is required in Part III unless it has been previously carried in Parts I or II.

¶ By careful selection of these electives and with an additional quarter the public health nursing certificate may be earned. See the bulletin of Preventive Medicine and Public Health.

Variant for those interested in Nutrition:

Students taking this curriculum must have completed Home Economics 30, 2 cred., before entering the School of Nursing.

No.	Title	Credits
Nursing Courses		
Nurs. 60	Ward Organization for Instruction	4
Nurs. 69	Survey of Conditions in Nursing	3
Nurs. 71	Curriculum Making in Schools of Nursing	3
Education Courses		
Ed.T. 51A	Special Methods of Teaching in Schools of Nursing	3
Ed.T. 51B*	Special Methods of Teaching in the School and Directed Teaching in Schools of Nursing	5
Ed. 51B	Introduction to Secondary School Teaching	3
	Electives in Education approved by adviser	9
Home Economics Courses		
Agr.Biochem. 4	Introduction to Organic and Biochemistry	5
H.E. 34	Nutrition Problems	4
H.E. 170	Nutrition of the Family	3
H.E. 173	Nutrition in Disease	3
	Total	45

Other Variants:

During the coming year offerings in additional fields of specialization will be made from such areas as physical therapy and selected sciences basic to nursing.

B. Public Health Nursing (primary pattern—student enrolled in Medical School)†

Major Adviser: Mellie Palmer

No.	Title	Credits
P.M.&P.H. 53	Elements of Preventive Medicine and Public Health	5
P.M.&P.H. 61	Mental Hygiene	3
or 133	Mental Hygiene, Aspects of Public Health Nursing }	
P.M.&P.H. 62-63	Principles of Public Health Nursing	6
P.M.&P.H. 65	Field Practice in School Nursing	16
P.M.&P.H. 66	Field Practice in Rural Nursing	
P.M.&P.H. 67	Field Practice in Family Health Agency }	
Soc. 90	Principles of Social Case Work	3 or 5
or 129	Survey of Social Work	
	Electives in Child Welfare Group	3
	Courses in Social Science Group exclusive of Sociology	9
	Electives in Science Group	14
	Electives from Dept. of P.M.&P.H.	8 or more

Variant for those interested in School Nursing. (See the College of Education Bulletin.)

* Requirements for registration in Ed.T. 51B are as follows:

1. A passing grade in the junior sequence in education.
2. Passing of the qualifying examination in English.
3. Attainment of a scholastic average of 1.5 in the field in which the practice teaching is to be done. A major portion of the work in the teaching field should be completed.
4. The recommendation of the subject-matter department in the major field.
5. Passing of the required speech test.

† Because of the overcrowding in this field it may be necessary for some students to spend a sequence of summer, fall, and winter quarters on the campus rather than fall, winter, and spring. In these instances the additional summer fees will be required.

CLINICAL CURRICULUM AFTER FIRST SIX MONTHS*†
FIVE-YEAR CURRICULUM

FALL CLASS

Freshman Year

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
Title	Wks.	Title	Wks.	Title	Wks.	Title	Wks.
Surg. Nurs.	6	Surg. Nurs.	8	Surg. Nurs.	4	Surg. Nurs.	8
Oper. Room	8	Oper. Room	8	Med. Nurs.	6	Med. Nurs.	6
Vac.	2	Vac.	2	Psych. Nurs.	6	Diet K.	5
Ped. Nurs.	10	Ped. Nurs.	8	Oper. Room	8	Vac.	2
				Vac.	2	Oper. Room	5

Junior Year

Ped. Nurs.	2	Ped. Nurs.	4	Ped. Nurs.	10	Oper. Room	3
Obst. Nurs.	12	Obst. Nurs.	12	Obst. Nurs.	12	Ped. Nurs.	12
Psych. Nurs.	6	Psych. Nurs.	6	Com. Dis.	6	Obst. Nurs.	12
Com. Dis.	6	Diet K.	5	Tlc. Nurs.	4	Psych. Nurs.	6
Out-Patient	4	Com. Dis.	6	Out-Patient	4	Surg. Nurs.	4
P. H. Nurs.	6	Out-Patient	4	Gyn. Nurs.	4	Com. Dis.	6
Vac.	4	Gyn. Nurs.	4	P. H. Nurs.	6	Vac.	4
Tbc. Nurs.	4	Tbc. Nurs.	4	Vac.	4	Out-Patient	4
Pri. Pat.	6	Vac.	4	Med. Nurs.	2	P. H. Nurs.	1
Diet K.	2	Med. Nurs.	3				

Senior Year

Diet K.	3	Med. Nurs.	1	Med. Nurs.	1	P. H. Nurs.	5
Gyn. Nurs.	4	P. H. Nurs.	6	Surg. Nurs.	7	Tbc. Nurs.	4
Med. Nurs.	10	Surg. Nurs.	6	Diet K.	5	Gyn. Nurs.	4
Surg. Nurs.	8	Pri. Pat.	6	Pri. Pat.	6	Med. Nurs.	4
Vac.	1	Med. Nurs.	6	Med. Nurs.	3	Surg. Nurs.	2
Campus	26	Vac.	1	Surg. Nurs.	3	Pri. Pat.	6
(Incl. 3 wks. vac.)		Campus	26	Vac.	1	Vac.	1
		(Incl. 3 wks. vac.)		Campus	26	Campus	26
				(Incl. 3 wks. vac.)		(Incl. 3 wks. vac.)	

Freshman Year

GROUP 5		GROUP 6		GROUP 7		GROUP 8	
Title	Wks.	Title	Wks.	Title	Wks.	Title	Wks.
Med. Nurs.	6	Surg. Nurs.	10	Med. Nurs.	6	Surg. Nurs.	10
Surg. Nurs.	3	Med. Nurs.	8	Surg. Nurs.	10	Med. Nurs.	4
Diet K.	5	Vac.	2	Vac.	2	Diet K.	5
Vac.	2	Psych. Nurs.	6	Psych. Nurs.	6	Vac.	2
Psych. Nurs.	6	Pri. Pat.	2			Pri. Pat.	5
Oper. Room	4						

Junior Year

Oper. Room	4	Oper. Room	8	Pri. Pat.	4	Pri. Pat.	1
Ped. Nurs.	12	Ped. Nurs.	12	Diet K.	5	Surg. Nurs.	2
Obst. Nurs.	12	Obst. Nurs.	12	Oper. Room	8	Med. Nurs.	3
Com. Dis.	6	Pri. Pat.	6	Ped. Nurs.	12	Psych. Nurs.	6
Surg. Nurs.	6	Vac.	4	Obst. Nurs.	12	Oper. Room	8
Vac.	4	Com. Dis.	6	Vac.	4	Ped. Nurs.	12
Tbc. Nurs.	4	Gyn. Nurs.	4	Surg. Nurs.	4	Obst. Nurs.	12
Out-Patient	4			Com. Dis.	3	Vac.	4
						Com. Dis.	4

Senior Year

Gyn. Nurs.	4	Diet K.	5	Com. Dis.	3	Com. Dis.	2
Surg. Nurs.	5	Med. Nurs.	2	Out-Patient	4	Tbc. Nurs.	4
P. H. Nurs.	6	Surg. Nurs.	4	Gyn. Nurs.	4	P. H. Nurs.	6
Pri. Pat.	6	Out-Patient	4	Tbc. Nurs.	4	Gyn. Nurs.	4
Med. Nurs.	4	P. H. Nurs.	6	P. H. Nurs.	6	Out-Patient	4
Vac.	1	Tbc. Nurs.	4	Med. Nurs.	4	Med. Nurs.	3
Campus	26	Vac.	1	Vac.	1	Surg. Nurs.	2
(Incl. 3 wks. vac.)		Campus	26	Campus	26	Vac.	1
		(Incl. 3 wks. vac.)		(Incl. 3 wks. vac.)		Campus	26
						(Incl. 3 wks. vac.)	

* Three-year students who (because of overcrowding in the public health nursing agencies) cannot be accepted for field practice receive in lieu thereof one month's experience in the nursery school plus two additional weeks in the out-patient department.

† Suitable substitutes for students not receiving full assignment to tuberculosis experience are approved by the faculty.

CLINICAL CURRICULUM AFTER SIX MONTHS —THREE-YEAR CURRICULUM*††

FALL CLASS†§

Freshman Year

GROUP 1		GROUP 2		GROUP 3		GROUP 4		GROUP 5		GROUP 6	
Title	Wks.	Title	Wks.	Title	Wks.	Title	Wks.	Title	Wks.	Title	Wks.
Surg. Nurs.	8	Surg. Nurs.	8	Surg. Nurs.	4	Surg. Nurs.	8	Med. Nurs.	6	Surg. Nurs.	10
Oper. Room	8	Oper. Room	8	Med. Nurs.	6	Med. Nurs.	6	Surg. Nurs.	3	Med. Nurs.	8
Vac.	2	Vac.	2	Psych. Nurs.	6	Diet K.	5	Diet K.	5	Vac.	2
Ped. Nurs.	10	Ped. Nurs.	8	Oper. Room	8	Oper. Room	2	Vac.	2	Psych. Nurs.	6
				Vac.	2	Oper. Room	5	Psych. Nurs.	6	Oper. Room	4

Junior Year

Ped. Nurs.	2	Ped. Nurs.	4	Ped. Nurs.	10	Oper. Room	3	Oper. Room	4	Oper. Room	8
Obst. Nurs.	12	Obst. Nurs.	12	Obst. Nurs.	12	Ped. Nurs.	12	Ped. Nurs.	12	Ped. Nurs.	12
Psych. Nurs.	6	Psych. Nurs.	6	Com. Dis.	6	Obst. Nurs.	12	Obst. Nurs.	12	Obst. Nurs.	12
Com. Dis.	6	Diet K.	5	Tbc. Nurs.	4	Psych. Nurs.	6	Com. Dis.	6	Pri. Pat.†	12
Out-Patient	4	Com. Dis.	6	Out-Patient	4	Surg. Nurs.	4	Surg. Nurs.	6	Vac.	4
P. H. Nurs.	6	Out-Patient	4	Gyn. Nurs.	4	Com. Dis.	6	Vac.	4	Com. Dis.	4
Vac.	4	Gyn. Nurs.	4	P. H. Nurs.	6	Vac.	4	Tbc. Nurs.	4		
Tbc. Nurs.	4	Tbc. Nurs.	4	Vac.	4	Out-Patient	4	Out-Patient	4		
Pri. Pat.†	8	Vac.	4	Med. Nurs.	2	P. H. Nurs.	1				
		Med. Nurs.	3								

Senior Year

Pri. Pat.†	4	Med. Nurs.	1	Med. Nurs.	1	P. H. Nurs.	5	Gyn. Nurs.	4	Com. Dis.	2
Diet K.	5	P. H. Nurs.	6	Surg. Nurs.	7	Tbc. Nurs.	4	Surg. Nurs.	5	Surg. Nurs.	4
Gyn. Nurs.	4	Surg. Nurs.	6	Diet K.	5	Gyn. Nurs.	4	P. H. Nurs.	6	Diet K.	5
Med. Nurs.	10	Pri. Pat.†	12	Pri. Pat.†	12	Med. Nurs.	4	Pri. Pat.†	12	Med. Nurs.	2
Surg. Nurs.	8	Med. Nurs.	6	Med. Nurs.	3	Surg. Nurs.	2	Med. Nurs.	4	Surg. Nurs.	4
Med. Nurs.	9	Surg. Nurs.	10	Surg. Nurs.	3	Pri. Pat.†	12	Surg. Nurs.	10	Out-Patient	4
Surg. Nurs.	10	Med. Nurs.	4	Med. Nurs.	9	Med. Nurs.	9	Med. Nurs.	9	P. H. Nurs.	6
Vac.	2	Vac.	2	Surg. Nurs.	10	Surg. Nurs.	3	Vac.	2	Tbc. Nurs.	4
		Med. Nurs.	5	Vac.	2	Vac.	2			Surg. Nurs.	10
						Surg. Nurs.	7			Vac.	2
										Med. Nurs.	9

NOTE.—In the shorter services certain rotation of students takes place which results in slight variation from the schedule—for instance in a three-month period including Gynecology, Diet Kitchen, and Surgical Nursing. Other variations may be made necessary by limitation of clinical field, illness of students, or other emergencies, but the above schedule is followed as closely as possible.

* Three-year students who (because of overcrowding in the public health nursing agencies) cannot be accepted for field practice receive in lieu thereof one month's experience in the nursery school plus two additional weeks in the out-patient department.

† October to December—classes only; January to March—part-time practice in medical and surgical nursing.

§ The class and clinical curriculum for the class entering the beginning of the spring quarter is similar to that for the class in the fall quarter with the exception of vacations which consist of one month in the junior and one in the senior year.

¶ Clinical experience in the care of private patients will be in the departments of medical and surgical nursing.

†† Suitable substitutes for students not receiving full assignment to tuberculosis experience are approved by the faculty.

CLINICAL CURRICULUM AFTER SIX MONTHS —THREE-YEAR CURRICULUM*††

FALL CLASS‡§

Freshman Year

GROUP 7		GROUP 8		GROUP 9		GROUP 10		GROUP 11		GROUP 12	
Title	Wks.	Title	Wks.	Title	Wks.	Title	Wks.	Title	Wks.	Title	Wks.
Med. Nurs.	8	Med. Nurs.	6	Surg. Nurs.	10	Surg. Nurs.	12	Med. Nurs.	6	Surg. Nurs.	10
Surg. Nurs.	4	Surg. Nurs.	10	Med. Nurs.	4	Med. Nurs.	12	Surg. Nurs.	14	Med. Nurs.	8
Pri. Pat.‡	12	Vac.	2	Diet K.	5	Vac.	2	Vac.	2	Diet K.	5
Vac.	2	Psych. Nurs.	6	Vac.	2	Pri. Pat.‡	5	Diet K.	4	Vac.	2
		Pri. Pat.‡	2	Pri. Pat.‡	5					Med. Nurs.	1

Junior Year

Psych. Nurs.	6	Pri. Pat.‡	10	Pri. Pat.‡	7	Diet K.	5	Diet K.	1	Med. Nurs.	3
Oper. Room	8	Diet K.	5	Surg. Nurs.	2	Pri. Pat.‡	12	Psych. Nurs.	6	Pri. Pat.‡	12
Ped. Nurs.	12	Oper. Room	8	Med. Nurs.	3	Oper. Room	8	Pri. Pat.‡	12	Psych. Nurs.	6
Obst. Nurs.	12	Ped. Nurs.	12	Psych. Nurs.	6	Psych. Nurs.	6	Oper. Room	8	Oper. Room	8
Com. Dis.	6	Obst. Nurs.	12	Oper. Room	8	Ped. Nurs.	12	Ped. Nurs.	12	Ped. Nurs.	12
Vac.	4	Vac.	4	Ped. Nurs.	12	Vac.	4	Vac.	4	Vac.	4
Surg. Nurs.	4	Surg. Nurs.	1	Obst. Nurs.	6	Obst. Nurs.	5	Obst. Nurs.	9	Obst. Nurs.	7
				Vac.	4						
				Obst. Nurs.	4						

Senior Year

Out-Patient	4	Surg. Nurs.	3	Obst. Nurs.	2	Obst. Nurs.	7	Obst. Nurs.	3	Obst. Nurs.	5
P. H. Nurs.	6	Com. Dis.	6	Com. Dis.	6	Com. Dis.	6	Med. Nurs.	4	Surg. Nurs.	4
Surg. Nurs.	6	Out-Patient	4	Tbc. Nurs.	4	Tbc. Nurs.	4	Com. Dis.	6	Com. Dis.	6
Med. Nurs.	2	Gyn. Nurs.	4	P. H. Nurs.	6	P. H. Nurs.	6	Tbc. Nurs.	4	Gyn. Nurs.	4
Diet K.	5	Tbc. Nurs.	4	Gyn. Nurs.	4	Surg. Nurs.	4	P. H. Nurs.	6	Out-Patient	4
Tbc. Nurs.	4	P. H. Nurs.	6	Out-Patient	4	Gyn. Nurs.	4	Out-Patient	4	P. H. Nurs.	6
Gyn. Nurs.	4	Med. Nurs.	4	Med. Nurs.	3	Out-Patient	4	Gyn. Nurs.	4	Tbc. Nurs.	4
Surg. Nurs.	10	Surg. Nurs.	10	Surg. Nurs.	2	Med. Nurs.	7	Surg. Nurs.	10	Med. Nurs.	7
Med. Nurs.	9	Vac.	2	Med. Nurs.	9	Surg. Nurs.	8	Vac.	2	Vac.	2
Vac.	2	Med. Nurs.	9	Vac.	2	Vac.	2	Med. Nurs.	9	Surg. Nurs.	10
				Surg. Nurs.	10						

NOTE.—In the shorter services certain rotation of students takes place which results in slight variation from the schedule—for instance in a three-month period including Gynecology, Diet Kitchen, and Surgical Nursing. Other variations may be made necessary by limitation of clinical field, illness of students, or other emergencies, but the above schedule is followed as closely as possible.

* Three-year students who (because of overcrowding in the public health nursing agencies) cannot be accepted for field practice receive in lieu thereof one month's experience in the nursery school plus two additional weeks in the out-patient department.

† October to December—classes only; January to March—part-time practice in medical and surgical nursing.

‡ The class and clinical curriculum for the class entering the beginning of the spring quarter is similar to that for the class in the fall quarter with the exception of vacations which consist of one month in the junior and one in the senior year.

§ Clinical experience in the care of private patients will be in the departments of medical and surgical nursing.

†† Suitable substitutes for students not receiving full assignment to tuberculosis experience are approved by the faculty.

THREE-YEAR CURRICULUM

The three-year curriculum leads to the diploma of graduate in nursing. Candidates for the diploma in nursing must complete the curriculum of class work (omitting Social Pathology and Ed. 51A or P.M.&P.H. 62 and adding Gen. Col. 2) as outlined under Part II, page 26, and of clinical experience as given on pages 32-33. Candidates must complete the first quarter's class work and earn one honor point per credit before admission to the second quarter. A description of the clinical experience will be found on page 28. Any changes therefrom must have the approval of the Students' Work Committee of the School of Nursing. Graduates of this curriculum receive 60 blanket credits toward a bachelor of science degree in nursing education or public health nursing.

DEGREE CURRICULUM FOR GRADUATE NURSES

CURRICULA FOR STUDENTS WHO ARE GRADUATES OF ACCREDITED
SCHOOLS OF NURSING

Open to those who meet entrance requirements for specialized curricula of the College of Education (see page 28). Advanced credit for the professional nursing courses will be determined by the Committee on Evaluation of Nursing Credentials which will indicate any additional hospital services to be completed before credit is granted. Forty-five credits represent approximately the average advanced standing granted for a satisfactory course of study in a school of nursing.

Candidates must conform to the College of Education regulation relative to total credits and honor points and are entitled to privilege of quality credit rule. Candidates must also meet the physical education requirements of the College of Education.

To secure a degree in the College of Education students must earn 185 credits and 185 honor points, and in addition must earn $1\frac{1}{2}$ honor points for each credit in a major field.

Graduate work in fields related to nursing may be carried and a Master's degree earned by students who meet the requirements of the Graduate School. Programs should be made out in consultation with a major adviser in the department.

The amount and type of college courses to be required of each candidate are to be decided by her major adviser after consideration of a candidate's general education and experience. All programs must also be approved by the Students' Work Committee and the dean of the College of Education. As a rule, however, the following curricula meet the needs of the majority of students. Substitutions may be made by petition upon the recommendation of the major adviser and Students' Work Committee of the College of Education.

A. Nursing Education

Major Adviser: Katharine J. Densford

Curriculum leading to a bachelor of science degree with a major in nursing education. Courses to be included in this program will be found in Part I and Part III A of the five-year curriculum (as given on pages

25, 26, and 28) plus Education 51A and Sociology 49 and sufficient electives as recommended by the major adviser to fulfill the total credit and honor point requirement.

B. Public Health Nursing

Major Adviser: Mellie F. Palmer

Curriculum leading to a bachelor of science degree with a major in public health nursing. In addition to the courses listed in Part III B of the five-year course (page 30) the following courses are required:

No.	Title	Credits
Eng. A, B, C or	Freshman English	15
Comp. 4-5-6	Freshman Composition	9
Soc. 1	Introduction to Sociology	5
Soc. 49	Social Pathology	3
Psy. 1-2	General Psychology	6
Bact. 53 or 101	General Bacteriology } Medical Bacteriology }	5
	Electives to make	180

For additional information see the Bulletin of the Department of Preventive Medicine and Public Health.

AFFILIATIONS

Because of the large number of patients and the wide variety of illness manifested in these patients the school is able to offer affiliation in certain services to other schools of nursing desiring additional practice for their students.

Services in which other schools may arrange affiliations are medical, surgical, pediatric, obstetric, communicable disease, and outpatient departments. To schools sending students for a period of one year it is possible to include certain additional elective services.

The terms of affiliation are agreed upon between the university school and the school sending students. A copy of the conditions of affiliation will be sent to any school interested upon request to the director, School of Nursing, University of Minnesota. The length of affiliation varies from three months in the city of Minneapolis to six months or one year for schools outside the city. Schools desiring affiliation must be accredited schools and be connected with hospitals which are approved by the American College of Surgeons as well as by the American Hospital Association.

POSTGRADUATE CURRICULA

Among the opportunities offered through postgraduate courses are the following:

1. To prepare for head nurse positions, combining proficiency in nursing, teaching, and administration.
2. To become acquainted with the scientific, social, and preventive aspects of advanced nursing in clinical fields.
3. To carry related university courses giving credit toward a degree.

A program of academic study in the University is arranged for each field of postgraduate work, but may be modified by petition to meet the needs of the individual student and to take into consideration her interests and lines of development. All clinical subjects in the School of Nursing are also available for election. (For admission requirements see page 17.)

The clinical experience of the postgraduate students is planned so as to include all available subdivisions of the various fields. The University and Minneapolis General Hospitals are available as fields for clinical experience. Students taking surgical nursing and operating room technique and administration receive their clinical experience in the University of Minnesota Hospitals; those in the medical and obstetric curricula receive their clinical experience in the Minneapolis General Hospital; those in the pediatric curriculum are assigned by the Students' Work Committee, half going to the University of Minnesota Hospitals and the other half to the Minneapolis General Hospital. Only a limited number of applicants can be accepted in any one quarter. Students must, before the end of their third quarter in the school, be recommended by the faculty for administrative experience. Those not so recommended will be expected to withdraw from the course.

Postgraduate students pay a \$10 deposit fee to the registrar for reservation of place. This fee is retained by the University if the applicant does not accept the appointment as agreed upon. Postgraduate students receive full maintenance except when they are not giving nursing care in the hospital (as for instance nursery school observation) during which time the hospital does not provide maintenance. Such periods are clearly indicated in the outlines of the separate courses. During these periods the students may pay the hospital \$10 weekly for maintenance or live elsewhere if they prefer.

Students wear their own graduate nurse uniforms while in the hospital. Laundry is included in maintenance. As registrants in the School of Nursing, postgraduate students pay no tuition fee but do pay a deposit fee of \$5 on entrance, to be refunded at completion of the course if there are no charges against it. Postgraduate students who are desirous of transferring such college credits as may be counted for the bachelor of science degree pay the College of Education tuition fee (i.e., \$1.75 to \$3.50 per credit) at the time they transfer their credits from the School of Nursing to the College of Education, which college grants the degree. The following curricula do not provide for courses during the second summer term. In cases of students whose clinical curriculum allows, a course may be taken during the second term of the Summer Session by paying the required fee. Occasionally, also, additional courses may be carried in the General Extension Division by paying the required fee. Students in residence at the Minneapolis General Hospital pay carfare to and from university classes.

For students who continue work toward a degree six additional credits will be given by the Committee on Evaluation of Nursing Credits for the clinical portion of the programs after the satisfactory completion of any postgraduate curriculum.

MEDICAL NURSING—TWELVE MONTHS

Class Curriculum		Clinical Curriculum		Approx. Weeks in Service
Subject	Credits	Type of Service		
Bact. 53, General Bacteriology.....	5*	Men's and Women's Medicine		21
or		Communicable Disease		4
Physiol. 2, Elements of Physiology	4*	Receiving Department		2
Nurs. 72, Teaching and Supervision in Schools of Nursing	3*	Diet Therapy		2
Nurs. 60, Ward Organization for Instruction	4*	Tuberculosis		2†
Controlled electives	6* or 7*	Ward Administration		12
Nurs. 18a-19a, Principles of Medical Nursing	4	Medical Clinics in Out-Patient Department		5
Nurs. 36, Principles of Tuberculosis and Tuberculosis Nursing	2	Surgical Nursing		4
Nurs. 35, Principles of Communicable Disease Nursing	2			

* Credits transferable to College of Education.

SURGICAL NURSING—TWELVE MONTHS

Class Curriculum		Clinical Curriculum		Approx. Weeks in Service
Subject	Credits	Type of Service		
Physiol. 2, Elements of Physiology ...	4*	Eye, Ear, Nose, and Throat Surgery		4
or		Tuberculosis Surgery		2
Physiol. 4, Human Physiology	4*	Gynecology Wards		4
or		Operating Room		3
Bact. 53, General Bacteriology	5*	Orthopedic Surgery, including Physical Therapy		3
Nurs. 72, Teaching and Supervision in Schools of Nursing	3*	Out-Patient Department		4
Nurs. 60, Ward Organization for Instruction	4*	Surgical Supply Room		1
Controlled electives	6* or 7*	Administration		12
Nurs. 23, Massage	1	Urology		3
Nurs. 52, Advanced Surgical Nursing	1	General Surgery		14
		Women's Surgery } including		
		Men's Surgery } Tumor		
			Surgery	
		Elective in hospital		2

* Credits transferable to College of Education.

OPERATING ROOM TECHNIQUE, TEACHING, AND ADMINISTRATION—TWELVE MONTHS

Class Curriculum		Clinical Curriculum		Approx. Weeks in Service
Subject	Credits	Type of Service		
Nurs. 72, Teaching and Supervision in Schools of Nursing.....	3 or 5*	General Surgery and Urology.....		16
Bact. 53, General Bacteriology.....	5*	Dressing and Supply Room		1
Physiol. 2, Elements of Physiology	4*	Ward and Surgical Dispensary ...		6
or		Eye, Ear, Nose, and Throat Surgery		9
Anat. 3, Elementary Anatomy.....	3*	Gynecology and Orthopedic Surgery		9
Nurs. 56, Operating Room Administration	2*	Administration		9
Controlled electives	3* or 5*	Elective		2
Nurs. 55, Operative Aseptic Technique	1			

* Credits transferable to College of Education.

PEDIATRIC NURSING—TWELVE MONTHS

<i>Class Curriculum</i>		<i>Clinical Curriculum</i>	
Subject	Credits	Type of Service	Approx. Weeks in Service
Nurs. 72, Teaching and Supervision in Schools of Nursing	3*	Medical Children, including diet laboratory	7
Nurs. 60, Ward Organization for Instruction	4*	Infants, including milk laboratory	4
C.W. 40, Child Training	3*	Communicable Disease	6
Controlled electives	9* or 10*	Surgical Children	5
Nurs. 35, Principles of Communicable Disease Nursing	2	Treatment Room	2
Nurs. 41, Principles of Pediatric Nursing	3	Orthopedics and Physical Therapy	4
		Administration	12
		Elective in hospital service	2
		Premature Infants	2
		Out-Patient Department	2
		Newborn Infants	2
		Nursery School	4†

* Credits transferable to College of Education.

† Maintenance not provided by hospitals.

OBSTETRIC NURSING—TWELVE MONTHS

<i>Class Curriculum</i>		<i>Clinical Curriculum</i>	
Subject	Credits	Type of Service	Approx. Weeks in Service
Bact. 53, General Bacteriology	5*	Obstetrics, including normal and abnormal cases	8
P.M.&P.H. 58, Maternal and Child Hygiene	2*	Nursery	8
Nurs. 72, Teaching and Supervision in Schools of Nursing	3*	Delivery Room	8
Nurs. 60, Ward Organization for Instruction	4*	Gynecological Wards and Clinics	4
Controlled electives	4* or 5*	Communicable Disease	6
Nurs. 35, Principles of Communicable Disease Nursing	2	Premature Infants	2
Nurs. 51, Advanced Obstetric Nursing	2	Prenatal Clinic, including home visiting	4†
Anesthesia (7 lectures)		Administration	8
		Elective in hospital service	4

* Credits transferable to College of Education.

† Including experience in administration of ether.

COMMUNICABLE DISEASE NURSING—TWELVE MONTHS

<i>Class Curriculum</i>		<i>Clinical Curriculum</i>	
Subject	Credits	Type of Service	Approx. Weeks in Service
P.M.&P.H. 60, Tuberculosis and Its Control	2*	Communicable Disease and Isolation, including pediatric out-patient service and laboratory observation	26
Bact. 53, General Bacteriology	5*	Venereal and dermatological service including Out-Patient Department	8
Nurs. 72, Teaching and Supervision in Schools of Nursing	3*	Tuberculosis	2†
Nurs. 60, Ward Organization for Instruction	4*	Administration	8
Controlled electives	4* or 5*	Elective in hospital service	8
Nurs. 35, Principles of Communicable Disease Nursing	2		
Nurs. 36, Principles of Tuberculosis and Tuberculosis Nursing	2		

* Credits transferable to College of Education.

† At Glen Lake Sanatorium.

SUMMER COURSES

Summer courses for graduate nurses are offered during the first term (six weeks) of the Summer Session in the School of Nursing in co-operation with the Department of Preventive Medicine and Public Health. Whenever possible, guest instructors outstanding in their respective fields are added to the regular faculty for these courses. Courses offered cover such subjects as ward administration, teaching, supervision, administration in schools of nursing, and public health nursing in its various phases.

A special summer announcement describing these courses can be had upon request to the director.

DESCRIPTION OF COURSES

- Anat. 3f,s. Elementary Anatomy. Brief résumé of cytology and embryology. More detailed study of the gross anatomy and histology of the organ systems by means of lectures, laboratory studies, and demonstrations. (3 cred.; 44 hrs.)
- Bact. 1f,s.† Elementary Bacteriology. Principles of bacteriology, general survey of pathogenic bacteria, molds, protozoa and viruses. Elements of immunity. Sanitary analysis of water and milk. Germicides. Bacterial food poisoning. (4 cred.; 66 hrs.)
- Ed.T.51Aw.‡‡ Special Methods of Teaching in Schools of Nursing. Principles underlying clinical and classroom teaching in schools of nursing. Planning and evaluating instruction. (3 cred.)
- Ed.T. 51Bs.‡‡ Special Methods of Teaching and Directed Teaching in Schools of Nursing. Observation and study of principles of teaching applied in the nursing school situation. Supervised practice in teaching of nursing subjects. (5 cred.)
- Gen.Col. 2f,w. Practical Applications of Psychology. The aim of this course is to present a picture of the ways in which the human being meets the problems of his environment and develops the many traits which are called personality. (6 cred.; 66 hrs.)
- Med. 131w,su. Principles of Neuropsychiatry. This course deals with the diagnosis, treatment, nursing care, and prevention of (1) neurological disorders; and (2) of organic and functional psychoses, with emphasis upon the relation of personality disorders to physical disorders, to family and community problems, etc. Lectures, clinics, ward nursing classes, case study conferences, demonstrations, and excursions. (3 cred.; 33 hrs.)
- Nurs. 1f,s. History of Nursing. A brief historical survey of nursing serving as a basis for study of problems of the present day. (1 cred.; 11 hrs.)
- Nurs. 10f,s. Introduction to Nutrition. A course dealing with food and its relation to the human body; the processes by which the body utilizes food; the study and classification of the various foods together with the caloric index. The normal diet and routine hospital diets are given with directions for modification under special circumstances. (1 cred.; 11 hrs.)
- Nurs. 11w,su. Foods and Nutrition. Laboratory and lecture course in practical dietetics, food preparation together with methods of cookery; definite instruction in carrying out the dietary prescription is given. (3 cred.; 44 hrs.)
- Nurs. 14w,s. Introduction to Medical Sciences. This course attempts to integrate the information which the student has learned in the physical and social sciences and focus it upon the patient in his relation to nurse, doctor, and community. It includes consideration of the development of

† Microscope required. Students (except medical) may obtain use of microscope by purchasing \$1.50 microscope card from bursar.

‡‡ A fee of \$1 per credit is charged for this course.

- medical science, the causes of disease, how disease manifests itself in the body, how the doctor makes the diagnosis, how disease is treated, and methods of disease control and prevention. (2 cred.; 22 hrs.)
- Nurs. 15w,su-16f,s. Nursing Arts. A course presenting the principles of fine nursing, demonstrating their application in the care of the patient, showing the relation between the operation of these principles and foundation sciences, developing through supervised practice a high degree of skill in caring for patients and judgment in observing symptoms and conditions. Nursing 15 includes ethics and covers a total of 88 hours. Nursing 16 includes bandaging, massage, and metrology and covers a total of 44 hours. (10 cred.; 140 hrs.)
- Nurs. 18w,su-19f,s. Principles of Medical and Surgical Nursing. A course designed to give a knowledge of the causes, symptoms, treatment, and prevention of abnormal medical and surgical conditions including the nursing and nutrition aspects and nursing care of patients with these conditions. Nursing 18 includes general consideration of causes and treatment of disease, conditions of the respiratory tract, including nose and throat, and conditions of the gastrointestinal tract, including oral hygiene, and conditions of the liver and gallbladder. Nursing 19 is devoted to study of the endocrine glands, of allergy, of the circulatory system, and of the urinary system. (8 cred.; 88 hrs.)
- Nurs. 20w. Principles of Nursing in Conditions of the Skin. Lectures, classes, demonstrations, and clinics present the etiology, symptomatology, treatment, and nursing care of disorders of skin and closely related tissues. Emphasis is placed upon prevention of skin disorders and upon the mental hygiene, social, and economic aspects of treatment. (1 cred.; 11 hrs.)
- Nurs. 23w,su. Massage. 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. For post-graduates. (1 cred.; 11 hrs.)
- Nurs. 25f,s. Principles of Orthopedics and of Orthopedic Nursing. Lectures, classes, and clinics dealing with orthopedic conditions including fractures and amputations. Emphasis is laid upon the preventive, economic, and social aspects of these conditions. Treatment (including physical therapy) and nursing care are stressed. (2 cred.; 22 hrs.)
- Nurs. 35f,w,s,su. Principles of Communicable Disease Nursing. Lectures, classes, and demonstrations on the etiology, symptoms, treatment, and nursing care of communicable diseases with emphasis on their significance to public health and on preventive measures. (2 cred.; 22 hrs.)
- Nurs. 36f,w,s,su. Principles of Tuberculosis and Tuberculosis Nursing. A course designed to give the distribution of tuberculosis, theories of invasion, pathology and bacteriology of tuberculosis, principles of treatment and care of tuberculous patients with emphasis on the preventive work in this field. Lectures, clinics, classes, and demonstration. (2 cred.; 22 hrs.)

- Nurs. 39f. Principles of Nursing in Conditions of the Reproductive System. This course consists of lectures on etiology, symptoms, treatment, and prevention of abnormal conditions. Psychological aspects of this branch of nursing are considered. Demonstrations, classes, and clinics form a part of the course. (1 cred.; 11 hrs.)
- Nurs. 41f,s. Principles of Pediatrics and Pediatric Nursing. Lectures, classes, clinics, and demonstrations on the development, mental and physical, of the normal child, on the diseases of infancy and childhood, on treatment, care, feeding, and guidance of the child. Movements for the promotion of child health. (3 cred.; 33 hrs.)
- Nurs. 43f,s. Principles of Obstetrics and Obstetric Nursing. This course gives instruction in the physiology, pathology, and hygiene of pregnancy, labor, puerperium, and care of newborn infants. Emphasis is placed on the relation of this field to the public health. Lectures, classes, clinics, and demonstrations. (2 cred.; 22 hrs.)
- Nurs. 45w,su. First Aid. American Red Cross standard course. (1 cred.; 22 hrs.)
- Nurs. 48w. Principles of Care in Ear Conditions. This course consists of lectures, classes, clinics, and demonstrations. It deals with medical and nursing care, pathological conditions of the ear and nose. (1 cred.; 11 hrs.)
- Nurs. 49f,w,s,su. Principles of Care in Eye Conditions. (1 cred.; 11 hrs.)
- Nurs. 50f. Survey of Professional Fields. A course dealing with present-day problems of nursing—legal, economic, civic, legislative. A survey of fields open for nurses and of related health movements. (2 cred.; 22 hrs.)
- Nurs. 51f. Advanced Obstetric Nursing. Lectures, classes, clinics, and demonstrations on the hygiene, physiology, and pathology of pregnancy, labor, the puerperium and the newborn infant, recent research, findings, and new literature in the field of maternity and newborn care. For postgraduates. (2 cred.; 22 hrs.)
- Nurs. 52w. Advanced Surgical Nursing. Lectures, classes, and demonstrations dealing with the more important surgical conditions, recent research, new literature, and treatments used in modern practice of general surgery. For postgraduates. (1 cred.; 11 hrs.)
- Nurs. 53f,w,s,su. Field Practice in Public Health Nursing. Six weeks. (Required for five-year students. May be available for some three-year students.)
- Nurs. 55f,w,s,su. Operative Aseptic Technique. A course dealing with the personnel of the operating room; the care and use of equipment; antiseptics and methods of sterilization; problems of co-ordination with other hospital departments; and management of operating room schedule. Taught by lectures, demonstration, discussion, and field types. For postgraduates. (1 cred.; 11 hrs.)
- Nurs. 56f,w,s,su. Operating Room Administration. A course dealing with the administration and management of an operating room. Taught by lectures, discussion, and field trips. For postgraduates. (2 cred.; 22 hrs.)

- Nurs. 60s,su. Ward Organization for Instruction. A course designed to acquaint the nurse with the principles underlying ward organization and personnel management for instructional purposes. Special consideration is given to the problems related to the planning of schedules, patient care, programs, and analysis and evaluation of clinical materials for ward teaching programs. Opportunity for application of these principles in a real ward situation carrying two additional credits will be required of all postgraduate students except those in the operating room and will be elective for any other students in the course by special permission of the instructor. (4 cred.; 44 hrs.)
- Nurs. 63w. Motion Study. A course designed to apply the science of motion study to the technique of nursing. The student is taught to analyze critically the present methods used in nursing, and to devise better ways of doing the job. Motion picture method of analysis, lectures, and laboratory work. (2 cred.; 33 hrs.)
- Nurs. 65w. Comparative Nursing Procedures. A comparative study of nursing procedures including individual projects. (4 cred.; 44 hrs.)
- Nurs. 69f. Survey of Conditions and Trends in Nursing. A study of conditions existing in nursing as revealed in literature and reports. (3 cred.; 33 hrs.)
- Nurs. 71s. Curriculum Making in Schools of Nursing. General principles of curriculum making; study of the functions of the graduate nurse in the community as determinants of the clinical and classroom curricula of the professional school. Integration of materials into curricula preparing nurses as community health agents. (3 cred.; 33 hrs.)
- Nurs. 72w. Teaching and Supervision in Schools of Nursing. Principles of teaching applicable in schools of nursing. Planning of class work. Use of case studies, ward clinics and demonstrations, and assignment of practice, as methods of clinical teaching. Methods of evaluating students' work. Principles of supervision and their application for the improvement of nursing practice. For postgraduates. (3 cred.; 33 hrs.)
- Pharm. 8w,su. Elementary Pharmacology. A study of the history, uses, classification, and preparation of drugs; definition of descriptive terms; methods of administration; principles of dosage, etc., together with appropriate laboratory exercises. (3 cred.; 44 hrs.)
- Physiol. 1f,s. Elements of Physiological Chemistry. (a) A brief study of physical and chemical laws; of the composition of matter, chemical compounds, chemical and energy changes; of the ionic theory; of gases and solutions. (b) The physiological chemistry of gases, water, salts, carbohydrates, fats, and proteins; of the nutritive media, of digestive fluids and digestion, of metabolism, of excretion and excretory products. (3 cred.; 44 hrs.)
- Physiol. 2f,s. Elements of 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. (5 cred.; 66 hrs.)
- P.M.&P.H. 3f,w,s. Personal Health. Elementary principles of normal body function; predisposing and actual causes of disease; ways in which disease may be avoided. (2 cred.; 22 hrs.)

SCHOOL OF NURSING

CLINICAL EXPERIENCE*†§

COMMUNICABLE DISEASE NURSING

Experience in nursing care of communicable diseases, venereal diseases, and tuberculosis. Preventive and public health aspects are emphasized. Observation of venereal treatment in out-patient department is arranged wherever possible. 1½ months.

GYNECOLOGICAL NURSING

Nursing care of gynecological patients. Examination, pre- and post-operative care, including surgical dressing room technique. 1 month.

MEDICAL NURSING

Clinical experience in the application of principles of medical nursing to the care of medical patients. The care of patients with neurological disorders is included in this period. 4 to 6 months.

NURSERY SCHOOL

Experience in observing, and assisting with, the care of the normal child. 1 month.

OBSTETRIC NURSING

Clinical experience in the care of obstetric patients, both mothers and newborn infants, including the instruction of mothers. Practice in assisting at both normal and abnormal deliveries. 3 months.

OPERATING ROOM

The students learn and apply in practice the principles of sterile technique and the care of operating room equipment and supplies. They give assistance at a number of operations of varied types including general surgical, orthopedic, ear, eye, nose, and throat, gynecological and urological, as well as assistance with cytosopic treatments. 1½ to 3 months.

OUT-PATIENT DEPARTMENT

Experience in the management of clinics, assisting with examination and treatment of patients. A study of the dispensary as a community health center. 1 month.

PEDIATRIC NURSING

Observation of the normal child, preparation of formulae, clinical experience in the care of convalescent and sick infants and children. 3 months.

PRIVATE PATIENT NURSING

A period of clinical experience in the nursing care of private patients, usually in the medical and surgical services. 1½ to 2 months.

* Three-year students who (because of overcrowding in the public health nursing agencies) cannot be accepted for field practice receive in lieu thereof one month's experience in the nursery school plus two additional weeks in the out-patient department.

† A slight variation of clinical experience is allowed for illness, absence, and vacation adjustments.

§ Suitable substitutes for students not receiving full assignment to tuberculosis experience are approved by the faculty.

PSYCHIATRIC NURSING

A clinical experience with a wide variety of psychiatric disorders. Supervised practice in care of the underactive, the overactive, the newly admitted, and the convalescent patient, in planning and supervising occupational and recreational therapy, and in giving simple hydrotherapy. 1½ months.

PUBLIC HEALTH NURSING

Supervised field experience with community public health nursing agencies. 1½ months.

SPECIAL DIET KITCHEN

Supervised practice in preparing, planning, and calculating therapeutic diets. Two classes a week are held, covering diet therapy for the patient under treatment at the time. 1 month. Students also have ½ month of pediatric diet preparation while in the Pediatric Department.

SURGICAL NURSING

Application of principles of surgical nursing to the care of surgical patients including those affected by urological, orthopedic, and ear, eye, nose, and throat conditions. 4 to 6 months.

TUBERCULOSIS NURSING

Clinical experience in nursing care of all types of tuberculosis. Preventive and educational aspects are emphasized. 1 month.

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