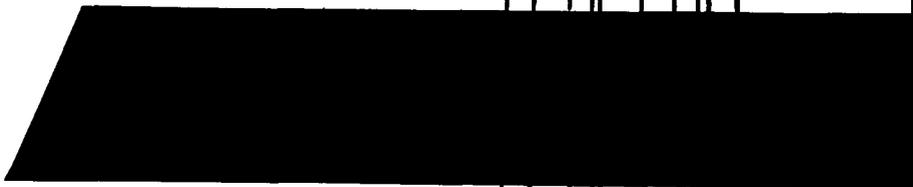


Bulletin of the
**UNIVERSITY OF
MINNESOTA**



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UNIVERSITY OF MINNESOTA

Minneapolis Minnesota

1956



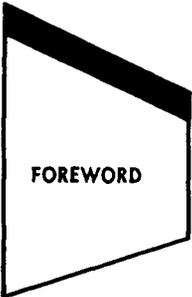
SUMMER SESSION

First Term

June 11-July 14

Second Term

July 16-August 18



FOREWORD

The University of Minnesota Summer Session provides one of the most varied and distinguished summer programs to be found anywhere. It offers training on the graduate and undergraduate levels for students in education; in science, literature, and the arts; in engineering and other technical fields; in medicine; in nursing; in home economics; in most branches of agriculture; and indeed in virtually every major field of instruction to be found in the curriculum of a great American university.

This bulletin, describing the summer program in general and listing more than one thousand formally organized courses, provides a broad overview of the Summer Session activities.

It is a cordial invitation to participate in a program of carefully planned study and recreation for the summer of 1956. We hope that you will be among those who accept the invitation.



Special Programs

**WORKSHOP
ON SCHOOL
PSYCHOLOGY**

This workshop, presented jointly by the College of Education, the Institute of Child Welfare, and the Department of Psychology, is designed to provide information, instruction, and observation experience on problems and methods, both to persons now employed as school psychologists and as a means of further preparing persons already trained in psychological fields for the rapidly developing specialty of school psychology.

The workshop, which is to run through the second term, offers 9 graduate credits, although some registrations can be accepted from adult special students. All workshop participants will take a basic course in Introduction to School Psychological Services (Educational Psychology 152) and a Laboratory-Seminar course (Educational Psychology 153 or Child Welfare 200). Both of these courses are limited to students accepted as members of the workshop. In addition, each registrant will elect one three-hour course from the curricula of sponsoring or related departments.

For further information regarding the workshop and for application forms, write to Dean of Summer Session, 650 Johnston Hall, University of Minnesota, Minneapolis 14.

**LANGUAGE
ARTS**

Several departments are co-operating in a special first term program in the Language Arts . . . reading, speaking, writing, listening, children's literature. Supplementing the courses will be two Institutes at the Center for Continuation Study, to be held June 25 through June 29 and August 20 through August 24, respectively. These Institutes will emphasize sound practices for elementary and secondary school instruction in the language arts.

**DRIVER
EDUCATION**

The course in Driver Education (101 under Curriculum and Instruction) will provide the special background required for high school instructors in driver training. Sections will be avail-

able both terms on the Minneapolis Campus. Because registration is limited, interested summer students should apply in advance for this work.

**HIGHER
EDUCATION
WORKSHOPS**

The very useful higher education workshops (228 under Curriculum and Instruction) will be available again. The first term workshop is planned for representatives from the liberal arts colleges of the North Central area, and the second term group will emphasize the problems of the teacher-education institutions.

**WORKSHOP FOR
INDUSTRIAL
ARTS
TEACHERS**

In the first term, Howard Nelson and William A. Kavanaugh will conduct a workshop on the industrial arts program for junior high schools. The present strong interest in improving junior high school programs makes this a particularly useful workshop for industrial arts teachers who wish to evaluate and replan their own work at the junior high school level.

**WORKSHOPS
FOR SCHOOL
ADMINISTRATORS**

As a part of the advanced graduate program (one year beyond the Master's degree) leading to the certificate of Specialist in Education—School Administration, a workshop on the Improvement of Instruction in the Elementary School (240 under Curriculum and Instruction) is scheduled for the first term. The course will require half-time work from the participants for the full term of five weeks. The group will be limited in size, and the completion of a Master's degree program for school superintendents is required for enrollment.

A special announcement concerning the Specialist in Education program will be sent to those who request it: write to Dean of Summer Session, 650 Johnston Hall, University of Minnesota, Minneapolis 14.

**WORKSHOP IN
TEACHING
DISPLAY**

For teachers and co-ordinators in distributive education, a two-week Workshop in Teaching Display (147 under Curriculum and Instruction) will provide assistance in handling their many problems in this area. A more detailed announcement will be available through the Dean of Summer Session, 650 Johnston Hall, University of Minnesota, Minneapolis 14.

**JUNIOR HIGH
SCHOOL
PROGRAMS**

One of the national leaders in the movement for improving junior high school programs, Professor Roscoe Cramer, will give a course on junior high school problems in the first term (167 under Educational Administration).

**LANGUAGE
TEACHING**

For high school and junior college teachers of French, German, and Latin, there will be three special courses in the first term (187A, 187B, 187C under Curriculum and Instruction). The course for each language will deal with the analysis of syntactical materials, free composition, appreciation of style, creative translation and the development of effective teaching techniques for these areas. Many teachers will want to combine one of these courses with others in the languages and with the work of the Language Houses.

**SPECIAL PRO-
GRAM FOR
TEACHERS OF
THE VISUALLY
HANDICAPPED**

The American Foundation for the Blind is assisting the University of Minnesota in an important first-term offering for teachers of the visually handicapped. Included will be a workshop on educational procedures and school curriculum adaptation with blind children, scheduled at Tuttle Demonstration School where observation will be provided; a course on teaching Braille, with a section for beginners and one for those with a working knowledge of the Braille system; and a course on visual impairment (178, 179, 180 under Curriculum and Instruction).

A limited number of scholarships are available through the American Foundation for the Blind. For information write to Dean of Summer Session, 650 Johnston Hall, University of Minnesota, Minneapolis 14.

DEMONSTRATION FACILITIES The University High School and the Tuttle Demonstration Elementary School will both be in operation during the first term. All school staff members will be welcome to observe these programs.

The Institute of Child Welfare conducts a nursery school and a kindergarten in which students may observe children of preschool ages.

In both terms, the Psycho-Educational Clinic will be available for summer students who wish to observe its individual and group remedial projects.

EFFICIENT READING Adult reading needs are a matter of real concern. The course Efficient Reading (see index), designed for the average and above-average adult reader, provides a unique combination of activities for improving reading speed, comprehension, and vocabulary.

SPEECH AND DRAMA INSTITUTE As a special feature of the University High School program, a Speech and Drama Institute will be open to high school students. The Institute will have two sections: (1) a group of thirty high school students working on forensic activities, oral interpretation of literature, extemporaneous and other public speaking, discussion, and debate, (June 18 through July 20); (2) a second group of thirty for work on dramatics for high school students,

(June 11 through July 14). High school speech teachers are urged to register for the regular graduate courses of the Summer Session in order that they may take advantage of the observation opportunities available in the Speech and Drama Institute in the University High School.

For a more detailed announcement concerning the Institute write to Dean of the Summer Session, 650 Johnston Hall, University of Minnesota, Minneapolis 14.

**INTRODUCTION
TO
ELEMENTARY
EDUCATION**

Introductory courses for prospective elementary school teachers, not ordinarily available in the Summer Session, will be given this year. These courses (75A, first term, and 75B, second term, under General Education) have been planned particularly for persons with Bachelor's degrees who now wish to prepare themselves for teaching in the elementary schools.

**FARM SHOP
MANAGEMENT**

A new course, Agricultural Engineering 130, is designed to meet the needs of high school agriculture teachers in the fields of shop program administration, demonstrations, job records, and shop problems relating to the farming program of students.

**PROGRAM IN
AUDIOLOGY**

Under the Department of Speech and Theater Arts, in co-operation with the Audiology Clinic at the University Hospitals, there will be four special courses and an institute for parents of deaf children. The first term courses are Speech 152, Hearing Disorders; and Speech 157, Clinical Practice in Audiology. Second term courses are Speech 127, Language Training for the Deaf; and Speech 156, Auditory Training.

The institute which will follow the close of the second term will be designed to help the parent of the deaf child deal with the special problems involved.

**INSTITUTE FOR
HIGH SCHOOL
TEACHERS
OF THE
PHYSICAL
SCIENCES**

From June 18 to July 21 the Departments of Physics and Chemistry will conduct a program of refresher courses in the basic and fundamental phases of their sciences and additional courses in the recent advances in these sciences. The program is designed explicitly for the needs of high school teachers and will occupy their full time. Scholarships covering tuition and living expenses will be available. Six credit hours in the Graduate School will be given to those who satisfactorily complete the work and are seeking a Master's degree in education.

Those interested in the Institute should write to Dean J. W. Buchta, 225 Johnston Hall, University of Minnesota, Minneapolis 14.

**INSTITUTE FOR
HIGH SCHOOL
TEACHERS OF
MATHEMATICS**

From June 18 to July 21 the Department of Mathematics will conduct a program in the basic and applied aspects of mathematics as these are related to the pedagogical needs of high school teachers. Scholarships covering tuition and living expenses will be available. Six credits in the Graduate School will be given to those who have been admitted to the Graduate School and who satisfactorily complete the work in the program. These credits will be applicable toward advanced degrees for those whose major subject is education and whose minor subject is mathematics and for those whose major subject is mathematics.

Those interested in making application for the Institute should write to B. R. Gelbaum, Associate Professor of Mathematics, 119 Folwell Hall, University of Minnesota, Minneapolis 14.

**PUBLIC HEALTH
NURSING**

Two workshops for public health nurses will provide opportunities for short-time study in rehabilitation nursing and in mental hygiene applied to supervision in public health nursing. For

further information, see the section on Schools and Colleges, Public Health.

**INSTITUTE ON
MINNESOTA
GOVERNMENT
AND POLITICS**

An Institute on Minnesota Government and Politics (Political Science 114) to be held the first two weeks of the second term, July 16-27 inclusive, is intended to introduce to those who attend the sessions the organization and operation of political parties in Minnesota, and the nomination and election of candidates for public office, including campaign management, financing, strategy, and techniques. The role of issues, political interest groups, the political parties, the media of communication in the formation of public opinion, and the expression of that opinion at the polls, will be emphasized throughout. Some attention will be devoted to the national party conventions, both of which are scheduled to be held after the Institute, in mid-August.

The topics will be presented by panels consisting of persons drawn from both major political parties in Minnesota, including party officials, candidates and workers, journalists, educators, elected public officials, and leaders of political interest groups.

A related course on American Political Parties, Political Science 137, may be taken during the last three weeks of the second term.

**ECONOMIC
EDUCATION**

A special overview of current national and international economic problems is embodied in a second-term course in Current Economic Issues (Econ. 129, School of Business Administration) intended for the nonmajor, including the teacher of social science who seeks some understanding of the economic side of everyday life. The course will be of particular value to teachers

who have attended or are using the materials from recent Economic Education Workshops.

**JOURNALISM
AND
COMMUNI-
CATIONS**

The School of Journalism program contains courses for both undergraduate and graduate students interested in professional training, and it provides courses for advisers of student publications in high schools, junior colleges, and colleges.

The School also offers five courses and two graduate seminars in the area of mass communications. Courses that carry senior college and graduate credit include Critical Writing, The Press in a Dynamic Society, Interpretation of Contemporary Affairs, History of Journalism, and Mass Communications. A graduate seminar open to students on this level of instruction will deal each term with Special Problems in Mass Communications. For those in the advertising sequence, Advertising Copy Writing is offered.

Murphy Hall, the School of Journalism building, is the headquarters of both the National Scholastic Press Association and the Associated Collegiate Press. Students are welcome to visit these organizations and to obtain counsel on publication problems from the staffs of NSPA and ACP.

**CULTURAL
RESOURCES
OF THE
TWIN CITIES**

The School of Home Economics will give a course in Cultural Resources of the Twin Cities (Home Economics 119). The University is located in an area rich in a broad range of the arts and this course will provide students an opportunity to take advantage of them. Architecture (both public buildings and homes), home landscaping, interior design and furnishings, painting, sculpture, ceramics, costume and food, optional areas:

music, theater, and film. There will be lectures by practicing professional artists and designers, field trips to art galleries, studios, public buildings, homes, and commercial establishments.

**IMPROVING
PATIENT CARE**

A special course, Improving Nursing Care Through Effective Night Supervision, will be offered during the first term of the Summer Session. Miss Pauline Heymann, instructor in surgical nursing and night supervisor, surgical nursing service of the Cornell University-New York Hospital School of Nursing, will be the instructor. Miss Heymann has devoted considerable time to study and research in this aspect of nursing care. Course content will include discussion of problems peculiar to administration and supervision of nursing care at night. (See Nu.Ad. 173, School of Nursing)

**MODERN
LANGUAGE
INSTITUTE**

During the first term of the Summer Session, the Modern Language Institute will sponsor residence houses, located near the campus, for graduate and undergraduate students of French, Spanish, and German. All activities will be carried on in the language elected by the student. The directors will be Professor Herman Ramras for the Deutsches Haus; Associate Professor Santiago A. Cunco for the Casa Hispánica; and Associate Professor Guy Desgranges for the Maison Française. In each house there will be native assistants.

PROGRAMS

The program will consist of regular departmental courses conducted in the morning; practical conversation sections at the residence houses in the afternoon; and lectures, round-table discussions, plays, films, music, and dances in the evening. Thus, each house will constitute a milieu for training in the language

and culture of the country and will provide a unique opportunity for improvement in the spoken language.

This year opportunity for observation of and participation in language instruction on the grade school level will also be provided.

The Institute has proved valuable to students and others who desire training in speaking a foreign language . . . those planning to apply for Fulbright or SPAN scholarships, or to join other foreign study groups . . . teachers or potential teachers of French, Spanish, or German, whether or not they are working for graduate degrees . . . men and women training for positions with the government, international organizations, or private business.

**FEES AND
SCHOLARSHIPS**

Each language program carries 10 quarter credits for the elementary group and 9 for advanced and graduate students. A special fee of \$40, in addition to regular Summer Session fees, is charged for the program offered in a language residence house. Room and board are additional. Several scholarships are available for the Maison Française and the Deutsches Haus.

**STATISTICS
INTERDISCIPLINARY**

Interdisciplinary work in statistics sponsored by the Graduate School Committee on Statistics will be given first term by the distinguished mathematical statistician, Professor S. N. Roy of the Institute of Statistics, the University of North Carolina. Two courses, 138B, Analysis of Variance and Multivariate Analysis—II, and 139B, Statistical Models in the Social Sciences, will be offered in the Department of Mathematics in the College of Science, Literature, and the Arts, and will be of interest to all students of statistics.

**A SUMMER
TRAVEL
COURSE IN
EUROPEAN
ART**

The summer travel course in European art will be conducted by the Department of Art under the auspices of the Summer Session. It will cover the main phases of ancient, medieval, Renaissance, and modern art in a series of lectures, guided visits, and discussions held at important cultural centers, museums, and cathedrals. Among the cities to be visited are Paris, Avignon, Nimes, Arles, Nice, Genoa, Pisa, Rome, Florence, Siena, Venice, Verona, Innsbruck, Salzburg, Munich, Rothenburg, Speyer, Luxembourg, Brussels, Bruges, and London. Five credits will be given in Art 59 to students successfully completing the course.

The group will depart from Montreal by steamer on June 28, spend approximately six weeks in Europe, and disembark in Montreal on August 30.

For information write to Dean of Summer Session, 650 Johnston Hall, University of Minnesota, Minneapolis 14.

**AMERICAN
STUDIES
PROGRAM**

During the summer of 1956, visiting professors in art, literature, and sociology will offer courses in various aspects of American culture, as will members of the University of Minnesota staff in these and other departments (anthropology, economics, education, history, journalism, music, philosophy, and political science). A visiting professor will also conduct an American Studies seminar.

The American Studies summer program is designed for candidates for the B.A., the M.A., and the Ph.D. degrees. Candidates for these degrees enroll in the above courses conducted by the participating departments and in American Studies semi-

nars designed to integrate these courses. Knowledge of a foreign civilization is also required of all candidates.

**INSTITUTE FOR
COLLEGE
TEACHERS
OF BIOLOGY**

An Institute for College Teachers of Biology will be conducted this summer under the auspices of the National Science Foundation at the Lake Itasca Forestry and Biological Station. Members will enroll in one graduate course, carry out an individual research program, and participate in seminars on problems related to the teaching of biology. Ten stipends will be available.

Inquiries concerning this program should be addressed to Dean of Summer Session, 650 Johnston Hall, University of Minnesota, Minneapolis 14.

**INSTITUTE FOR
HIGH SCHOOL
TEACHERS OF
BIOLOGY**

Plans are being formulated for an Institute for High School Teachers of Biology to be held at the Lake Itasca Forestry and Biological Station. Teachers who would be interested in spending a summer in this field laboratory with other high school biology teachers should inquire of the Dean of the Summer Session, 650 Johnston Hall, University of Minnesota, Minneapolis 14.

**FLORENTINE
RENAISSANCE**

A new course, Florentine Renaissance, Humanities 63, given for the first time last summer, will be repeated in 1956 in the second term. Based on the spring quarter course, Renaissance Heritage, it presents a more intensive study of the aesthetic, moral, and political values of our European heritage by concentrating on the brilliant rebirth of artistic and social activity that occurred in fifteenth- and sixteenth-century Florence.

**RADIO AND
TELEVISION**

Two courses in radio and television at the senior college level, Speech 65, Radio and Television Speech; and Speech 66, Radio and Television Drama; will be given in the Department of Speech and Theater Arts. Advanced work at the graduate level can be arranged on an individual basis under Speech 181-182-183, Readings in Speech.

The television production unit at KUOM in Eddy Hall on campus will be in operation throughout both sessions and will provide opportunity for observation and participation on an extra-curricular basis.

**SCANDINAVIAN
AREA STUDIES**

The Scandinavian Area Studies program, held alternate summers at the University of Wisconsin and the University of Minnesota, for the summer of 1956 is scheduled to be held at the University of Minnesota. For detailed information consult Professor Alrik Gustafson, Department of Scandinavian Languages, 13 Folwell Hall, University of Minnesota, Minneapolis 14.

**MUSIC
EDUCATION**

Of interest to teachers of both vocal and instrumental music is a new course in music education, Recent Research and Literature (Mu.Ed. 170). It is designed to help teachers evaluate their materials and appraise new publications in such a way that they can make musically and educationally appropriate choices among them for use in their schools.



Dates of Summer Session
University Facilities
Faculty
Housing and Food Service
Admission and Registration

General Information

**GENERAL
INFORMATION**

A more complete Summer Session bulletin is issued annually in March. Copies of that bulletin or additional copies of this preliminary bulletin may be obtained by addressing your request to Dean of Summer Session, 650 Johnston Hall, University of Minnesota, Minneapolis 14.

The University of Minnesota is on the quarter system, and the Summer Session is so organized that the two terms make it possible for the student to complete a full quarter's academic work.

**DATES OF
SUMMER
SESSION**

The Summer Session consists of two terms of five weeks each: June 11 to July 14 and July 16 to August 18. Students may register for subjects of their choice in either or both terms. Registration and payment of fees for the first term close at 4:00 on Tuesday, June 12. First term classes on the Minneapolis Campus will begin Tuesday, June 12, at 8:00 a.m. while classes on the St. Paul Campus will begin at 7:30 a.m.

Registration and payment of fees for the second term close at 4:00 p.m. on Monday, July 16. Classes for this term will open Tuesday, July 17.

Most individual courses are planned for completion in a single term.



*Aerial view of the Minneapolis
Campus, situated on the banks
of the Mississippi.*

Academic procession—president,
faculty, and officers of the
University.



UNIVERSITY FACILITIES

The Summer Session student has available all the facilities of a great university; its distinguished faculty . . . its libraries . . . laboratories . . . classrooms . . . and its highly specialized technical equipment. An expanding physical plant, with more than 1,000 buildings, serves his needs.

SEVERAL CAMPUSES

The Minneapolis Campus is located on the banks of the Mississippi River, overlooking the heart of the Minneapolis business district. St. Paul is also readily accessible, thus making available to the student the recreational and cultural advantages of two large metropolitan centers.

The Institute of Agriculture is located on the St. Paul Campus and includes the College of Agriculture, Forestry, and Home Economics, and the School of Veterinary Medicine. A variety of related courses is offered on the St. Paul Campus, and extensive laboratory and recreational facilities are also available. The Minneapolis and St. Paul campuses are joined by an intercampus bus line which gives regular service free to students enrolled for classes on both campuses.

The Lake Itasca Forestry and Biological Station, located on historically famous Lake Itasca in Itasca State Park is scheduled for the first term. It offers courses in various fields of biology. (See index)

Facilities of the Duluth Campus, and courses offered at Duluth, are discussed elsewhere in this bulletin. (See index)

LIBRARIES

Full library privileges are available to the summer student. Among the finest university libraries in existence, the University of Minnesota Libraries contain more than one and three-quarter million volumes and a wide variety of periodicals and pamphlets. Large, comfortable reading rooms provide an excellent atmosphere for study.

Departmental libraries on both campuses contain special collections of value to students.



University students soon become acquainted with the many facilities of the library.

Other available library facilities in the Twin Cities area include the Minneapolis Public Library, the St. Paul Public Library, the Minnesota Historical Society, and the James Jerome Hill Reference Library of St. Paul.

**SPEECH AND
HEARING CLINIC**

Students with speech and hearing problems may use the facilities of the University Speech and Hearing Clinic during the summer. These offices are located at 205 Shevlin Hall.

**STUDENTS'
HEALTH
SERVICE**

The Students' Health Service, in quarters across from the Church Street entrance of the University Hospitals, maintains a dispensary and hospital exclusively for students. The students' hospital provides hospitalization for students whenever necessary. Home calls are made in case of emergency.

The staff of physicians, dentists, and nurses is on duty throughout the year.

FACULTY

The summer faculty is made up of distinguished instructors drawn largely from the staff of the University of Minnesota, and augmented by eminent scholars from other institutions. This faculty, numbering about 1,000, includes people with international reputations in a variety of fields.

**HOUSING AND
FOOD SERVICE
COMSTOCK HALL**

Ada Comstock Hall, a modern residence hall for women, overlooks the Mississippi River and is next to the Coffman Memorial Union. It has excellent living accommodations for 275 students. Well-planned, healthful meals are served under the direction of a trained dietitian. Applications for reservations, which should be sent directly to Comstock Hall as early as possible, will be filled in the order of the date received.

Write for applications and additional information to Director of Women's Residences, Comstock Hall, University of Minnesota, Minneapolis 14.

SANFORD HALL

Sanford Hall, another University dormitory for women, is located on University Avenue near the entrance to the campus. It will be open to graduates and undergraduates for room only, at very

reasonable rates. This provides comfortable living in double and single rooms.

Sanford Hall will not be open during the second term.

For applications and additional information, write as early as possible to Director of Sanford Hall, University of Minnesota, Minneapolis 14.

**WINCHELL
COTTAGES**

The Winchell Cottages for Women offer attractive, low-cost housing on a co-operative basis, for both terms. They are located on University Avenue near Sanford Hall. No meals are served in the summer.

Residents must furnish their towels, rugs, and curtains as desired. Students cut expenses by sharing the work in each house.

For applications and additional information, write directly to Director of Winchell Cottages, 212 12th Avenue S.E., University of Minnesota, Minneapolis 14.

**MEREDITH HALL,
ST. PAUL CAMPUS**

If there is a sufficient number of requests, Meredith Hall on the St. Paul Campus will be open to women during the first term. Inquiries should be made to the Director of Dormitories, School of Agriculture, University of Minnesota, St. Paul 1.

**DINING HALL
DORMITORY,
ST. PAUL
CAMPUS**

Contingent upon the number of applications, Dining Hall Dormitory on the St. Paul Campus will be open to men during the first term. Inquiries should be made to the Director of Dormitories, School of Agriculture, University of Minnesota, St. Paul 1.

**MEN'S RESIDENCE
HALL**

Centennial Hall, an ultra-modern men's dormitory with a large number of single rooms, will be available. A room and board contract (board—Monday through Friday) will be offered pro-

*Men's residence halls are cool
and tree shaded.*



vided there is a sufficient number of residents. Otherwise, contracts will be for room only. Early application is suggested. For application forms and additional information, write to Director of Centennial Hall, University of Minnesota, Minneapolis 14.

**PRIVATE
RESIDENCES**

There is available a considerable number of rooms in private homes and rooming houses. These facilities are University-inspected and approved and are listed with the Student Housing Bureau, 204 Eddy Hall.

All regularly enrolled students are required to live in University-approved residences and those taking rooms elsewhere must apply to the director of the Student Housing Bureau for approval. The Housing Bureau also helps married students obtain housekeeping facilities.

**FOOD
SERVICE**

In addition to the dining facilities in the residence halls, Coffman Memorial Union offers a variety of accommodations.

Well-prepared food at moderate prices and quick, efficient service are featured in the Cafeteria and Fountain Grille. The Commuters' Lunchroom is open with vending machine service.

Party and banquet dining facilities will be available for both lunch and dinner to all campus organizations and groups during the second term.

**ADMISSION AND
REGISTRATION**

ADMISSION

The courses of the Summer Session are open to all qualified high school graduates, regularly admitted students of the University including those attending regular session, and those with previous college work. Recent high school graduates must be regularly admitted before enrolling in the Summer Session. Students beginning their University attendance during the Summer Session who wish to attend during the academic year must submit credentials in the usual way.

**SPECIAL
STUDENTS**

Students with previous college work who wish to attend the Summer Session only may do so without filing credentials, provided they are in good standing and are not candidates for a degree. Such students will be classified as "special" for the Summer Session only.

Persons about 24 years of age or older who have not had previous college work and who are not candidates for a degree but wish to complete certain specific college subjects will also be considered for admission as special students for Summer Session only.

Attendance during the Summer Session in no way guarantees special students admission to the regular academic year. Special students who wish to be considered for admission to a subsequent term **must file regular admission applications early in the summer.**

**GRADUATE
STUDENTS**

The procedure for admission of graduate students is discussed in the section on the Graduate School. (See index)

**DEGREE
CANDIDATES**

Those who expect to become *candidates for a degree* at the University during the Summer Session must have filed an application for admission and have been regularly admitted to a college of the University.

Late fees for the second term are as follows for payment of fees on:

Tuesday, July 17.....	\$2.00
Wednesday, July 18.....	3.00
Thursday, July 19.....	4.00
Friday, July 20.....	5.00

No registrations will be accepted for the second term later than Thursday, July 19, without special permission of the dean of the school or college concerned.

No provision is made for allowing exemption from late registration fees to those who are unable to reach the University during regular registration days.

**PLACE OF
REGISTRATION**

At the beginning of the first term, registration in all colleges except the College of Agriculture, Forestry, and Home Economics and the School of Veterinary Medicine will be in the Main Ballroom, Coffman Memorial Union. Registration in the College of Agriculture, Forestry, and Home Economics and the School of Veterinary Medicine will be at 203d Coffey Hall, St. Paul Campus.

The University of Minnesota reserves the right to cancel any and all courses in which registration is insufficient to warrant continuation of the course.

**CHANGES IN
REGISTRATION**

After a student's registration has been accepted by the recorder, any change must be approved by the Committee on Student Scholastic Standing or dean of the college in which the student is registered. *Only in exceptional cases will any change be made after classes have begun.*

FEES

The following fees are payable each term by each full-time student (whether resident or nonresident) at time of registration and must be paid before registration is complete:

Tuition fee (per term).....	\$50.00
Incidental fee (per term).....	8.50
	<hr/>
Total fee (per term).....	\$58.50

PART-TIME FEES

The following fees are payable each term at time of registration by each student taking 4 credits or less (whether resident or nonresident) and must be paid before registration is complete:

Part-time tuition fee (4 credits or less)	
(per term)	\$39.00
Incidental fee (per term).....	8.50
	<hr/>
Total fee (per term).....	\$47.50

INCIDENTAL FEE

The incidental fee of \$8.50 per term entitles each student to the privileges of Coffman Memorial Union, Health Service, and the recreation program including the *Minnesota Daily*.

SPECIAL FEES

Regular tuition fees as provided during the academic year will be charged all students in the School of Nursing. In the Schools of Medicine, Dentistry, Law, and Veterinary Medicine, residents pay regular Summer Session tuition fees; nonresidents pay tuition at the summer rate or academic year rate, whichever is higher. Special tuition fees are collected in the Biological Station. All students pay the Summer Session incidental fee.

In addition, course fees are charged for Civil Engineering Camp, Modern Language Institute, Music, Physical Education, Public Health, and Itasca Biological Station as indicated in the section on course fees in the regular *Bulletin of the Summer Session*.

Graduate students who have completed all of their graduate work with the exception of their thesis may register for thesis work only upon payment of \$26 tuition per term and the incidental fee.

Summer Session staff members are entitled to the same fee privileges in the summer as during the academic year. Eligible staff members pay at the resident rate in the Graduate School as follows: more than 3 credits, \$23 per term; 3 credits or less or thesis only, \$11.50 per term; plus incidental fee.

AUDITORS

Fees for auditors are the same as for students registered for credit.

AMOUNT OF WORK

A maximum of 9 quarter credits or two 5-credit courses is considered a full program for either term. Registration for a greater number requires special permission from the Committee on Student Scholastic Standing or the dean of the school or college in which the student is registered.

EXAMINATIONS

Examinations are normally held at the last scheduled class hour for each course.

Sports
Excursions
Films
Coffman Memorial Union
St. Paul Campus Union
Concerts and Lectures
University Theater
Museum of Natural History
University Gallery

Summer Recreation



**SUMMER
RECREATION**

The University of Minnesota Summer Session has a planned program of activities available on campus at very little or no cost to the student.

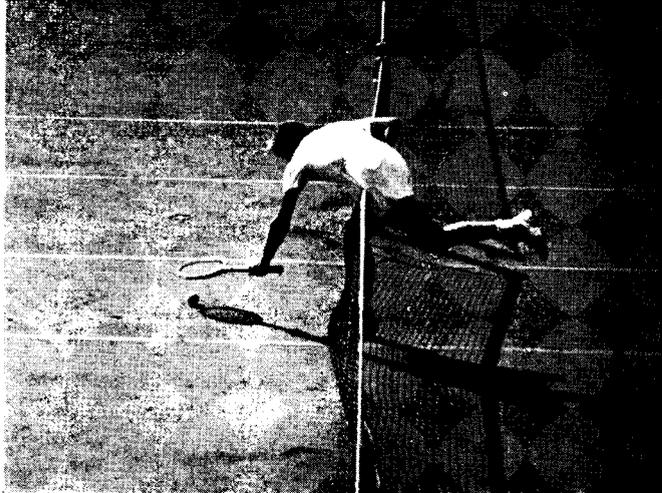
In addition to this program, the location of the University makes possible the use of the cultural and recreational facilities of a large metropolitan area. Lakes and lagoons on which to canoe, swimming beaches, picnic grounds in parks and along the roadsides, evening concerts on lake shores and in parks, art centers, museums, libraries, beautiful stores for shopping and browsing, a wide choice of places for dining, as well as the many professional entertainments provided by a large city, are within easy access from the campus by public or private transportation.

**SPORTS
PROGRAM**

A program of tennis and golf tournaments as well as other competitive sports is arranged each summer. A daily sports hour for women including such activities as aerial darts, badminton, and table tennis is planned at the Norris Gymnasium. At scheduled hours, swimming pools with attendants and instructors in charge are available for men in Cooke Hall and for women in Norris Gymnasium. Most of these activities have no extra charge except for towel service.

Tennis and golf tickets will be issued to regularly enrolled Summer Session students upon presentation of their fee statements and payment of a small fee. A greens fee is also charged

Tennis, golf, and other sports tournaments are popular.



for use of the golf course. Without tickets a slightly higher charge per session of play is made for use of the tennis courts.

SPORTS FACILITIES

Facilities for healthful exercise are offered by the University's physical education plants. These include recreation fields . . . an 18-hole golf course . . . gymnasiums and swimming pools in Cooke Hall for men and Norris Gymnasium for women . . . Northrop Field containing facilities for baseball, track, and diamond ball . . . 25 tennis courts . . . space for other sports such as badminton, horseshoes, handball, squash, table tennis, and archery.

EXCURSIONS

Conducted excursions may be taken to points of historical, industrial, educational, and recreational interest. The transportation fee is the only cost of these tours.

FILMS

A feature film, either foreign or domestic, will be shown one day a week. Another weekly feature is the Newsreel Theater which shows motion pictures of current events, travel pictures, and various educational films. A program of educational films of a type which can be used in the classroom is of special interest to teachers. These film programs are shown with the co-operation of the Department of Audio-Visual Education.



University Theater student actors in "Twelfth Night."

UNIVERSITY THEATER

Performances of legitimate drama have become an outstanding feature of the Summer Session. The University Theater, recognized as one of the leading off-Broadway playhouses, will present a season of exceptional plays.

COFFMAN MEMORIAL UNION

Summer Session students will find an informal, friendly spirit in the Coffman Memorial Union which offers a pleasant respite from the rigors of classroom activities. Quiet and comfortable lounges, efficient dining rooms and varied recreation rooms give the Union a pleasant setting for informal, social, and recreational activities.

FACILITIES

Facilities include billiards, table tennis, and a coeducational game room for recreation . . . an Art Craft Workshop for general hobby craft—woodworking, leather work, ceramics, weaving, photography . . . the large cafeteria and fountain grille for dining . . . men's, women's, and coeducational lounges for resting and studying . . . the outdoor terrace overlooking the Mississippi for lounging or dining . . . the Terrace Reading Room for recreational reading . . . a modern ballroom for informal dancing parties and dance instruction sessions . . . the University Post Office and Union Bookstore . . . and barber and beauty shops.

**UNION
PROGRAM**

The Union provides a diversified program during the summer which includes instruction in folk and modern dancing, instruction classes in bridge, personal grooming, and social hours, parties, musical programs, and art exhibits. These are all available to students without charge. Some of the dancing and social hour programs are conducted on the outdoor terrace.

**ST. PAUL
CAMPUS
UNION**

The Union on the St. Paul Campus will be open throughout the Summer Session.

Facilities include lounges, newspaper and magazine service, billiards, table tennis, television, photography darkroom, conference rooms, and a kitchenette for use by social groups.

Ice cream, cold drinks, and light lunches are available at the fountain grille. Club service and take-out picnic supplies may be obtained by University groups.

**CONCERTS AND
LECTURES**

Through the Department of Concerts and Lectures, the Summer Session provides a program covering a wide field of musical features . . . symphonies . . . chamber music . . . piano and vocal soloists. Convocations and numerous lectures are also featured in this program. Addresses are by outstanding scientists, literary figures, artists, and observers of national and international affairs.

Folk dancing at the Union is popular with students.



**MUSEUM OF
NATURAL
HISTORY**

The Minnesota Museum of Natural History, located on the campus at Seventeenth and University avenues, contains a series of lifelike exhibits of animal and plant life selected from various parts of the state.

In addition to public exhibits, extensive scientific series of birds, mammals, and other natural history materials are housed here for those interested in more careful study in these fields.

The exhibition corridors are open to the public from 9:00 to 5:00 o'clock daily and from 2:00 to 5:00 o'clock on Saturdays, Sundays, and most holidays during both summer terms.

The Museum's modern auditorium is widely used by many campus departments.

**UNIVERSITY
GALLERY**

Exhibitions of national and international scope are arranged for the summer student. The University Gallery is open 8:30 a.m. to 4:00 p.m. Monday through Friday except on official holidays.

Exhibition space and the offices of the Gallery are on the third floor of Northrop Memorial Auditorium. In addition to the general exhibitions of paintings, prints, sculpture, and other creative arts, special study exhibitions are arranged to supplement textbooks and lectures in the art classes. Pictorial reference materials are available in 315 Northrop.

RENTAL SERVICE

Students registered for the Summer Session may borrow framed reproductions and prints from the University Gallery located on the third floor, East Corridor. This rental service will be open from 10:00 a.m. to 1:00 p.m. Tuesday through Thursday the first week of each term. The rental fee is 25 cents for one term, or 50 cents for two terms. The pictures are due on Thursday of the last week of the term for which they are rented.

ART LIBRARY

A library for art students is in Room 307 of Northrop Memorial Auditorium where reference books are available.

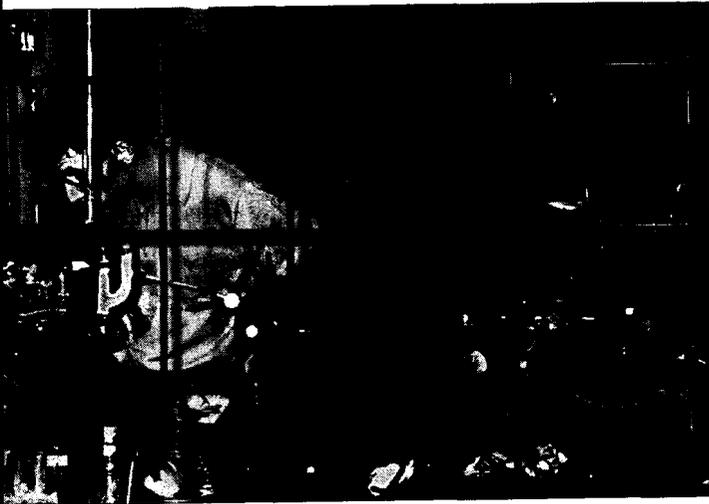
Schools and Colleges

Graduate School
College of Science, Literature,
and the Arts
Institute of Technology
College of Engineering
School of Chemistry
School of Mines and
Metallurgy
School of Business Administra-
tion (including Economics)
Institute of Agriculture
College of Agriculture, For-
estry, and Home Economics
School of Veterinary
Medicine
Law School
General College
College of Education
Physical Education for Men
Physical Education for Women
Institute of Child Welfare
Medical School
School of Nursing
School of Public Health
School of Dentistry
Biological Station



**GRADUATE
SCHOOL**

The Graduate School of the University of Minnesota brings together in a single organization all programs and offerings of the University which lead to the higher degrees of master of arts, master of science, and doctor of philosophy.



The Graduate School facilities include excellent laboratories for research.

The University's libraries, laboratories, and clinics, supplemented by libraries, hospitals, and other institutions in the Twin Cities, offer excellent facilities and possibilities for graduate students. These privileges are, in general, open to those who have received Bachelor's degrees from accredited colleges and universities and who are adequately prepared for graduate work in their chosen fields of study.

APPLICATIONS

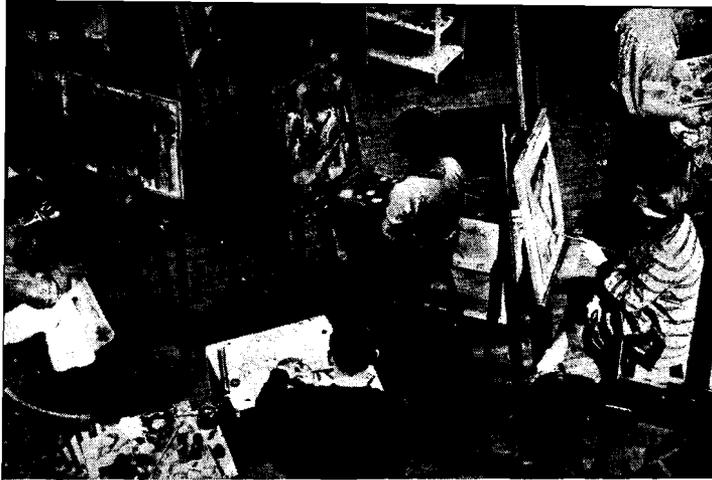
Students must make application for admission at least four weeks before the opening of the term they expect to attend in order to avoid delay, last-minute disappointment, and possible penalty for late registration. Applications for admission, except for University of Minnesota graduates, must be accompanied by an official transcript in duplicate of all undergraduate work, including degrees earned and a single official transcript of all graduate work completed. University of Minnesota graduates must submit certified copies of their scholastic records. Application forms may be secured by writing to the Dean of the Graduate School, 316 Johnston Hall, University of Minnesota, Minneapolis 14.

Students, *before their arrival at the University*, should have assurance from the Graduate School that they are adequately prepared and will be accepted as majors in their chosen field. Admission to the Graduate School does not imply admission to candidacy for an advanced degree. After a student has studied in this Graduate School for one or more terms and on application for degree candidacy, the staff will determine whether or not he should be encouraged to work for a degree.

The *Bulletin of the Graduate School* contains detailed information on requirements and work in the Graduate School. A copy may be obtained by writing to the Dean of Admissions and Records, University of Minnesota, Minneapolis 14.

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

The College of Science, Literature, and the Arts is the largest undergraduate college of the University of Minnesota, offering instruction leading to the Bachelor's degree in all of the liberal arts and science subjects. A broad and varied program of general education offered in the first two years prepares students for further liberal education, professional or vocational curricula, or for taking one's place in society without further formal education. In addition to programs for a major in most of the subjects of a liberal arts college, students may elect in the college pre-



A corner of the art studio in Jones Hall.

professional curricula, or professional curricula in journalism, librarianship, or social work.

Summer courses offered by the College are chosen from the College's regular curricula to provide students a wide variety of programs in general education, liberal arts and sciences, and vocational or professional studies. This selection of courses is made from the offerings of twenty-seven departments, and includes in addition to the departments listed many courses suitable for interdepartmental majors.

Courses in each of the departments of the College will be found in the section on List of Courses and will be seen to include introductory, intermediate, and advanced work. A few of the programs of the College are discussed in the following paragraphs.

ART

Professional training in the Department of Art includes professional studio work and industrial art as well as graduate work. The departmental library and galleries will be open for historical and creative research.

ENGLISH

A variety of courses useful either for the student interested in literature and literary history and criticism or the student seeking special competence for graduate, professional work, or teaching is provided by the Department of English.

GENERAL STUDIES

Courses in the Department of General Studies cut across departmental lines and are designed particularly for the student specializing in other subjects who wants a liberal understanding of the humanities and the social sciences, or work in family life and personal orientation.

HISTORY

The summer offerings in the Department of History are carefully selected from the regular curriculum. The student will find a wide choice in American and European, ancient and medieval history.

LIBRARY SCHOOL

The Library School offers courses leading to a Master's degree and a 23 credit program leading to certification for school library work. Courses are offered on a rotation plan in alternate summers for students not able to enroll during the regular academic year. Basic courses required for admission to the Master's degree program, some of the graduate courses, and certification courses are offered in both summer terms.

Preparation for professional librarianship embraces five years of study beyond secondary school, including one year of professional content. The Master's degree program in Library School meets this requirement. Inquiries concerning admission to this program should be addressed to Dean of Summer Session, 650 Johnston Hall, Minneapolis 14.

MUSIC

Students interested in obtaining a cultural background and those preparing to become teachers of music and professional performers may take courses in applied music, music literature, music history, and music theory under nationally known musicians.

Students wishing a broader knowledge of symphonic literature will be interested in the courses, Symphonies of Beethoven and Symphonies of the Romantic Era. The courses in American Music should interest the general student and be of special interest to those majoring in American studies.

Instruction in Class Piano (Mus. 11C) and Class Voice (Mus. 12C) will be presented for the first time during a Summer term for those interested in studying piano or voice for their own pleasure or cultural development. This will be of great value to anyone in the field of education, especially elementary education. Class Voice presents the basic techniques in voice production and breath control; Class Piano teaches the primary triads enabling students to play accompaniments to simple folk melodies.

Students with a knowledge of piano who are interested in teaching private or class piano to children and/or adults will profit from Normal Piano (Mus. 70) which outlines materials as well as modern methods used in this type of instruction.

Class piano instruction in the Music Department.



The concertmaster of the Minneapolis Symphony Orchestra will be on campus this summer to instruct those particularly interested in string work (Music 60B-61B-62B).

PHILOSOPHY

Courses in the Philosophy Department are planned for the student whose objective is an understanding and appreciation of philosophy as a part of a liberal education or preparation for professional work. Also, there are advanced courses for students possessing previous competence in this field.

PSYCHOLOGY

Specialized courses in the fields of experimental psychology, human and animal behavior, differential psychology, and social and political psychology are available in the Psychology Department. Included are courses for the nonpsychology major as well as professional courses for those for whom psychology will be essentially a "tool subject" such as the psychology of individual differences, clinical psychology, abnormal psychology, psychology of advertising, and psychology in personnel work.

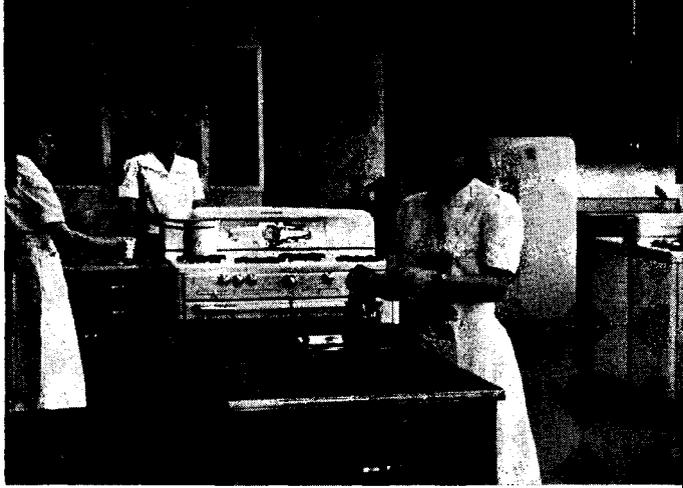
SOCIOLOGY

Sequences in general sociology, social problems and social policy, and social research are among the offerings in the Sociology Department. In co-operation with the School of Social Work, a special sequence is designed as preparation for graduate study in the School of Social Work.

INSTITUTE OF TECHNOLOGY

The Institute of Technology includes the College of Engineering, the School of Architecture, the School of Chemistry, and the School of Mines and Metallurgy.

Students in the Home Economics laboratory on the St. Paul Campus.



A limited number of courses in civil, electrical, and mechanical engineering; drawing and descriptive geometry; mathematics, and mechanics and materials are listed for students in the College of Engineering.

In the School of Chemistry, inorganic, analytical, organic, and physical chemistry will be given. Students are able to acquire a Master's degree in chemistry by attendance at summer sessions only.

**INSTITUTE OF
AGRICULTURE
COLLEGE OF
AGRICULTURE,
FORESTRY, AND
HOME ECONOMICS
AND THE
SCHOOL OF
VETERINARY
MEDICINE**

There are many courses, primarily for graduate students, in the College of Agriculture, Forestry, and Home Economics and in the School of Veterinary Medicine. Most departments correlate thesis and problem work with work in the Agricultural Experiment Station.

High school teachers of agriculture may take advanced courses in those agricultural fields which are applicable to the requirements of the Department of Agricultural Education (see College of Education).

The School of Home Economics' program includes courses for graduate and undergraduate students, for experienced teachers, and other home economists. Transfer students and students wishing to qualify for vocational certification may wish

to meet some of their requirements through Summer Session attendance. Courses in a variety of subject matter areas are offered. Individual needs of graduate students may be met through special problems courses in the areas of foods, nutrition, institution management, related art, and home economics education. Courses will be offered in both terms of the Summer Session.

Information concerning admission to the Graduate School should be obtained from the Dean of the Graduate School, 316 Johnston Hall. Students wishing information regarding courses at the graduate level should confer with the graduate staff of the department or school in which they will be working.

GENERAL COLLEGE

The General College two-year program in higher education leads to the degree of associate in arts. The aim of this program is to give the student a general education which will prepare him for the personal, vocational, civic, and cultural problems of his life in the community.

Courses are planned to be as complete as possible in themselves in order to give an understanding of basic principles. They are not merely introductions to more specialized courses in the same field.

Courses successfully completed in the Summer Session may be applied toward fulfilling the requirements leading to the degree. For general information about the college program, requirements for the associate in arts degree, and requirements for transfer to other colleges, students should consult one of the administrative or counseling officials, or the *Bulletin of the General College*.



*Calculating business ratios
in the laboratory.*

**LAW
SCHOOL**

A student who has completed at least one year of work in this Law School or in another accredited law school may take the courses listed in this bulletin (see index). Beginning students are admitted to the regular courses in the fall quarter only.

Registration for a single term is not possible because all courses will continue through both terms without interruption.

**SCHOOL OF
BUSINESS
ADMINISTRATION
(including
ECONOMICS)**

The School of Business Administration offers a broad foundation in economics and in the several aspects of management of a business organization in addition to specialized courses, available at both undergraduate and graduate levels. The University's location in a metropolitan area presents opportunities for close observation of business in action.

Admission to this School ordinarily follows completion of a two-year prebusiness program in a liberal arts or technical school. The admission requirements take account of the varying needs and interests of students. Under certain circumstances, mature students who have special objectives in business but do not

technically meet the formal admission requirements may be admitted to take selected courses consistent with individual objectives.

The undergraduate curriculum is planned both for regular students and for visitors at Minnesota who wish to make progress toward their degrees during the summer.

Graduate work in both economics and business administration is planned to meet the needs of (1) high school and college faculty members and others whose graduate work is limited largely to summer sessions, and (2) graduate students at Minnesota and elsewhere who wish to accelerate their progress toward advanced degrees. Graduate work should be arranged through the Graduate School.

COLLEGE OF EDUCATION

The College of Education summer offerings emphasize the needs of teachers, school administrators, counselors, and other educational workers. In addition to courses in curriculum and instruction, philosophy of education, educational psychology, and administration for both elementary and secondary school staff members, there are offerings in the vocational fields of business and distributive education, agricultural education, industrial education, and home economics education. Advanced work is available for music and art educators, for teachers of health and physical education, and for recreation workers, as well as for teachers of all high school subjects and of elementary grades.

Counselors will find in both terms the courses they need for state certificates. In elementary education, with the demand for well-qualified principals rising sharply, basic courses in administration and supervision will be available both terms. Elementary

teachers completing work for undergraduate degrees, as well as those carrying on graduate study, will find a wide selection of courses in their special area, including an exceptionally fine offering in the language arts.

Music education courses, helpful to elementary teachers as well as to music education majors, will be offered both terms. For a new course in Recent Research and Literature (Mu.Ed. 170) see section on Special Programs.

All teachers are urged to examine the broad offerings of the College of Science, Literature, and the Arts, where the various departments have many valuable courses for teachers in the summer terms. Teachers will wish to strengthen their liberal and general education through the summer offerings in the humanities and the social sciences, literature, speech, music, art, and all of the other liberal arts departments. The School of Business Administration, also, offers special work for teachers, including courses providing much-needed materials in economic education. Both secondary and elementary school teachers may plan a program combining courses in professional education with the liberal and general education courses of the other divisions of the University, emphasizing either their own teaching subjects or related and broadening activities.

**PHYSICAL
EDUCATION
FOR MEN**

Teachers will find a full program of professional courses. Students may work toward the degree of bachelor of science with either a major or minor in physical education or in recreation, master of education with a major in physical education or in recreation, master of arts with a major in physical education, or doctor of philosophy in education with major emphasis in physical education.

**PHYSICAL
EDUCATION
FOR WOMEN**

Regular professional courses lead to the degree of bachelor of science with major in physical education, master of education with major in physical education offered in the College of Education, master of arts with major in physical education offered

in the Graduate School, or doctor of philosophy with major in education and emphasizing physical education and school health education.

During the first Summer Session in 1956 the department is planning a short institute on Functional Posture Education. The purpose of the institute is to assist particularly teachers who are concerned with modern approaches to the daily habits of children in erectness of carriage, correct use of the foot in walking, and well-balanced use of the body in everyday activities. Principles of relaxation, weight control, and functional exercise for adults will also be considered. A national leader will present sound and practical procedures that may be used at the elementary and secondary levels. There will also be demonstrations to show the application of procedures to children and adults.

Students wishing to qualify as part-time teachers of physical education in Minnesota may take courses toward an undergraduate minor in physical education and an undergraduate minor in school health education.

A regular program of teaching demonstrations in physical education will be presented during the first term at the Tuttle Demonstration Elementary School.

Instruction is given on the University golf courses.



Children at sand play provide opportunities for observation.



**CREDIT FOR
REQUIRED
PHYSICAL
EDUCATION**

Since the various colleges of the University either require physical education or give elective credit in this field, certain courses are open to students who wish to satisfy this need or interest.

**RECREATIONAL
OPPORTUNITIES**

All women students may use the facilities of Norris Gymnasium for Women for leisure recreation . . . recreational swimming . . . tournaments and individual practice in golf, archery, tennis . . . sports demonstrations . . . movies . . . and clinics.

**INSTITUTE OF
CHILD WELFARE**

Courses in the Institute of Child Welfare are planned not only for graduate and undergraduate students but also to meet the needs of experienced teachers and professional workers who wish to increase their knowledge and skill in working with children.

There are beginning and advanced courses in child psychology, adolescent psychology, behavior problems of children, child development, childhood education, and parent education. The nursery school and kindergarten will provide facilities for observation and participation.

Special attention is called to courses listed under *Curriculum and Instruction* and *Methods and Student Teaching* in the College of Education.

Graduate courses meet some of the requirements for a Master's degree under either Plan A or Plan B. Your attention is called to the announcement of the Workshop in School Psychology under the Special Program section.

MEDICAL SCHOOL

The University of Minnesota Medical School is known as one of the leading centers for medical instruction and training in the United States. Its newly expanded University Hospitals' facilities, as well as affiliation with the Minneapolis Veterans Hospital and other Twin Cities hospitals, provide the Summer Session student of medicine with unusual opportunities for study.

All medical students except members of the present fourth-year class will attend required courses during the first term. These courses are continued from the spring quarter and are not open to registrants from other medical schools.

However, certain other required courses as well as elective courses in both preclinical and clinical departments will be given during both summer terms for medical students at the University of Minnesota, accredited students from other medical schools, and graduate physicians. These courses lead to training programs for physicians, nurses, physical therapists, occupational therapists, medical and X-ray technologists, medical officers of public health, public health nurses, public health engineers, and health educators.

EXTERNSHIPS

The clinical departments of Medicine, Neurology and Psychiatry, Obstetrics, Pediatrics, Radiology, and Surgery will offer elective externships at the University Hospitals and in the Minneapolis Veterans Hospital. These externships are open to sophomore and junior medical students at the University of Minnesota who have completed the required first Summer Session term, and to physicians and qualified medical students from other institutions dur-

ing both terms. For information outlining clinical opportunities write to the department head of the service in which you are interested, University of Minnesota Hospitals, Minneapolis 14.

**REGISTRATION
AND GRADUATE
CREDIT**

Registration of students from other medical schools will be on June 11. Students who wish to earn graduate credit must register through the Graduate School office. (See section on Graduate School.) Final approval of registration in any course in the Medical School must be obtained from the Medical School office. For more detailed information regarding courses, fees, etc., consult the regular *Bulletin of the Summer Session*.

**SCHOOL OF
NURSING**

The basic professional program in the School of Nursing leads to the degree of bachelor of science with a major in professional nursing. For the graduate nurse, the School conducts programs leading to the bachelor of science degree in nursing education and in nursing administration. A four-quarter certificate program in practical nursing begins in the fall quarter. Programs leading to the degree of master of education in nursing education and master of nursing administration in nursing service administration are available for qualified professional nurses.

For qualified graduate nurses, there are courses in ward administration, methods of teaching, personnel work, the survey in nursing education, and nursing service administration. A special course is planned, Improving Nursing Care Through Effective Night Supervision, about which additional information is given under Special Programs in the front of this bulletin.

**NURSING
SCHOOL
FEES**

Students in the School of Nursing working toward the bachelor of science degree in professional nursing and students registered in the practical nursing curriculum will pay the same fees as

charged during the academic year; graduate nurses will register in the College of Education or the School of Nursing and pay the Summer Session fees.

**SCHOOL OF
DENTISTRY**

Clinical instruction in operative dentistry, prosthesis, crown and bridge, oral surgery, pedodontia, periodontia, and oral diagnosis is open to eligible dental students.

**SCHOOL OF
PUBLIC HEALTH**

The School of Public Health program of courses is of special interest to public health nurses. Besides the usual basic courses for those beginning their formal training in this field, suitable electives will be available each term for advanced students. Workshops provide opportunities for those who can devote only a short time to summer study.

A workshop on Rehabilitation Nursing (148 under Public Health) during the week of June 25-July 6 will consider special nursing problems that arise in connection with the rapidly growing field of rehabilitation of the handicapped and crippled. This will be followed during the first two weeks of the second term (July 16-27) by another workshop (175 under Public Health) which will deal with principles of human relations in public health nursing supervision. These workshops are limited in registration. Inquiries should be addressed directly to the School of Public Health.

**BIOLOGICAL
STATION**

The Lake Itasca Forestry and Biological Station which is open during the first term is located in the famous Itasca State Park with its wide variety of natural habitats all within easy reach of the Station's several well-equipped laboratories. A wide selection of undergraduate courses in botany, entomology, and zoology is available. Field courses stress natural history and ecology as well as the taxonomy and identification of organisms.

Graduate and independent research work opportunities are particularly inviting. Arrangements can be made by qualified graduate students and researchers to continue their research through the entire field season. These arrangements must be made well in advance of the opening of the session on June 11.

**TWO INSTITUTES
FOR TEACHERS
OF BIOLOGY**

COLLEGE

An Institute for College Teachers of Biology will be conducted at the Station this summer under the auspices of the National Science Foundation. Members will enroll in one graduate course, carry out an individual research program, and participate in seminars on problems related to the teaching of biology. Ten stipends are available.

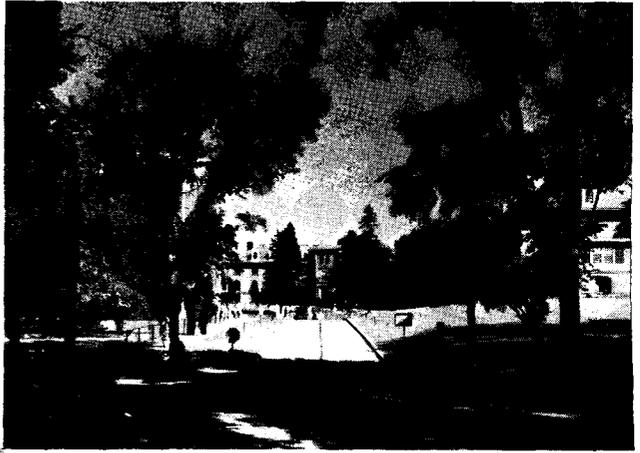
HIGH SCHOOL

Plans are being formulated for an Institute for High School Teachers of Biology to be held at the Station for teachers interested in spending a summer in this field laboratory with other high school biology teachers.

For more detailed information regarding any of these programs write to Dean of Summer Session, 650 Johnston Hall, University of Minnesota, Minneapolis 14.



*Collecting aquatic insects
at the Lake Itasca Station.*



General Information
Master of Arts Degree
Bachelor of Science Program
Studies in Rural Education
Workshop in Advanced Painting
Accounting and Statistics
American Southeast Tour
Audio-Visual Education
Speech and Hearing Clinic
Facilities of Special Interest
Recreation

Duluth Branch

**DULUTH
BRANCH**

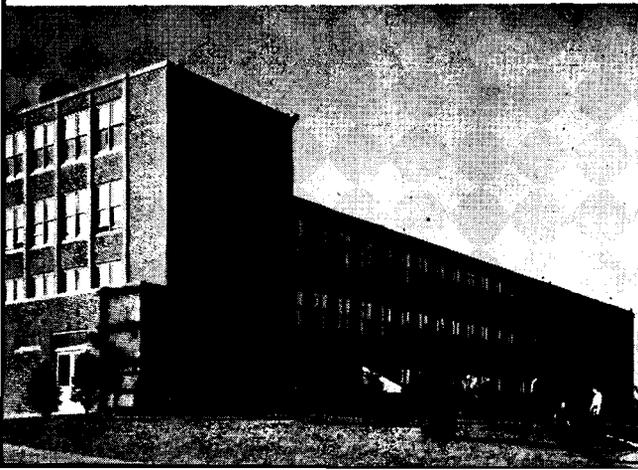
**GENERAL
INFORMATION**

A highly diversified list of courses at both graduate and undergraduate levels is available at the University of Minnesota Duluth Branch. (For course listings, see index)

In a spectacular setting and invigorating climate that assures visual beauty and physical comfort for summer study, the Duluth Branch overlooks majestic Lake Superior, the largest fresh-water body in the world. Lake Superior contributes both an ever-changing panorama of interlake vessel traffic and natural beauty and lake-cooled air to the pleasure and comfort of the Duluth Branch summer student. Duluth's average July temperature is 64.9 degrees. Because of a low pollen count, Duluth attracts large numbers of hayfever sufferers who migrate here in summer for quick relief. Many trout streams tumble through Duluth proper to meet Lake Superior. Spectacular falls, inland lakes, scenic golf courses, deep-sea fishing grounds, bridle paths, and other nearby attractions offer invigorating diversion.

**MASTER OF
ARTS DEGREE**

Under a plan integrated with the Graduate School of the University, it is now possible to complete the master of arts degree on the Duluth Campus with majors in education and in curriculum and instruction. The master of arts program is designed especially to serve elementary school teachers and principals, secondary school teachers, and rural teachers. The master of arts program will be implemented with a wide selection of courses especially for summer students.



The Science building is one of six new facilities on UMD's beautiful 196-acre upper campus overlooking Lake Superior

Clinic and classroom experiences with children are available on the UMD campus in summer.



The master of arts program at Duluth is on the B plan, and involves course work without thesis or language requirement. Oral and written tests and approval of the student's program are administered by committees appointed by the Graduate School. Complete details of Plan B requirements may be found in the current *Bulletin of the Graduate School*.

Students who wish graduate credit must apply for admission to the Graduate School, 316 Johnston Hall, University of Minnesota, Minneapolis 14, at least four weeks in advance of the term they wish to enter. (See section on Graduate School)

BACHELOR OF SCIENCE PROGRAM

Teachers wishing to complete requirements for the bachelor of science degree will find a wide selection of undergraduate courses both in professional education and in fields related to their specific teaching interests. The summer schedule of courses is especially helpful to in-service teachers who cannot pursue bachelor of science studies during the regular year. Bachelor of arts graduates interested in teaching also will find it convenient to take summer courses toward the bachelor of science degree.

STUDIES IN RURAL EDUCATION

Continuing its tradition of offering special work in the field of rural education, UMD will present a group of courses which will be of specific value to rural teachers and administrators. Emphasis will be placed upon the problems of organizing rural

community programs and the development of rural schools in the light of the best current practices. Ample opportunity will be available for students to explore specific problems arising in their own localities and to seek answers with sympathetic fellow students and colleagues. For details: Division of Education and Psychology, University of Minnesota, Duluth Branch, Duluth 5.

**WORKSHOP IN
ADVANCED
PAINTING**

A vital force in contemporary art, Dong Kingman, noted American watercolorist, will be the guest artist for the eighth annual workshop in advanced painting during the second summer term. Kingman thus extends an impressive tradition. His UMD workshop predecessors include Charles Burchfield, the late Yasuo Kuniyoshi, Max Weber, Arnold Blanch, Millard Sheets, Fletcher Martin, and Philip Evergood. Hundreds of American and Canadian art students have enjoyed stimulating instruction in the invigorating atmosphere of UMD's Lakeshore Studio overlooking beautiful Lake Superior. Kingman, who recently returned from a six-month mission in the Far East as a State Department cultural emissary, has taught in many art schools, including Columbia, where he is now teaching. A former Guggenheim foundation fellow, Kingman has watercolors among permanent collections in many private and public museums, including the Metropolitan, the Museum of Modern Art, and the Art Institute of Chicago. For details: Humanities Division, University of Minnesota, Duluth Branch, Duluth 5.

**ACCOUNTING
AND
STATISTICS**

Elementary courses in accounting and statistics have been arranged in an integrated manner over the first and second summer terms in a pattern convenient for students who wish to concentrate in these fields of study.

**AMERICAN
SOUTHEAST
TOUR**

This is the third in the series of tours sponsored by the Social Studies Division. Previous tours were to the Far West and to New England. The 1956 tour will include Washington, D. C., Florida, Cuba, New Orleans, and intermediate points of historical interest. Lectures at universities enroute will enrich the

student's depth of understanding of the history and social organization of the areas included in the tour. For details: Social Studies Division, University of Minnesota, Duluth Branch, Duluth 5.

**AUDIO-VISUAL
EDUCATION**

For increased competence in this area, teachers and audio-visual workers may be interested in two graduate courses—Audio-Visual Materials in Education and Audio-Visual Materials and Equipment Laboratory. In the former course, emphasis will be on characteristics, advantages, limitations, and practical schoolroom use of visual materials both non-projection and projection; the student will receive practice in operation of equipment. In the latter course, designed for the advanced student, motion picture production techniques, photography techniques, three-dimensional materials, sound recordings, slide-making, new visual devices and duplication processes will be included. (The course is being offered to help meet an increasing demand for such study at a number of American colleges and universities.) Enrollment in these courses is limited. Persons interested may write to the Division of Education and Psychology to make a reservation.

**SPEECH AND
HEARING CLINIC**

Opportunity is provided for observation at the fourth annual clinic for children with speech and hearing disorders, held June 18 to August 10. Supervised clinical experience with university credit may also be attained, based upon teaching experience and course background. Those interested in such an experience may obtain details from the clinic director.

RECREATION

The Duluth Campus and the community in which it is located are rich in a variety of cultural and recreational activities which the UMD summer students will find a welcome supplement to their summer program. Thousands of vacationers find Duluth's climate and recreational resources healthful and relaxing. On the UMD special events calendar are numerous stimulating convocations and films, picnics, outings to points of industrial or

scenic interest, boat excursions on Lake Superior, faculty-student sports events and other activities. Boating, fishing, golfing, tennis, picnicking—all are within a few minutes' drive of the campus.

**FACILITIES OF
SPECIAL INTEREST**

UMD's Darling Observatory, located at 910 West Third Street, is one of the Duluth Campus' most popular summer facilities. Once each month the observatory is opened for lectures and observation with the nine-inch refractor.



Darling Observatory and its curator, Frank Halstead, offer one of the most popular attractions on the UMD Summer Session special events calendar.

On UMD's upper campus, new buildings offer exceptional facilities for study, research, and recreation. Recently completed buildings are a \$700,000 library and a \$1,300,000 student service center and dormitory. Completing the upper campus are the health and physical education building with an official inter-collegiate pool; the science group with a 400-seat lecture auditorium; and an Air Force ROTC building. On the lower campus are cafeteria, dormitory, student lounge, administrative offices, and classrooms.



List of Courses

LIST OF COURSES

THE FOLLOWING LIST of courses may be somewhat revised and amplified in the complete bulletin to meet the changing trend in enrollment. The University of Minnesota reserves the right to cancel courses when competent teaching staff is unavailable.

The number of credits given for each course follows the title of the course in parentheses. Courses 1 to 49 carry credit in the Junior College; courses 50 to 99 carry credit in the Senior College; courses 100 to 199 carry Senior College credit and graduate credit for those registered in the Graduate School; courses 200 and above are open only to those registered in the Graduate School.

INSTITUTE OF AGRICULTURE

COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

Agricultural Biochemistry

First Term	203	Research Problems (2-5)	Staff
Second Term	203	Research Problems (2-5)	Staff

Agricultural Economics

First Term	180	Farm Accounting (3)	Engene
	200	General Seminar in Agricultural Economics (3)	Staff
Second Term	201	General Seminar in Agricultural Economics (3)	Staff

Agricultural Education

See courses listed under the College of Education.

Agricultural Engineering

First Term	130	Farm Shop Management (3)	Henderson
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Agronomy and Plant Genetics

First Term	201	Research in Farm Crops (3-9)	Dunham, Schmid
	241	Research in Plant Genetics (3-9)	Myers, Burnham, Rinke, Thomas, Lambert
	244	Laboratory Methods in Plant Breeding (1½)	Staff
Second Term	201	Research in Farm Crops (3-9)	Dunham, Schmid
	241	Research in Plant Genetics (3-9)	Myers, Burnham, Rinke, Thomas, Lambert
	244	Laboratory Methods in Plant Breeding (1½)	Staff

Animal Husbandry

First Term	213	Research in Animal Husbandry (3-5)	Ferrin, Hanson, Harvey, Winters
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Second Term	213	Research in Animal Husbandry (3-5)	Ferrin, Hanson, Harvey, Winters
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Dairy Husbandry

First and Second Terms	208	Research in Dairy Production (ar.)	Petersen, Williams, Clifton, Graham
	209	Research in Dairy Manufacturing (ar.)	Combs, Coulter, Thomas, Morris
	215	Research in Dairy Bacteriology (ar.)	Olson, Jezeski
		Previous graduate study at the University of Minnesota required.	

Entomology and Economic Zoology

First Term **	197	Introduction to Research (2 or more)	Staff
	204	Research in Entomology (3 or more)	Staff
Second Term ††	197	Introduction to Research (2 or more)	Staff
	204	Research in Entomology (3 or more)	Staff

Forestry

Graduate courses will be shown in the complete Summer Session Bulletin. Students interested at this time should write to the School of Forestry.

Second Term	<i>(Offered at Lake Itasca)</i>		
	Open to students registered in forestry in the University, or who have had one year in a junior college or other college and plan to register in forestry.		
	2	Important Forest Plants (2)	Rees
	5	Field Forest Ecology (2)	Hansen
	6	Field Measurements (2)	Brown
	Ent.13	Field Zoology (2)	Krogstad
	Soil.3A	Field Forest Soils (1)	Arncman

Home Economics

First Term	F.L.15	The Home and Its Furnishings (3)	Myren
	27	Related Art Problems (3)	Esteros
	34	Nutrition Problems (4)	Peterson
	49	Household Equipment (3)	Stulberg
	53	Advanced Clothing (3)	Ar.
	71	Demonstrations (1)	Trammell
	86	Home Management Laboratory (4)	Jeary, Stephens
	115	Economic and Social Aspects of Clothing (3)	Ar.
	119	Cultural Resources of the Twin Cities (2-3)	Esteros
	139	Advances in the Management and Preparation of Food (3)	Trammell
	180	Home Planning and Furnishing (5)	Myren
	184	Home Management Principles (3)	Jeary
	185	Family Relationships (3)	Gallagher
	295	Home Economics Problems (1-5)	Leichsenring, Noble, Esteros
Second Term	86	Home Management Laboratory (4)	Segolson
	295	Home Economics Problems (1-5)	Pilcher

** For entomology and economic zoology courses given at Lake Itasca Biological Station, see index.

†† See Forestry for other course offerings.

Home Economics Education

See courses listed under College of Education.

Horticulture

First Term	190-191-192	Special Problems in Horticulture (2-4)	Staff
	247	Report on Special Horticultural Topics (9 or less)	Staff
	249	Research in Horticultural Crop Breeding (9 or less)	Currence, Krantz, Hutchins, Wilcox
Second Term	190-191-192	Special Problems in Horticulture (2-4)	Staff
	247	Report on Special Horticultural Topics (9 or less)	Staff
	249	Research in Horticultural Crop Breeding (9 or less)	Currence, Krantz, Hutchins, Wilcox

Plant Pathology and Botany **

First and Second Terms	206	Research in Plant Pathology (ar.)	J. J. Christensen, Eide, Hart, C. M. Christensen, Dossdall, Kernkamp, King, DeVay, French, Kommedahl
	210	Special Problems in Mycology (ar.)	J. J. Christensen, C. M. Christensen, Dossdall
	257	Research Problems in Applied Plant Physiology (ar.)	Landon, DeVay
	263	Research Problems in Agricultural Botany (ar.)	J. J. Christensen, Kommedahl

Poultry Husbandry

First and Second Terms	214	Research in Poultry Husbandry (ar.)	Johnson and staff
	215	Research in Poultry Nutrition (ar.)	Johnson
	216	Research in Poultry Breeding (ar.)	Shoffner
	218	Research in Poultry Products (ar.)	Swanson

Rhetoric

First Term	22	Public Speaking (3)	Nichols
	47	Efficient Reading (4 sec.) (3)	Mondale, Wright
	51	Exposition (3)	Nichols
Second Term	22	Public Speaking (3)	Drake
	47	Efficient Reading (4 sec.) (3)	Seymour, Wright

Soils

First and Second Terms	202 ††	Research Problems in Soils (2-5)	Martin, Burson, Caldwell, MacGregor, Schmidt, Arneman, Blake
	Second Term †† 3A	Field Forest Soils (1)	Arneman

** For plant pathology and botany courses given at Lake Itasca Biological Station, see index.

†† Offered only at Lake Itasca.

‡‡ Before registering, students must have approval of instructor in charge.

SCHOOL OF VETERINARY MEDICINE

First and Second Terms	128§§	Problems in Veterinary Bacteriology and Public Health (ar.).....	Pomeroy and staff
	130††	Problems in Animal Physiology (ar.).....	Sellers
	157‡‡	Veterinary Post-mortem Pathology (ar.).....	Sautter, Kernkamp
	158‡‡	Veterinary Surgical Pathology (ar.).....	Sautter, Kernkamp
	191**	Special Studies in Veterinary Anatomy (ar.).....	Kitchell, Weber
	201‡‡	Advanced Animal and Poultry Pathology (ar.).....	Sautter, Fenstermacher, and staff
	205§§	Advanced Veterinary Bacteriology (ar.).....	Pomeroy, Fenstermacher, and staff
	210†††	Advanced Veterinary Surgery and Radiology (ar.).....	Spurrell
	220†††	Advanced Veterinary Surgery (ar.).....	Arnold

BIOLOGICAL STATION

First Term

Botany

112	Aquatic Flowering Plants (4).....	Ogden
116	Summer Flora of Minnesota (4).....	Ogden
135	Ecology of the Itasca Region (4).....	Bray
138	Analysis of Vegetation (4).....	Bray
155	Fresh-water Algae (4).....	Norris
196	Problems (1-5).....	Staff
208	Research Problems in Taxonomy (1-5).....	Ogden
224	Research Problems in Ecology (1-5).....	Bray
236	Research Problems in Cryptogams (1-5).....	Norris

Entomology and Economic Zoology

59	Field Entomology (4).....	Peterson
124	Biology of Immature Insects (4).....	Peterson
162	Ecology of Terrestrial Vertebrates (4).....	Marshall
196	Special Problems in Entomology and Economic Zoology (ar.).....	Marshall, Peterson

Plant Pathology and Botany

56	Introduction to the Study of Fungi (4).....	C. M. Christensen
156	Advanced Study of Fungi (4).....	C. M. Christensen
210	Special Problems in Mycology (ar.).....	C. M. Christensen

Zoology

55	Natural History of Invertebrates and Fishes (4).....	Eddy
115	Advanced Natural History of Invertebrates and Fishes (4).....	Eddy

** Veterinary Anatomy.

†† Veterinary Physiology and Pharmacology.

‡‡ Veterinary Pathology and Parasitology.

§§ Veterinary Bacteriology and Public Health.

††† Veterinary Surgery and Radiology.

119	Limnology (4)	Eddy
135	Advanced Ornithology (4)	Emlen
197	Problems in Ornithology, Ecology, and Limnology (ar.)	Eddy, Emlen

SCHOOL OF BUSINESS ADMINISTRATION (including ECONOMICS)

First Term	Econ.3	Elements of Money and Banking (3)	Ar.
	Econ.5	Elements of Statistics (3)	Neter
	Econ.6	Principles of Economics (3)	Scott, Coen
	Econ.24	Principles of Accounting (3)	Nightingale
	Econ.26	Principles of Accounting (3)	Nelson
	Econ.50	Insurance Principles (3)	Williams
	B.A.51	Business Law: Contracts (3)	Wright
	B.A.54	Elementary Accounting (combined course) (4)	Lund
	B.A.58	Elements of Public Finance (3)	Borak
	B.A.66	Managerial Costs (3)	Meyers
	B.A.71	Transportation: Services and Charges I (3)	Nightingale
	Econ.73	Manpower Economics and Labor Problems (3)	Ar.
	B.A.74	Business Statistics A (3)	Neter
	Econ.75	Corporation Finance (3)	Borak
	Econ.81	Intermediate Economic Analysis: Firms and Households (3)	Chipman
	B.A.89	Production Management (3)	Wickesberg
	Econ.107	Insurable Risks and Insurance (3)	Williams
	B.A.112	Time Series Analysis and Quality Control (3)	Neter
	B.A.114	Retail Store Management (3)	Werner
	B.A.116	Property and Liability Insurance I (3)	Williams
	Econ.124	Theory of Employment, National Income, and Price Level I (3)	Chipman
	B.A.130	Managerial Cost Accounting (3)	Meyers
	Econ.144	Economic Analysis: Firms and Households (3)	Chipman
	Econ.149	Business Cycles (3)	Scott
	B.A.150	Intermediate Accounting I (3)	Lund
	B.A.152	Cost Accounting (3)	Meyers
	Econ.155	The Modern Corporation (3)	Borak
	B.A.159	Advanced Accounting (3)	Nelson
	B.A.160	Readings in Business Administration (ar.)	Staff
	Econ.160	Readings in Economics (ar.)	Staff
	Econ.161	General Manpower Economics and Labor Problems (3)	Ar.
	Econ.163	Union Government and Policies (3)	Troxezz
	Econ.165	Current Trends in Industrial Relations (1)	Staff
Econ.169	Labor Legislation: Economic Security (3)	Troxezz	
Econ.172	Economics of Transportation (3)	Nightingale	
Econ.176	Introduction to International Economics (3)	Coen	
B.A.184	Scientific Management in Industry (3)	Wickesberg	
B.A.187	Administration of Production (3)	Wickesberg	
Econ.189	Principles of Public Finance (3)	Borak	
Econ.251	Seminar in Industrial Relations (3)	Yoder	
B.A.299	Graduate Research in Business Administration (ar.)	Staff	
Econ.299	Graduate Research in Economics (ar.)	Staff	
Second Term	Econ.7	Principles of Economics (3)	Ar.
	Econ.25	Principles of Accounting (3)	Reighard and ar.
	B.A.55	Elementary Accounting (combined course) (4)	Eaton

Econ.64	Economics of Money and Banking (3)	Smith
B.A.65	Analysis of Financial Statements (3)	Reighard
Econ.73	Manpower Economics and Labor Problems (3)	Mahoney
B.A.77	Survey in Marketing (3)	Lewis
Econ.80	Intermediate Economic Analysis: Income and Employment (3)	Ar.
Econ.85	Government Regulation of Business (3)	Buttrick
Econ.103	Advanced Price Theory (3)	Boddy
B.A.113	Sales Management (3)	Lewis
Econ.125	Theory of Employment, National Income and Price Level II (3)	Buttrick
Econ.129	Current Economic Issues (3)	Smith
B.A.139	Corporate Statements (3)	Reighard
Econ.142	Monetary and Banking Policy (3)	Smith
Econ.143	Economic Analysis: Income and Employment (3)	Ar.
B.A.146	Investments (3)	Matthews
B.A.151	Intermediate Accounting II (3)	Matthews
B.A.153	Cost Accounting (3)	Eaton
B.A.156	Finance Management (3)	Ar.
B.A.160	Readings in Business Administration (ar.)	Staff
Econ.160	Readings in Economics (ar.)	Staff
Econ.161	General Manpower Economics and Labor Problems (3)	Ar.
B.A.167	Introduction to Industrial Relations (3)	Seltzer
B.A.168	Advanced Personnel Administration (3)	Heneman
Econ.175	Government Regulation of Market Behavior (3)	Buttrick
B.A.180D	Senior Topics: Industrial Relations (3)	Seltzer
Econ.185	Economics of Marketing (3)	Lewis
B.A.299	Graduate Research in Business Administration (ar.)	Staff
Econ.299	Graduate Research in Economics (ar.)	Staff

INSTITUTE OF CHILD WELFARE

First Term	80	Child Psychology (3)	Ar.
	130	Motor, Linguistic, and Intellectual Development of the Child (3)	Ar.
	140	Behavior Problems (3)	Cummings
	150	Childhood Education (3)	Helgerson
	170	Parent Education (3)	Cummings
	270	Readings and Research in Child Development (3)	Staff

See also Ed.C.I. 162 and 163, listed under Curriculum and Instruction, and Ed.T. 77 and 78, under Methods and Student Teaching, College of Education.

Second Term	131	Personality, Emotional and Social Development of the Child (3)	Templin
	132	Later Childhood and Adolescence (3)	Bassham
	140	Behavior Problems (3)	Bassham
	142	Psychology of Atypical Children (3)	Templin
	270	Readings and Research in Child Development (3)	Staff

For information regarding the Workshop in School Psychology see Special Programs.

SCHOOL OF DENTISTRY

See index.

COLLEGE OF EDUCATION

Agricultural Education

First Term	82	Teaching Agriculture in the Secondary School (4)	Kitts
	124	Teaching Units in Livestock Breeding (3)	Swanson
	154	Rural Education and Community Leadership (3)	Swanson
	171	Teaching Procedures in Agriculture (3)	Granger
	221	Field Problems (3)	Peterson, Kitts, Swanson
	232	Research in Agricultural Education (3-9)	Peterson, Kitts, Swanson
Second Term	91	Supervised Teaching Experience (6)	Kitts, Swanson
	221	Field Problems (3)	Peterson, Kitts, Swanson
	232	Research in Agricultural Education (3-9)	Peterson, Kitts, Swanson

Art Education

First Term	17	Pictorial Expression for Elementary Education (3)	Bratlee
	18	Design Activities for Elementary Education (3)	Hastie
	19	Functional Arts and Crafts in Elementary Education (3)	Bratlee
	158	Art Education in Europe (3)	Gayne
	184	Improving Art Programs in the Elementary School (3)	Gayne
	189	Application of Aesthetic Theory in Education (3)	Hastie
	295	Problems in Art Education (ar.)	Gayne, Hastie
	296	Seminar in Art Education (1)	Staff
Second Term	17	Pictorial Expression for Elementary Education (3)	Wold
	18	Design Activities for Elementary Education (3)	Wold
	184	Improving Art Programs in the Elementary School (3)	Gayne
	295	Problems in Art Education (ar.)	Gayne
	296	Seminar in Art Education (1)	Staff

See also Department of Art, College of Science, Literature, and the Arts.

Educational Administration

First Term	General Courses		
	117	Schools in Rural Areas (3)	Archer
	124	Public School Administration (3)	Wakefield
	210	Financial Aspects of Public School Business Administration (3)	Prentis
	225	Pupil Personnel Administration (3)	Lane
	226	School Plant Planning and Management (3)	Prentis
	227	Teacher and Employee Administration (3)	Lane
	228	Special Problems in Educational Administration (1-3)	Lane, Prentis, Wakefield
	230	Public Relations for Schools (3)	Wakefield
	236	Field Study in Educational Administration (0-10)	Domian

Elementary Education

115	Administration of the Elementary School (3)	Curtin
118	The Community School (3)	Archer

Secondary Education

167	The Junior High School (3)	Cramer
218	Recent Literature in Secondary Education (ar.)	R. Keller, Mitchell

264	Administration of Instructional Activities in the Secondary School (3).....	Ar.
265	Administration of the Noninstructional Activities in the Secondary School (3).....	Mitchell
270	Special Problems in Secondary Education (ar.).....	Bossing, R. Keller, Mitchell

Higher Education

274	The Junior College (3).....	R. Keller
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Second Term General Courses

124	Public School Administration (3).....	Wakefield
210	Financial Aspects of Public School Business Administration (3).....	Prentis
225	Pupil Personnel Administration (3).....	Lane
226	School Plant Planning and Management (3).....	Prentis
227	Teacher and Employee Administration (3).....	Lane
228	Special Problems in Educational Administration (1-3).....	Lane, Prentis, Wakefield
230	Public Relations for Schools (3).....	Wakefield
236	Field Study in Educational Administration (0-10).....	Domian

Elementary Education

115	Administration of the Elementary School (3).....	Curtin
200	Seminar in Elementary School Administration (3).....	Archer, Goossen, Curtin, Ruddled

Secondary Education

218	Recent Literature in Secondary Education (ar.).....	R. Keller, Mitchell
263	Organization of the Secondary School (3).....	Abel
264	Administration of Instructional Activities in the Secondary School (3).....	Mitchell
270	Special Problems in Secondary Education (ar.).....	Bossing, R. Keller, Mitchell

Curriculum and Instruction

First Term General Courses

101	Driver Education (June 18-29) (2).....	Neal and ar.
105	Audio-Visual Materials in Education (3).....	Pearson
106	Co-ordinating an Audio-Visual Education Program (3).....	Pearson
145	Reading Difficulties (3).....	Bond
151	Diagnosis and Treatment of Learning Difficulties (3).....	Clymer
171	Curriculum Laboratory Practice (3).....	Bossing
174-175-176	Clinical Methods and Practice in Speech Pathology (3 each).....	Bryngelson
178	Educational and Social Implications of Visual Impairment (3).....	Abel and ar.
179	Principles and Methods of Teaching Braille (Sec. 1, for beginners; Sec. 2, for those with working knowledge of the Braille system) (3).....	Kenmore, Petrucci
180	Workshop: Educational Procedures and School Curriculum Adaptation with Blind Children (3).....	Abel and ar.
205	Problems in Audio-Visual Education (ar.).....	Pearson

227	Problems in Rural Education (ar.).....	Archer
243	Recent Research in Reading (3).....	Bond, Clymer
271	Problems in Curriculum Construction (ar.).....	Archer, Bossing, Boeck, Goossen, D. Johnson, Curtin, Ruddell
273	Problems in Reading (ar.).....	Bond, Clymer

Elementary Education

60	The Teaching of Reading in the Elementary School (3).....	Odland
61	The Teaching of the Social Studies in the Elementary School (3).....	Schwab
62B	The Teaching of Arithmetic in the Intermediate Grades (3).....	Ruddell
102	Teaching the Social Studies in the Elementary School (3).....	Schwab
103	Teaching of Science in the Elementary School (3).....	Boeck
119	Elementary School Curriculum (2 sec.) (3).....	Jarolinck
121	Selecting Literature for the Elementary School (3).....	D. V. Smith
123	Speech in the Elementary School (3).....	Henrikson
143	Teaching and Supervision of Reading in the Elementary School (3).....	Odland
149	Teaching and Supervision of Arithmetic in the Elementary School (3).....	Ruddell
150	Supervision and Improvement of Instruction (2 sec.) (3).....	Goossen
153	Supervision and Teaching of English in the Elementary School (3).....	Chase
162	Laboratory in Nursery School and Kindergarten Instructional Practices (3).....	Headley
163	Plastic Materials, Story Telling, and Social Studies for Young Children (3).....	Headley
186	Laboratory in Elementary Instructional Practices (2).....	Jensen
240	Improvement of Instruction in the Elementary School (4).....	Curtin, Cramer
261	Special Problems in the Improvement of Instruction (ar.).....	Goossen, Curtin, Ruddell

Secondary Education

113	High School Curriculum (3).....	Bossing
114	Development of the Core Curriculum (3).....	Bossing
125	Occupational Information Laboratory (3).....	White
131	Advanced Course in Teaching the Technical Business Subjects (3).....	Price
135	Group Procedures in Guidance (3).....	Borow
137A	Materials and Methods in Co-operative Part-Time Classes (3).....	Meyer
139	Co-ordination Techniques (3).....	Meyer
140	Teaching of Speech (3).....	D. K. Smith
144	Teaching of Reading in Secondary Schools (3).....	Chase
147	Workshop in Teaching Display (June 18-29) (2).....	E. Nelson
155	Materials Laboratory for Social Studies Teachers (3).....	McCune
156	Trends in Business Education (3).....	Price
158	Materials and Methods in Office and Clerical Practice (3).....	Ar.
187A	The Teaching of the Analysis of the French Language (2).....	Falk

187B	The Teaching of the Analysis of the German Language (2)	Menze
187C	The Teaching of the Analysis of the Latin Language (3)	Bock
192	Mathematics Laboratory (3)	D. Johnson
199E	Internship (ar.)	Fitzgerald
201	Problems in Teaching the Social Studies (ar.)	McCune
225	Special Problems in Supervision of Instruction in Secondary Schools (ar.)	R. Keller
238	Problems in Distributive Education (ar.)	Meyer
239	Problems in Business Education (ar.)	Price
266	Supervision of High School Instruction (3)	Ar.
287	Advanced Course in the Teaching of Science (3)	Boeck
294	Advanced Course in Curriculum and Methods in Secondary School English (3)	D. V. Smith
296	Special Problems in Teaching English (ar.)	D. V. Smith

Higher Education

228	Workshop: Problems of Higher Education and Teacher Education (June 11-July 6) (6)	Cooper, Eckert, Corcoran, McKeefery, and consultants
250	Higher Education in the United States (3)	Eckert
252	Effective College Teaching (3)	McCune

Second Term *General Courses*

101	Driver Education (July 30-August 10) (2)	Neal and ar.
105	Audio-Visual Materials in Education (3)	Pearson
109	Audio-Visual Materials and Equipment Laboratory (3)	Pearson
133	Consumer Education in the Schools (3)	Price
145	Reading Difficulties (3)	Tinker
171	Curriculum Laboratory Practice (3)	Bossing
174-175-176	Clinical Methods and Practice in Speech Pathology (3 each)	Bryngelson
205	Problems in Audio-Visual Education (ar.)	Pearson
227	Problems in Rural Education (ar.)	Archer
271	Problems in Curriculum Construction (ar.)	Archer, Bossing, Boeck, Goossen, D. Johnson, Curtin, Ruddell
273	Problems in Reading (ar.)	Tinker, Reynolds, Clymer

Elementary Education

102	Teaching the Social Studies in the Elementary School (3)	Jarolimek
103	Teaching of Science in the Elementary School (3)	Boeck
119	Elementary School Curriculum (3)	Jarolimek
121	Selecting Literature for the Elementary School (3)	Odland
143	Teaching and Supervision of Reading in the Elementary School (3)	Clymer
146	Current Developments in Language Expression in the Elementary School (3)	Archer
149	Teaching and Supervision of Arithmetic in the Elementary School (3)	Ruddell
150	Supervision and Improvement of Instruction (3)	Goossen
261	Special Problems in the Improvement of Instruction (ar.)	Goossen, Curtin, Ruddell

Secondary Education

113	High School Curriculum (3)	Bossing
122	Literature for Adolescents (3)	Kegler
125	Occupational Information Laboratory (3)	White
135	Group Procedures in Guidance (3)	Borow
136	Organization and Administration of Distributive Education (3)	Meyer
141	Co-operative Part-Time Work Experience Programs (3)	Meyer
144	Teaching of Reading in Secondary Schools (3)	Tinker
161	Curriculum Construction in Business Education (3)	Price
168	Current Developments in the Social Studies (3)	McCune
170B	Curriculum and Course of Study Construction (3)	Bossing
199E	Internship (ar.)	Fitzgerald
201	Problems in Teaching the Social Studies (ar.)	McCune
225	Special Problems in Supervision of Instruction in Secondary Schools (ar.)	R. Keller
238	Problems in Distributive Education (ar.)	Meyer
239	Problems in Business Education (ar.)	Price
266	Supervision of High School Instruction (3)	Abel

Higher Education

228	Workshop: Problems of Higher Education and Teacher Education (July 23-August 17) (6)	Grim, Boeck, Mork, Allen, and consultants
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EDUCATIONAL PSYCHOLOGY

First Term

General Courses

60	Introduction to Measurement and Statistics (3)	Collier
110	Measurement in the Classroom (3)	D. Johnson
116	Introduction to Statistical Methods in Education (3)	Collier
116a	Introduction to Statistical Methods in Education—Laboratory (2)	MacEachern
125	Group Dynamics in Education (3)	Flanders
140	Instruments and Techniques of Measurement (3)	Edson
150	Clinical Practice in Remedial Teaching (3)	Reynolds, Clymer
151	Clinical Practice in Educational Diagnosis (3)	Reynolds, Balow
159	Personality Development and Mental Hygiene (3)	Swan
184	Education of the Slow-Learning Child (3)	Reynolds
193	Psychology of Human Learning (3)	Mork
208	Methods in Educational Research (3)	P. O. Johnson
216	Statistical Methods in Education (3)	P. O. Johnson
216a	Statistical Methods in Education—Laboratory (2)	MacEachern
233	Problems in Guidance and Personnel Work (ar.)	Dugan, Borow, Edson
253	Research Problems (ar.)	Dugan, P. O. Johnson, Edson, Flanders, Mork, Reynolds
290	Individual Differences (3)	Flanders
293	Psychology of Learning (3)	Mork

Secondary Education

133	Basic Procedures in Student Personnel Work (2 sec.) (3)	Borow, White
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134	School Counseling Procedures (3).....	Dugan
282	Practice in High School Personnel Work (3).....	Swan

Second Term General Courses

110	Measurement in the Classroom (2 sec.) (3).....	D. Johnson
116	Introduction to Statistical Methods in Education (3).....	Stecklein
116a	Introduction to Statistical Methods in Education—Laboratory (2)	MacEachern
117	Basic Principles of Measurement (3).....	Collier
150	Clinical Practice in Remedial Teaching (3).....	Reynolds, Clyner
151	Clinical Practice in Educational Diagnosis (3).....	Reynolds, Balow
152	Introduction to School Psychological Services (3).....	Gray
153	Seminar and Laboratory in School Psychological Services (3)	Gray
159	Personality Development and Mental Hygiene (3).....	Jones
182	Education of Exceptional Children (3).....	Reynolds
193	Psychology of Human Learning (3).....	Mork
217	Statistical Methods in Education (3).....	Collier
217a	Statistical Methods in Education—Laboratory (2).....	MacEachern
233	Problems in Guidance and Personnel Work (ar.).....	Dugan, Borow
253	Research Problems (ar.)	Dugan, Mork, Reynolds

Secondary Education

133	Basic Procedures in Student Personnel Work (3).....	White
134	School Counseling Procedures (3).....	Dugan

General Education

First Term	Ed.75A	Introduction to Elementary School Teaching (5).....	Balow
Second Term	Ed.75B	Introduction to Elementary School Teaching (5).....	Balow

History and Philosophy of Education

First Term	110	Intercultural Education (3).....	Kosaki
	141	Critical Issues in Contemporary Education (3).....	Clopton
	156	History of Ideas in American Education (3).....	Clopton
	180	The School and Society (2 sec.) (3).....	Dupuis
	241	Problems in the History and Philosophy of Education (ar.)	Clopton, Dupuis
Second Term	131	Comparative Education (3).....	Beck
	180	The School and Society (2 sec.) (3).....	Beck, Atherton
	241	Problems in the History and Philosophy of Education (ar.).....	Beck

Home Economics Education

First Term	191	Advanced Course in the Teaching of Home Economics (3).....	Ar.
	193A	Home Economics Curriculum (Secondary Level) (3).....	Ar.
	243	Trends in Home Economics (3).....	Rose
	293	Problems in Home Economics Education (1-9).....	Rose
Second Term	192	Evaluation in Home Economics (3).....	Ford
	293	Problems in Home Economics Education (1-9).....	Ford

Industrial Education

First Term	101	Tests in Industrial Subjects (3).....	Kavanaugh
	106	Industrial Education Workshop—Industrial Arts in the Junior High School (3-6).....	H. Nelson, Kavanaugh
	107	Co-ordination (3).....	Widdowson
	109	Conference Leading for Industry (3).....	Widdowson
	200	Research Problems (3-6-9).....	Micheels, H. Nelson, Kavanaugh
Second Term	251	Research in Industrial Education (3).....	Micheels
	103	Instructional Aids (3).....	Kavanaugh
	110	Vocational Guidance (3).....	H. Nelson
	200	Research Problems (3-6-9).....	H. Nelson, Kavanaugh

Methods and Student Teaching

First Term	Nursing Education			
	Ed.T.51A	The Teaching of Nursing (2).....	Norris, Dunning	
	Elementary Education			
	Ed.T.77	Student Teaching in the Nursery School (3).....	Helgerson	
	Ed.T.78	Student Teaching in the Kindergarten (3).....	Helgerson	
	Secondary Education			
	Ed.T.52	Student Teaching (ar.).....	Grim	
	Ed.T.84A-B-C	Practice and Field Work in Recreation Leadership (2).....	Fitzgerald	
	Ed.T.85A-B-C	Practice and Field Work in Recreation (1 or 2).....	Fitzgerald	
	Second Term	Nursing Education		
		Ed.T.51A	The Teaching of Nursing (2).....	Norris, Dunning
		Secondary Education		
Ed.T.84A-B-C		Practice and Field Work in Recreation Leadership (2).....	Fitzgerald	
Ed.T.85A-B-C		Practice and Field Work in Recreation (1 or 2).....	Fitzgerald	

Music Education

First Term	51	Teaching of Music (3).....	C. Nelson	
	52	Teaching of Music (3).....	C. Nelson	
	60-61-62	Supervision and Teaching of Music (3).....	Ivory	
	104	Advanced Topics in Vocal Music Education (3).....	Caswell	
	105	Advanced Topics in Instrumental Music Education (3).....	Ivory	
	160	Organization and Supervision of Vocal-Instrumental Music in Secondary Schools (3).....	Ivory, Caswell	
	224	Research Problems (3-9).....	Ivory, Caswell	
	225E	Advanced Applied Music (2-4).....	Ar.	
	Second Term	51	Teaching of Music (3).....	Caswell
		52	Teaching of Music (3).....	Ivory
170		Recent Research and Literature (3).....	Ivory, Caswell	
224		Research Problems (3-9).....	Ivory, Caswell	
225E		Advanced Applied Music (2-4).....	Ar.	

See also Department of Music, College of Science, Literature, and the Arts.

Physical Education for Men

First Term	1A	Beginning Golf (1).....	Bolstad
	1B	Intermediate Golf (1).....	Bolstad
	1C	Beginning Swimming (1).....	Piper
	5A	Touch Football, Calisthenics, Tactics (1).....	Shawbold
	5B	Gymnastics (1).....	Shawbold
	5C	Stunts, Contests, Softball, Baseball (1).....	Shawbold
	9A	Fundamental Rhythms, Folk Dance (1).....	Piper
	9B	Square and Ballroom Dance (1).....	Piper
	50	Human Anatomy (3).....	Osell
	73-74-75	Directed Teaching (2).....	Piper
	101	Principles of Physical Education (3).....	Keller
	135	Tests and Measurements in Physical Education (3).....	Keller
	224	Research Problems in School Health Education, Physical Education and Recreation (ar.).....	Graduate Staff
	233	The Administration of Physical Education in Schools (3).....	Donnelly
	236	Recent Literature and Research in Physical Education and Recreation (3).....	Donnelly
	241	Administration of Public Recreation (3).....	Fitzgerald
	Second Term	2A	Intermediate Golf (1).....
2B		Intermediate Swimming (1).....	Piper
8		Tennis and Golf (1).....	Piper
65		Adapted Physical Education (3).....	Osell
67		Football Coaching (2).....	Warmath and staff
73-74-75		Directed Teaching (2).....	Piper
110		Recreation Surveys (3).....	Fitzgerald
155		Instructional Aids in Health, Physical Education and Recreation (3).....	Piper
224		Research Problems in Health Education, Physical Education and Recreation (ar.).....	Graduate staff
234		The Curriculum in Physical Education (3).....	Donnelly
261A	Seminar in Contemporary Problems in Physical Education (3).....	Donnelly	

Physical Education for Women

First Term	7	Tennis for Beginners (1).....	Ar.
	8	Golf for Beginners (1).....	Ar.
	10	A Teachers' Course in Fundamentals of Physical Education (1).....	Jaeger
	18	Elementary Folk Dancing, Games and Methods (2).....	Lampe
	32	Elementary Swimming (1).....	Ar.
	37	Individual and Dual Sports and Methods (2).....	Jaeger
	81	Posture Education and Functional Exercise (2).....	Wilson
	84	Physical Education Program in Elementary and Secondary Schools (3).....	Jaeger
	118E	Problems in Teacher Education in Health, Physical Education, and Recreation (ar.).....	Graduate staff
	124	Supervision of Physical Education (3).....	Baker
	130	Contributions of Basic Sciences to Physical Education (3).....	Wilson
	224	Research Problems in Health Education, Physical Education, and Recreation (ar.).....	Graduate staff
Second Term	117	Advanced Course in School Health Instruction (3).....	Slocum
	118E	Problems in Teacher Education in Health, Physical Education, and Recreation (ar.).....	Graduate staff
	224	Research Problems in Health Education, Physical Education, and Recreation (ar.).....	Graduate staff

GENERAL COLLEGE

First Term	8A	Applied Mathematics (3)	Rassweiler
	10A	Human Biology: Fundamental Similarities in the Living World (3)	Dearden
	23A	Art Laboratory (3)	Safer
	30A	Invitation to Literature: Western World I (3)	Kivits
	31A	Writing Laboratory: Personal Writing (3)	Draxten
	37	Social Trends and Problems (3)	Stovall
	40B	The Logic of Straight Thinking (3)	McCoy
Second Term	43A	Background of the Modern World (3)	Stovall
	5	Home Life: Marriage and Family Living (3)	Anderson
	10B	Human Biology: How the Living Machinery in Man Works (3)	Dearden
	19A	Problems of Business Transactions (3)	Rassweiler
	31B	Writing Laboratory: Organizing Ideas (3)	Stockdale
	32A	Oral Communication: Basic Principles (3)	Olson
	44B	Current History (3)	F. J. Harris

LAW SCHOOL

First and	Income Taxation (3)	Visiting Professor
Second Terms	Estate and Gift Taxation (3)	Visiting Professor
(combined)	Insurance (3)	McClure
	Family Law (3)	Paulsen
	Conflicts (3)	Paulsen
	Creditors' Remedies (6)	Sovern

COLLEGE OF MEDICAL SCIENCES

MEDICAL SCHOOL

Anatomy

First Term	104	Human Histology (4)	Williams
	111	Human Neurology (6)	Campbell
	156	Advanced Anatomy (ar.)	Graduate staff
	204	Research in Anatomy (ar.)	Graduate staff
Second Term	156	Advanced Anatomy (ar.)	Graduate staff
	204	Research in Anatomy (ar.)	Graduate staff

Anesthesiology

First and	265	General Anesthesia (12)	Van Bergen
Second Terms	266	Regional Anesthesia (4)	Van Bergen
(combined)	267	Pre- and Postoperative Evaluation (2)	Van Bergen
	268	Seminar in Anesthesia (2)	Van Bergen
	269	Research in Anesthesia (ar.)	Van Bergen

Bacteriology and Immunology

First Term	53	General Bacteriology (5)	Johansson
	114	Medical Mycology (3)	Roth
	201	Research (ar.)	Syvertson

Second Term	116	Immunology (4)	Watson
	201	Research (ar.)	Watson

Medicine

First Term	102	Clinical Laboratory Medicine (5)	Evans and staff
	104	Introduction to Internal Medicine (6)	Spink and ar.
	111	Junior Medicine Clerkship (6)	Spink, Tobian
	123	Dermatology and Syphilology (3)	Fisher
	140	Externship in Medicine (3)	Spink
	157	Ward Clinics in Dermatology (ar.)	Fisher
	158	Clinics in Dermatology (ar.)	Fisher
	165	Seminar in Dermatology (ar.)	Fisher
	201	Clinical Medicine (ar.)	Spink, Tobian
	202	Diseases of the Cardiovascular Apparatus (ar.)	Tobian
	203	Research in Medicine (ar.)	Spink, Evans, Schwartz, Tobian
	206	Clinical Conference (1)	Spink, Tobian
	207	Clinical Pathological Conference (1)	Tobian
	226	Clinical Dermatology and Syphilology (ar.)	Fisher
	Second Term	111	Junior Medicine Clerkship (6)
157		Ward Clinics in Dermatology (ar.)	Fisher
158		Clinics in Dermatology (ar.)	Fisher
165		Seminar in Dermatology (ar.)	Fisher
201		Clinical Medicine (ar.)	Hoffbauer
203		Research in Medicine (ar.)	Hoffbauer, Schwartz
206		Clinical Conference (1)	Hoffbauer
207		Clinical Pathological Conference (1)	Hoffbauer
208		Clinical Radiological Conference (1)	Hoffbauer
226		Clinical Dermatology and Syphilology (ar.)	Fisher

Obstetrics and Gynecology

First Term	201	Advanced Obstetrics and Gynecology, Part I (ar.)	McKelvey, Janda, Kaiser, Prem, and staff
	205	Advanced Obstetrics and Gynecology, Part II (ar.)	McKelvey, Janda, Kaiser, Prem, and staff
	209	Advanced Obstetrics and Gynecology, Part III (ar.)	McKelvey, Janda, Kaiser, Prem, and staff
	216	Research (ar.)	McKelvey, Janda, Kaiser, Prem, and staff
	301	Externship (6)	McKelvey, Janda, Kaiser, Prem, and staff
Second Term	204	Advanced Obstetrics and Gynecology, Part I (ar.)	Janda, Kaiser, Prem, and staff
	208	Advanced Obstetrics and Gynecology, Part II (ar.)	Janda, Kaiser, Prem, and staff
	212	Advanced Obstetrics and Gynecology, Part III (ar.)	Janda, Kaiser, Prem, and staff
	219	Research (ar.)	Janda, Kaiser, Prem, and staff
	302	Externship (6)	Janda, Kaiser, Prem, and staff

Otolaryngology

First and	230	Clinical Otolaryngology (3)	Boies and staff
Second Terms	231	Clinical Rhinology and Laryngology (3)	Boies and staff
	232	Surgery of the Ear, Nose, and Throat (3)	Boies and staff

Pathology

First Term	104	Autopsies (ar.)	Dawson, McCartney
	106	Diseases of the Heart (2½)	McCartney
	111	Conference on Autopsies (1)	Dawson
	112	Diagnosis of Tumors (2½)	McCartney
	113	Surgical Pathology (ar.)	McCartney
	201	Research (ar.)	Dawson, McCartney
Second Term	104	Autopsies (ar.)	Dawson, Hebbel
	111	Conference on Autopsies (1)	Dawson
	112	Diagnosis of Tumors (2½)	Hebbel
	113	Surgical Pathology (ar.)	Hebbel
	120	Diseases of the Lungs (1)	Dawson
	121	Diseases of the Alimentary Tract (1)	Hebbel
	201	Research (ar.)	Dawson, Hebbel

Pediatrics

First Term	124	Junior Clinical Clerkship (6)	John Anderson and staff
	152	Fundamental Principles of Nutrition and Metabolism as Applied to Children (1)	John Anderson and staff
	154	Endocrinology as Applied to Pediatrics (1)	John Anderson and staff
	162	Common Behavior Disturbances in Childhood (1)	Jensen, Quast, Engstrom
	170	Rheumatic Infection and Heart Diseases in Childhood (1)	Dwan, Good, R. Anderson, P. Adams
	174A	Dispensary Externship in Pediatrics (4)	John Anderson and staff
	174B	In-Patient Externship in Pediatrics (4½)	John Anderson and staff
	200	Graduate Seminar in Pediatrics (1½)	John Anderson and senior staff
	202	Pediatric Clinic (5)	John Anderson and senior staff
	204	Three-Month Residency in Pediatrics (7)	John Anderson and senior staff
208	Pediatric Research (ar.)	John Anderson and senior staff	
210	Special Clinics in Pediatrics (1)	Jensen, Dwan, Stoesser	
Second Term	152	Fundamental Principles of Nutrition and Metabolism as Applied to Children (1)	John Anderson and staff
	154	Endocrinology as Applied to Pediatrics (1)	John Anderson and staff
	162	Common Behavior Disturbances in Childhood (1)	Jensen, Quast, Engstrom
	170	Rheumatic Infection and Heart Diseases in Childhood (1)	Dwan, Good, R. Anderson, P. Adams
	174A	Dispensary Externship in Pediatrics (4)	John Anderson and staff
	174B	In-Patient Externship in Pediatrics (4½)	John Anderson and staff
	200	Graduate Seminar in Pediatrics (1½)	John Anderson and senior staff
	202	Pediatric Clinic (5)	John Anderson and senior staff
	204	Three-Month Residency in Pediatrics (1-7)	John Anderson and senior staff
	208	Pediatric Research (ar.)	John Anderson and senior staff
210	Special Clinics in Pediatrics (1)	Jensen, Dwan, Stoesser	

Pharmacology

First Term	9	Pharmacology for Nurses (1)	Cranston and assistants
	102	Pharmacology for Medical Students (3)	Bieter, Wright, and staff

	109	Pharmacological Problems (ar.)	Bieter, Wright, Cranston
	110	Toxicology (ar.)	Wright
	203	Research in Pharmacology (ar.)	Bieter, Wright, Cranston
Second Term	9	Pharmacology for Nurses (1)	Ertel
	203	Research in Pharmacology (ar.)	Bieter

Physical Medicine and Rehabilitation

First and	103	Physical Therapy Clinic (ar.)	Kottke, Kubicek
Second Terms	200	Physical Medicine Service (ar.)	Staff
	203	Poliomyelitis Clinic (1)	Kottke and staff
	210	Research in Physical Medicine (ar.)	Kottke, Kubicek

Physiological Chemistry

First Term	100	Physiological Chemistry (7)	Armstrong, Glick, Carr
	153	Problems in Physiological Chemistry (ar.)	Armstrong, Glick, Carr
	205	Research in Physiological Chemistry (ar.)	Armstrong, Glick, Carr
Second Term	101	Physiological Chemistry (6)	Barnum, Van Pilsum, Bollum
	153	Problems in Physiological Chemistry (ar.)	Barnum, Van Pilsum
	205	Research in Physiological Chemistry (ar.)	Barnum, Van Pilsum

Physiology

First Term	4	Human Physiology (4)	McClintock, Thompson
	107	Human Physiology (5)	Visscher, Brown, King
	203	Research in Physiology (ar.)	Visscher, Brown, Johnson, King
Second Term	51	Human Physiology (6)	Ar.
	203	Research in Physiology (ar.)	Ar.

Psychiatry and Neurology

First Term	103	Junior Clinical Clerkship in Psychiatry and Neurology (6)	Hastings, Baker, Hathaway, Glueck
	120	Emotional Growth, Development (1)	Hastings, Glueck
	145	Reading in Psychiatry (ar.)	Hastings, Hathaway, Glueck
	145x	Reading in Neurology (ar.)	Baker
	155	Therapeutics in Neurology (2)	Baker
	208	Clinical Neurology (4)	Baker
	208x	Clinical Psychiatry (12)	Hastings, Hathaway, Glueck
	208y	Clinical Child Psychiatry (12)	Jensen
	209	Research in Psychiatry and Neurology (ar.)	Hastings, Baker, Hathaway, Glueck
	212	Survey of Neuropathology (1)	Staff
	221	Psychometric Clerkship (2)	Hathaway
	226	X-ray Conference (1)	Baker
	228	Research in Neuropathology (ar.)	Staff
	231	Applied Electroencephalography (1)	Staff
	233	Applied Neuropathology (1)	Staff
	243	Prolonged Psychotherapy (1)	Hastings, Hathaway, Glueck
	245	Case Conference for Psychologists (1)	Hathaway
Second Term	145	Reading in Psychiatry (ar.)	Schiele, Kiesler
	145x	Reading in Neurology (ar.)	Brown

152	Externship in Psychiatry (6)	Schiele, Schofield, Kiesler
153	Externship in Neurology (6)	Brown
208	Clinical Neurology (4)	Brown
208x	Clinical Psychiatry (12)	Schiele, Schofield, Kiesler
208y	Clinical Child Psychiatry (12)	Jensen
209	Research in Psychiatry and Neurology (ar.)	Schiele, Schofield, Brown, Kiesler
212	Survey of Neuropathology (1)	Staff
221	Psychometric Clerkship (2)	Schofield
226	X-ray Conference (1)	Brown
228	Research in Neuropathology (ar.)	Staff
231	Applied Electroencephalography (1)	Staff
233	Applied Neuropathology (1)	Staff
243	Prolonged Psychotherapy (1)	Schiele, Schofield, Kiesler
245	Case Conference for Psychologists (1)	Schofield, Kiesler

Radiology

First Term	111	Medical Roentgenologic Conference (1)	Nice
	121	Roentgen Diagnosis, Radium Therapy, for Junior Medical Students (cont.)	Nice, Stenstrom
	124	Pediatric Roentgenologic Conference (1)	Feinberg
	135c	Surgical Roentgenologic Conference (1)	Nice and staff
	163a	Neurosurgical Roentgenologic Conference (1)	Peterson
	200	Research in Roentgenology (ar.)	Nice
	204	Research Related to Radiation Therapy (ar.)	Stenstrom and staff
	206	Roentgenoscopy (3)	Nice and staff
	207	Roentgen and Radium Therapy (ar.)	Stenstrom and staff
	209	Roentgen Diagnosis (3)	Nice and staff
	210	Roentgen Technique (2)	Nice and staff
	238	Roentgen-Surgical Pathology Conference (1)	Nice, Hebbel
	240	Conference in Radiation Therapy (1)	Stenstrom and staff
	Second Term	109	Externship in Roentgen Diagnosis and Radiation Therapy (4)
111		Medical Roentgenologic Conference (1)	Nice
124		Pediatric Roentgenologic Conference (1)	Feinberg
135c		Surgical Roentgenologic Conference (1)	Nice and staff
163a		Neurosurgical Roentgenologic Conference (1)	Peterson
200		Research in Roentgenology (ar.)	Nice
204		Research Related to Radiation Therapy (ar.)	Stenstrom and staff
206		Roentgenoscopy (3)	Nice and staff
207		Roentgen and Radium Therapy (ar.)	Stenstrom and staff
209		Roentgen Diagnosis (3)	Nice and staff
210		Roentgen Technique (2)	Nice and staff
238		Roentgen-Surgical Pathology Conference (1)	Nice, Hebbel
240		Conference in Radiation Therapy (1)	Stenstrom, Vermund

Surgery

First Term	121	Principles of Surgery (3)	Wangensteen and staff
	135	Junior Clinical Clerkship (6)	Wangensteen and staff
	135g	Applied Surgical Anatomy (3)	Wangensteen and staff
	152	Problems in Clinical Investigation (ar.)	Wangensteen and staff
	167	Problems in Experimental Surgery (ar.)	Wangensteen and staff
	216	Surgical Research (ar.)	Wangensteen and staff
	250	Urological Surgery (ar.)	Creedy

	252	Urological Conference (ar.).....	Creedy
	253	Research in Urology (ar.).....	Creedy
Second Term	152	Problems in Clinical Investigation (ar.).....	Wangensteen and staff
	167	Problems in Experimental Surgery (ar.).....	Wangensteen and staff
	200	Out-Patient Clinic in Surgery (ar.).....	Wangensteen and staff
	211	Operative Surgery (ar.).....	Wangensteen and staff
	214	Surgical Ward Conference (ar.).....	Wangensteen and staff
	215	Roentgenological-Surgery Conference (ar.).....	Wangensteen and staff
	216	Surgical Research (ar.).....	Wangensteen and staff
	218	Medical-Surgical Pathology Conference (ar.).....	Wangensteen and staff

School of Nursing * *

First Term	Nu.Ad.160	Ward Administration (5).....	Grainger
	Nu.Ad.173	Improving Nursing Care Through Effective Night Supervision (3).....	Heymann
	Nu.Ad.175	Elements of Administration in Nursing (5).....	Harris, Miller
	Nu.Ad.176	Elements of Administration in Nursing (5).....	Harris, Miller
	Nu.Ad.193	Principles of Administration Applied to Nursing Service Administration (3).....	Harris, Miller
	Nu.Ed.162	Personnel Work in Nursing (3).....	Johnston
Second Term	Nu.Ad.170	Foundations of Nursing Service Administration (3).....	Harris, Miller
	Nu.Ad.193	Principles of Administration Applied to Nursing Service Administration (3).....	Harris, Miller
	Nu.Ed.190	The Survey in Nursing Education (3).....	Harrington

School of Public Health

First Term	50	Personal and Community Health (3).....	Bates
	62	Public Health Nursing I (5).....	Sanburn
	65	Field Work in Public Health Nursing (15).....	Murphy
	69	Nursing in Health Programs for School-Age Children (3).....	Murphy
	95	Human Nutrition (3).....	Stief
	100	Elements of Preventive Medicine and Public Health (for medical students only) (6).....	Thomson
	110	Biometric Principles (3).....	Johnson
	111	Biostatistics Laboratory (2).....	Ar.
	133	Mental Hygiene (3).....	Cline
	148	Workshop on Rehabilitation and Public Health Nursing (3).....	Cline, Eleanor Anderson
Second Term	59	Health of the School Child (3).....	Eichenlaub
	60	Tuberculosis and Its Control (2).....	Myers
	63	Public Health Nursing II (4).....	Murphy
	65	Field Work in Public Health Nursing (15).....	Sanburn
	75	Introduction to Environmental Sanitation (3).....	Bond
	100	Elements of Preventive Medicine and Public Health (5).....	Anderson
	119	Field Practice in Environmental Sanitation (Ar.).....	Bond
	130	Biostatistics III (3).....	Bearman
	131	Biostatistics Laboratory III (2).....	Johnson
	175	Principles of Human Relations in Public Health Nursing Supervision (3).....	Cline, vonBergen

** See also Ed.T. 51A, The Teaching of Nursing, College of Education, Methods and Student Teaching.

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

American Studies

First Term	Hum.21	American Life I (3).....	Kwiat
	201	Introduction to American Studies (3).....	Cottrell
	250	Readings in American Civilization (ar.).....	Ar.
Second Term	Hum.22	American Life II (3).....	Ar.
	112	Cultural Regions of the United States (3).....	Fishwick
	251	Readings in American Civilization (ar.).....	Ar.

Note: See also approved courses in participating departments as listed in the *Program in American Studies*.

Anthropology

First Term	1A	Introduction to Anthropology: Prehistoric Man and Culture (3).....	Spencer
	117	Indians of South America (3).....	Leslie
	140	Field Trip in Archaeology (1-6).....	Wilford
	165	Personality and Culture (3).....	Spencer
Second Term	2A	Introduction to Anthropology: Cultural Anthropology (3).....	Leslie
	80	American Indian (3).....	Ar.
	118	Pre-Columbian Civilizations of Mexico and Central America (3).....	Leslie
	140	Field Trip in Archaeology (1-6).....	Wilford
150	Contact of Cultures (3).....	Ar.	

Art

First Term	History and Criticism		
	1	Introduction to Art (3).....	Torbert
	59	Traveling Summer Course in European Art (5).....	Eitner
148	Modern Architecture (Nineteenth and Twentieth Centuries) (3).....	Torbert	

Design

23-24-25	Drawing and Design (3).....	Downs
73-74-75	Presentation Techniques (3).....	Downs

Drawing and Painting

20	Elements of Drawing (3).....	Quirt
70-71-72	Oil Painting (3).....	Quirt
70B-71B-72B	Oil Painting (3).....	Quirt
150-151-152	Problems in Painting (ar.).....	Quirt
200-201-202	Advanced Problems in Studio Work (ar.).....	Quirt

Printmaking

32	Elements of Printmaking (3).....	Myers
90-91-92	Printmaking (3).....	Myers
190-191-192	Problems in Printmaking (ar.).....	Myers
200-201-202	Advanced Problems in Studio Work (ar.).....	Myers

Photography

10	Photography (3).....	Liebling
11	Photography (3).....	Liebling

12	Photography (3)	Liebling
83-84-85	Photography II (3)	Liebling

Sculpture and Crafts

40	Sculpture I (3)	Morton
49	General Crafts (3)	Morton
200-201-202	Advanced Problems in Studio Work (ar.)	Morton

Second Term History and Criticism

1	Introduction to Art (3)	Torbert
68	Modern Art: Contemporary Art in Europe and America (3)	Torbert
158A	Twentieth-Century European and American Painting (3)	Torbert
197	Readings in American Culture and the Visual Arts (3)	Fishwick

Design

23-24-25	Drawing and Design (3)	Arnest
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Drawing and Painting

20	Elements of Drawing (3)	Rollins
52-53	Drawing II (3)	Rollins
60B-61B-62B	Water Color (3)	Rollins
70-71-72	Oil Painting (3)	Arnest
70B-71B-72B	Oil Painting (3)	Rollins
150-151-152	Problems in Painting (ar.)	Arnest
200-201-202	Advanced Problems in Studio Work (ar.)	Arnest

See also Department of Art Education, College of Education.

Astronomy

First Term	12	Descriptive Astronomy (3)	Luyten
	13	Stellar and Practical Astronomy (3)	Luyten

Botany

First Term **	4	General Botany (5)	Ar.
	194	Problems (1-5)	Staff
Second Term	5	General Botany (5)	Ar.
	195	Problems (1-5)	Staff

Classics

First Term	24	Technical Terms of Science, Medicine, and the Humanities (3)	McDonald
	45	Greek and Roman Mythology (3)	Bock
	124	Technical Terminology (3)	McDonald

For courses in language teaching in the College of Education, see Special Programs.

Communication

See index.

** For botany courses given at Lake Itasca Biological Station, see index.

Economics

See index.

English

First Term

Courses in Literature

22	Introduction to Literature (6)	Buckley
53	Nineteenth-Century English Novel (3)	Krieger
55	Shakespeare (3)	del Plaine
56	Shakespeare (3)	Montgomery
74	American Literature (3)	Hornberger
100	Old English (Anglo-Saxon) (6)	Clark
104	Emerson and Thoreau (3)	Bethurum
136	Advanced Shakespeare (3)	Bethurum
138	Nineteenth-Century Literature (3)	Montgomery
154	American Novel (3)	Levenson
162	Milton (3)	Unger
179	Calvinistic Element in American Literature (3)	Foster
188	Eighteenth-Century Literature (3)	Krieger
198	Seventeenth-Century Literature (3)	Unger
299	Independent Reading (3)	Staff

Courses in Composition

4	Freshman Composition (3)	Ar.
5	Freshman Composition (3)	Ar.
6	Freshman Composition (3)	Ar.
27	Advanced Writing (3)	del Plaine

Composition 4, 5, 6 open to students in the Institute of Technology.

Second Term

Courses in Literature

23	Introduction to Literature (6)	Steinmann
55	Shakespeare (3)	Christie
56	Shakespeare (3)	Christie
73	American Literature (3)	McDowell
75	Chaucer (3)	Allen
109	Romantic Poets of the Early Nineteenth Century (3)	Jackson
112	Crane and Howells (3)	Berryman
113	American Short Story (3)	Howe
127	Drama, 1700-1870 (3)	Jackson
129	Modern Drama (3)	Hillhouse
139	Nineteenth-Century Literature (3)	Stange
143b	Edith Wharton and William Faulkner (3)	Howe
165	Introduction to Modern English (3)	Allen
213	Bibliography and Methods of Literary Research (3)	Stange
297	Independent Reading (3)	Staff

Courses in Composition

6	Freshman English (3)	Ar.
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Composition 4, 5, 6 open to students in the Institute of Technology.

Family Life

See index.

Foreign Study Seminar

See index.

General Studies

First Term

Communication

3 Communication (3) O'Hara

Family Life

1 Preparation for Marriage (3) Dyer
1A Preparation for Marriage (3) Dyer
15 The Home and Its Furnishings (3) Myren

Foreign Study

161 Seminar for Foreign Study I (6) Fredricksen, Negay, Slusser

Humanities

1 Humanities in the Modern World I (3) Blum
3 Humanities in the Modern World III (3) Amberg
4 Humanities in the Modern World IV (3) Siegelman
21 American Life I (3) Kwiat
51 Humanities in the Modern World (3) Blum
61 The Greek Heritage (3) Vogelbaum
131 Humanities Proseminar (3) Ross

Natural Science

165 Science in World Affairs (3) Graubard

Personal Orientation

1 How to Study (2) Ar.

Social Science

1 Introduction to Social Science (3) Blum
3 Introduction to Social Science (3) Blum
11 International Relations (3) Turner

Second Term

Family Life

1 Preparation for Marriage (3) Luckey

Foreign Study

162 Seminar for Foreign Study II (6) Fredricksen, Negay, Slusser

Humanities

2 Humanities in the Modern World II (3) Bryan
4 Humanities in the Modern World IV (3) Bryan
22 American Life II (3) Ar.
52 Humanities in the Modern World (3) Ames
63 Renaissance and Reformation (Florentine) (3) Ames

Natural Science

175 Survey of Science History (3) Graubard

Personal Orientation

1 How to Study (2) Ar.

Social Science

2 Introduction to Social Science (3) Cooperman

Geography

First Term 4 Human Geography (5) Lukermann
70 Cartography (3) Eidt
90 Readings (ar.) Lukermann
109 Middle America (3) Eidt
301 Research Problems (ar.) Eidt

Second Term 101 Western, Central Europe (3) Webb
105 Mediterranean Region (3) Webb
118 Africa (3) Petterson
152 Industrial Geography (3) Petterson
301 Research Problems (ar.) Petterson

Geology and Mineralogy

First Term 1 General Geology (5) Thiel
100 Field Work in Northern Minnesota (3) Ar.
150 Black Hills Field Course (6) Ar.
170 Geologic Problems (3) Thiel

Second Term 2 Historical Geology (5) Sloan
170 Geologic Problems (3) Sloan

German

First Term 1 Beginning German (5) Wood
3 Beginning German (5) Prottengeier
4 Intermediate German (5) Prottengeier
93 German Civilization and Culture (3) Prottengeier
193 German Civilization and Culture (3) Prottengeier
165 Goethe's Faust (3) Ramras
176 Nineteenth-Century Drama: Kleist, Büchner (3) Wood

A Deutsches Haus is being planned. (See index)

For courses in language teaching in the College of Education, see Special Programs.

Second Term 2 Beginning German (5) Menze
142 Modern Drama in Translation: Hauptmann to Brecht (3) Menze

History

First Term 1 Civilization of the Modern World, Part I (3) Onion
2 Civilization of the Modern World, Part II (3) Onion
15 Ancient Civilization, Part II (3) Clift
20 American History, Part I (4) Chambers
21 American History, Part II (4) Beatty

51	Ancient Civilization, Part II (3)	Clift
62	Cultural History of China, Part I (3)	Mather
79	United States in the Twentieth Century, Part I (3)	Chambers
93	American Diplomatic History, Part I (3)	Beatty
98	Minnesota and the Northwest, Part II (3)	Jordan
101b	History of Rome, Part II (3)	Clift
109	Europe in the Twentieth Century, Part I (3)	Kollman
137a	American History, 1850-1900, Part I (3)	Loehr
147	American Economic and Social History, Part II (3)	Loehr
176c	Readings in Recent European History, Part I (3)	Kollman
186d	Readings in Nineteenth-Century American History, Part II (3)	Jordan
Second Term		
3	Civilization of the Modern World, Part III (3)	Wolf
22	American History, Part III (4)	Noble
67a	Renaissance and Reformation, Part III (3)	Hoyt
86	American Colonies, Part I (3)	Tyler
92	The American West, Part III (3)	Osgood
105a	Renaissance and Reformation, Part III (3)	Hoyt
107a	Continental Europe, Part II (3)	Wolf
148a	History of the South, Part III (3)	Noble
151	Social and Intellectual History of the United States, Part III (3)	Tyler
175	Readings in Medieval and Renaissance History, Part III (3)	Hoyt
187a	Readings in the West in American History, Part III (3)	Osgood

How to Study

See General Studies, Personal Orientation.

Humanities

See General Studies.

School of Journalism

First Term	18	Principles of Advertising (3)	Perry
	55	Advertising and Newspaper Typography (3)	Wilson
	73	Magazine Writing (3)	Charnley
	82	Supervision of School Publications (3)	Wilson
	106	Critical Writing (3)	Hage
	121	The Press in a Dynamic Society (3)	Gerald
	140	Interpretation of Contemporary Affairs (3)	Gerald
	290	Special Problems in Mass Communications (3)	Staff
Second Term	86	Advertising Copy Writing (3)	Perry
	110	History of Journalism (3)	Emery
	113	Mass Communications (3)	Jones
	290	Special Problems in Mass Communications (3)	Jones

Library School

First Term	53	School Library Management (3)	Carstens
	55	Library Administration (3)	Wezeman
	70	Reading Guidance (3)	Ar.
	74	Library Materials in the Classroom (2)	Hokinson
	157	School Library Problems (3)	Carstens
	163	Reference II (3)	Ar.

	172	Reading Guidance for Adolescents (3)	Hokinson
	176	Mass Media and the Library (3)	Berninghausen
	185	Independent Study Problems (ar.)	Staff
	259	Seminar in Library Problems (3)	Wezeman
Second Term	50	Libraries and Society (3)	Shove
	62	Reference I (3)	Jackson
	83	Cataloging and Classification (3)	Jackson
	171	Reading Guidance for Children (3)	Ar.
	185	Independent Study Problems (ar.)	Staff
	262	Literature of Natural Science (3)	Shove
	277	History of Children's Literature (3)	Ar.

Mathematics **

First Term	1	Higher Algebra (5)	Lindberg
	6	Trigonometry (5)	Varberg
	15	Elementary Mathematical Analysis I (5)	Sabidussi
	50	Differential Calculus (5)	Gibbens
	106	Differential Equations (3)	Carlson
	138B	Analysis of Variance and Multivariate Analysis—II (3)	Roy
	139B	Statistical Models in the Social Sciences (3)	Roy
	144-145A ††	Fourier Series and Orthogonal Functions (4½)	Orey
	187	Non-Euclidean Geometry (3)	Carlson
Second Term	6	Trigonometry (5)	Varberg
	7	College Algebra (5)	Krude
	16	Elementary Mathematical Analysis II (5)	Olmsted
	135	Integral Equations (3)	Gelbaum
	145B-146	Fourier Series and Orthogonal Functions (4½)	Hatfield
	176	Intermediate Differential Equations	Gelbaum

Music

First Term	1	Fundamentals of Music (2)	Ar.
	7B	Ear Training (3)	Fetler
	8A	Harmony (3)	Fetler
	10	Introduction to Music (4)	Riedel
	A	Piano (0)	Rymer, Weiser
	D	Voice (0)	Schuessler, Paige
	11	Piano (2-4)	Rymer, Weiser
	11C	Class Piano (2)	Duckworth
	12	Voice (2-4)	Schuessler, Paige
	12C	Class Voice (2)	Paige
	13	Violin (2-4)	Cullen
	13B	Violin (2-4)	Druian
	14	Viola (2-4)	Ar.
	15	Violoncello (2-4)	Jamieson
	16	Double Bass (2-4)	Fitch
	17	Flute (2-4)	Arnegard
	18	Oboe (2-4)	Angelucci
	19	Clarinet or Saxophone (2-4)	Handlon, Fitch

** See also Mathematics, Institute of Technology, and statement concerning an Institute for High School Teachers of Mathematics under Special Programs.

†† This course, together with 145B-146 in the second term, in one summer provides the material of a substantial 9-credit sequence as taught in the regular school year.

20	Bassoon (2-4)	Santucci
21	Trumpet (2-4)	Adelstein
22	French Horn (2-4)	Linder
23	Trombone or Baritone (2-4)	Isaeff
24	Tuba (2-4)	Isaeff
25	Percussion (2-4)	Dahlgren
26	Harp (2-4)	Miller
27	Organ (2-4)	Ar.
60B-61B-62B	Instrumental Ensemble (2)	Druian
70	Normal Piano (2)	Duckworth
97-98-99	Counterpoint (2)	Fetler
104A	American Music (3)	Riedel
108	Heinrich Schütz: His Life and Works (3)	Riedel
127-128-129	Composition (2)	Fetler
132	Symphonies of the Romantic Era (3)	Oberg
204	Graduate Applied Music (3)	Ar.
209-210-211	Advanced Topics (3)	Oberg
212	Special Problems (3-9)	Oberg
227-228-229	Seminar in Composition and Orchestration (3)	Fetler
Second Term		
1	Fundamentals of Music (2)	Duckworth
7A	Ear Training (3)	George
8B	Harmony (3)	George
A	Piano (0)	Rymer, Weiser
D	Voice (0)	Schuessler, Paige
11	Piano (2-4)	Rymer, Weiser
11C	Class Piano (2)	Duckworth
12	Voice (2-4)	Schuessler, Paige
12C	Class Voice (2)	Paige
13 thru 27	See first term	
33A	Music Literature (3)	Oberg
60B-61B-62B	Instrumental Ensemble (2)	Druian
106A	American Music (3)	Riedel
127-128-129	Composition (2)	George
131	Symphonies of Beethoven (3)	Oberg
204	Graduate Applied Music (3)	Ar.
212	Special Problems (3-9)	Oberg
227-228-229	Seminar in Composition and Orchestration (3)	George

See also Department of Music Education, College of Education.

Personal Orientation

See General Studies.

Philosophy

First Term		
1	Problems of Philosophy (3)	Sellars
2	Logic (3)	Raab
3	Ethics (3)	Terrell
50	History of Philosophy (Ancient) (3)	Sellars
106	American Philosophy since William James (3)	Raab
107	Philosophy in Modern Literature (3)	Terrell
160	Philosophy of Science (3)	Feigl
190	Seminar (ar.)	Staff
Second Term		
1	Problems of Philosophy (3)	Donagan
2	Logic (3)	Shaw
52	History of Philosophy (Modern) (3)	Shaw

137	Kierkegaard and Scandinavian Philosophy (3)	Magel
151	Aesthetics (3)	Donagan
182	Philosophy of Religion (3)	Magel
191	Seminar (3)	Staff

Physics

First Term	1	Introduction to Physical Science (Mechanics and Heat) (3)	Rassweiler
	1a	Physical Science Laboratory (1)	Ar.
	13	General Physics for Engineers—Third Quarter, Part I (Sound and Light) (2½)	Valasek
	14	Intermediate General Physics, Part I (2)	Valasek
	14a	Intermediate Physics Laboratory, Part I (½)	Ar.
Second Term	2	Introduction to Physical Science (Electricity and Magnetism) (3)	Rassweiler
	2a	Physical Science Laboratory (1)	Ar.
	13	General Physics for Engineers—Third Quarter, Part II (Sound and Light) (2½)	Wall
	14	Intermediate General Physics, Part II (2)	Wall
	14a	Intermediate Physics Laboratory, Part II (½)	Ar.

Political Science

First Term	A	State in the Modern World (3)	Sibley
	1	American Government and Politics (3)	Jones
	131	Public Administration (3)	Polley
	141	Comparative European Government (3)	Turner
	145	Government and Politics of Scandinavian Countries (3)	Roberts
	184	International Organization (3)	Jones
	222	Seminar in Recent Political Thought (3)	Sibley
Second Term	B	State in the Modern World (3)	Hulicka
	2	American Government and Politics (3)	Christensen
	25	World Politics (3)	McLaughlin
	114 **	Institute on Minnesota Government and Politics (3)	Flom
	120	Municipal Functions (3)	Ludwig
	137	American Political Parties (3)	Christensen
	143	Government and Politics of the USSR and Adjacent States (3)	Hulicka
	183	Recent Problems in International Law (3)	McLaughlin

Psychology

First Term	1-2	General Psychology (6)	Clark
	125-126	Psychology of Individual Differences (6)	Jenkins
	140	Social Psychology (3)	Kelley
	144-145	Abnormal Psychology (6)	Bird
Second Term	1-2	General Psychology (6)	Broen
	4-5	Introductory Laboratory Psychology (4)	Wrightsmann
	118	Psychology of Language (6)	Jenkins, Russell
	144-145	Abnormal Psychology (6)	Rosen
	156	Psychology of Advertising (3)	Longstaff
	160	Psychology in Personnel Work (3)	Longstaff

** For further information regarding the Institute, see index.

Romance Languages

First Term

French

1	Beginning French (5)	Ar.
3-4	Intermediate French (5)	Ar.
62	French Civilization and Culture (2)	Desgranges
147	The Drama of the Twentieth Century (2)	Falk
154	Nineteenth-Century Novel: Senancour, Constant, Stendhal, Fromentin (2)	Falk
259	Directed Readings (ar.)	Staff

A Maison Française is being planned. (See Index)

For a course of special interest to teachers of French, see Ed.C.I. 187A, Teaching of the Analysis of the French Language, under College of Education.

Spanish

1	Beginning Spanish (5)	Pattison
3	Intermediate Spanish (5)	Grismer
20	Intermediate Spanish (5)	Grismer
83	La Novela Hispano-Americana y los Problemas Sociales (2)	Cúnco
90	Spanish Civilization and Culture (2)	Pattison
132	History of Spanish Drama (2)	Grismer
259	Directed Readings (ar.)	Staff

A Casa Hispánica is being planned. (See Index)

Second Term

French

2	Beginning French (5)	Cleifton
142	Eighteenth-Century French Literature: Voltaire (2)	Cleifton
259	Directed Readings (ar.)	Cleifton

Spanish

2	Beginning Spanish (5)	Ar.
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Scandinavian Area Studies

First Term

Soc.117	Scandinavian Folk Movements (3)	Roberts
Pol.Sci.145	Government and Politics of the Scandinavian Countries (3)	Roberts

Second Term

Scand.161	The Nineteenth-Century Scandinavian Novel (3)	Ar.
Scand.171	Ibsen and the Beginnings of the Modern Drama (3)	Ar.

Social Science

See General Studies.

School of Social Work

First Term

Soc.50	Introduction to Theory and Practice of Social Work (3)	Cohn
Soc.91	Case Method Applied to the Study of Human Problems (3)	Cohn
C.W.140	Behavior Problems (3)	Cummings
275	Social Group Work (3)	Pernell
285	Special Studies in Social Work (1-9)	Pernell

Second Term	C.W.140	Behavior Problems (3)	Bassham
	260	Principles of Administration in Social Work (3)	Kidneigh
	285	Special Studies in Social Work (1-9)	Kidneigh

Sociology

First Term	1	Introduction to Sociology: Man in Modern Society (3)	Taves
	2	The American Community (3)	Martindale
	14	Rural Sociology (3)	Taves
	50	Introduction to Theory and Practice of Social Work (3)	Cohn
	91	Case Method Applied to the Study of Human Problems (3)	Cohn
	117	Scandinavian Folk Movements (3)	Roberts
	120	Social Psychology (3)	Stone
	140	Social Organization (3)	Stone
	170	Analytical Social Theory (3)	Martindale
	171	Social Life and Cultural Change (3)	Cottrell
Second Term	1	Introduction to Sociology: Man in Modern Society (3)	Donohue
	3	Social Problems (3)	Francis
	118	Delinquent Behavior (3)	Monachesi
	123	Intergroup Relations (3)	Francis
	162	Rural Social Institutions (3)	Donohue
	180	Methods of Social Research (3)	Monachesi

Speech and Theater Arts

First Term	1	Fundamentals of Speech (3)	Gilkinson, Smith, and staff
	2	Fundamentals of Speech (3)	Gilkinson, Smith, and staff
	3	Fundamentals of Speech (3)	Gilkinson, Smith, and staff
	51	Advanced Public Speaking (3)	Gilkinson
	61	Personal Development Through Speech (3)	Bryngelson
	65	Radio and Television Speech (3)	McGraw
	92	Stage Lighting (3)	Josal
	106	Discussion (3)	Smith
	109	Classical Rhetoric (3)	Smith
	111	Stage Direction (3)	Graham
	119	Introduction to Speech Correction (3)	Fletcher
	122	Introduction to Research (3)	Gilkinson
	126	History and Criticism of Public Address (3)	Gilkinson
	140	Introduction to Voice Science (3)	Fletcher
	152	Hearing Disorders (3)	Lassman
	157	Clinical Practice in Audiology (3)	Lassman
	163	Speech Pathology (3)	Bryngelson
	164-165-166	Clinical Methods and Practice in Speech Pathology (9)	Bryngelson, Henrikson, Ptacek
	181-182-183	Readings in Speech (9)	Staff
	191	Technical Stage Problems (3)	Josal
261	Seminar in Speech Pathology (3)	Bryngelson, Henrikson	
291-292-293	Research in Special Problems (9)	Staff	
Second Term	1	Fundamentals of Speech (3)	Howell and staff
	2	Fundamentals of Speech (3)	Howell and staff
	3	Fundamentals of Speech (3)	Howell and staff
	33	Beginning Acting: Stage Technique (3)	Moulton
	66	Radio and Television Drama (3)	McGraw
	81	Interpretative Reading (3)	Thompson
	103	Argumentation and Persuasion (3)	Howell
	106	Discussion (3)	Howell
	107	Platform Reading (3)	Thompson
	112	Stage Direction (3)	Whiting

127	Language Training for the Deaf (3)	Ar.
131	Creative Dramatics (3)	Graham
132	Children's Theater (3)	Graham
156	Auditory Training (3)	Ar.
164-165-166	Clinical Methods and Practice in Speech Pathology (9)	Bryngelson, Henrikson, Ptacek
169	Speech and Language in Human Behavior (3)	Ptacek
181-182-183	Readings in Speech (9)	Staff
203	Debate Coaching (2)	Howell
291-292-293	Research in Special Problems (9)	Staff

For speech courses listed under the College of Education see: Ed.C.I. 123, Speech in the Elementary School (3), Henrikson; Ed.C.I. 140, Teaching of Speech (3), Smith; and Ed.C.I. 174-175-176, Clinical Methods and Practice in Speech Pathology (3), Bryngelson.

See also Speech and Drama Institute under Special Programs.

Zoology

First Term **	1 ††	General Zoology (5)	Olson
	100	Zoological Techniques (ar.)	Staff
	197	Problems (ar.)	Ar.
Second Term	2 ††	General Zoology (5)	Merrell
	83	Introduction to Genetics and Eugenics (3)	Merrell
	101	Zoological Techniques (ar.)	Staff
	198	Problems (ar.)	Ar.

INSTITUTE OF TECHNOLOGY

COLLEGE OF ENGINEERING

Civil Engineering

First Term	23	Summer Camp (9)	Kersten, Fant, Johnson
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Drawing and Descriptive Geometry

First Term	4	Engineering Drawing (3)	Springer
	6	Engineering Drawing (3)	Schuck
	34	Lettering (1)	Schuck
Second Term	5	Descriptive Geometry (3)	Palmer
	10	Solid Geometry (0)	Kleinhenz
	34	Lettering (1)	Kleinhenz

Electrical Engineering

First Term	36	Electrical Engineering Survey (3)	Caverley
Second Term	37	Electrical Engineering Survey (3)	Cartwright

** For zoology courses given at Lake Itasca Biological Station, see index.

†† The entire course in elementary zoology includes both 1 and 2. No credit is given for 1 until the satisfactory completion of 2.

English (Engineering)

First Term	85	Advanced Technical Communication (3)	Haga
Second Term	85	Advanced Technical Communication (3)	Guthrie

Composition 4, 5, 6 in the Department of English in the College of Science, Literature, and the Arts are open to students in the Institute of Technology.

General Engineering

First Term	70	Slide Rule (1)	Springer
Second Term	70	Slide Rule (1)	Kleinhenz

Hydromechanics

First Term	103	Fluid Mechanics (5)	Olson
	104	Hydraulics Laboratory (1)	Olson

Industrial Engineering

First Term	90 ††	Industrial Assignment (1½)	Algren
	91 ††	Industrial Assignment (1½)	Algren
	92 ††	Industrial Assignment (1½)	Algren
	93 ††	Industrial Assignment (1½)	Algren
	94 ††	Industrial Assignment (1½)	Algren
	95 ††	Industrial Assignment (1½)	Algren
	150	Elements of Industrial Engineering and Management (3)	Block
Second Term	90 ††	Industrial Assignment (1½)	Algren
	91 ††	Industrial Assignment (1½)	Algren
	92 ††	Industrial Assignment (1½)	Algren
	93 ††	Industrial Assignment (1½)	Algren
	94 ††	Industrial Assignment (1½)	Algren
	95 ††	Industrial Assignment (1½)	Algren

Mathematics ††

First Term	12	College Algebra and Trigonometry II (5)	Culmer
	13	Analytic Geometry (5)	Loye
	25	Integral Calculus (5)	Stenberg
	80	Elementary Differential Equations (3)	Wilcox
	132	Introduction to Statistics and Probability (3)	Lindgren
	150	Calculus III: Intermediate Calculus (3)	Munro
	154	Vector Analysis (3)	Wilcox
	168	Elementary Complex Variables (3)	Munro
	Second Term	13	Analytic Geometry (5)
25		Integral Calculus (5)	Braden
80		Elementary Differential Equations (3)	Lindgren
152 §§		Calculus IV: Advanced Calculus (3)	Thompson
153 §§		Calculus V: Advanced Calculus (3)	Thompson

†† These courses carry 3 credits and will be given on a quarter basis. Credit not given for first term unless course is completed second term.

‡‡ See also Mathematics in the College of Science, Literature, and the Arts.

§§ 152 and 153 may be taken simultaneously; 150, 152, 153 form a 9 credit sequence regularly taught during the academic year.

Mechanical Engineering

First Term	22	Mechanisms of Automatic Machinery (3)	LaJoy
	90 ††	Industrial Assignment (1½)	Algren
	91 ††	Industrial Assignment (1½)	Algren
	92 ††	Industrial Assignment (1½)	Algren
	93 ††	Industrial Assignment (1½)	Algren
	94 ††	Industrial Assignment (1½)	Algren
	95 ††	Industrial Assignment (1½)	Algren
	130	Thermodynamics (3)	Ibele
	141	Heat Power Engineering (3)	Murphy
	160	Heating and Air Conditioning (3)	Threlkeld
Second Term	24	Elements of Machine Design (3)	Larsen
	34	Mechanical Engineering Laboratory II (2)	LaJoy
	90 ††	Industrial Assignment (1½)	Algren
	91 ††	Industrial Assignment (1½)	Algren
	92 ††	Industrial Assignment (1½)	Algren
	93 ††	Industrial Assignment (1½)	Algren
	94 ††	Industrial Assignment (1½)	Algren
	95 ††	Industrial Assignment (1½)	Algren
	131	Thermodynamics (3)	Ibele
	180	Refrigeration (3)	Threlkeld

Mechanics and Materials

First Term	26	Engineering Statics (5)	Anderson
	127	Engineering Dynamics (5)	Warner
	128	Engineering Solid Mechanics (5)	Doeringsfeld, Miller
	141	Solid Mechanics Laboratory (1)	Anderson, Miller
Second Term	127	Engineering Dynamics (5)	Doeringsfeld, Hsiao
	128	Engineering Solid Mechanics (5)	Miller

SCHOOL OF CHEMISTRY

Inorganic Chemistry

First Term	4	General Inorganic Chemistry (4)	Brasted
	9	General Inorganic Chemistry (5)	Ar.
	11	Semimicro Qualitative Analysis (4)	Britton
	12	Semimicro Qualitative Analysis (5)	Britton
	104	Chemistry of the More Representative Elements (3 or 4)	Britton
	105	Co-ordination Compounds (3)	Brasted
	301	Research in Inorganic Chemistry (ar.)	Brasted, Britton, and ar.
Second Term	5	General Inorganic Chemistry (4)	Reynolds
	10	General Inorganic Chemistry (5)	Pervier
	11	Semimicro Qualitative Analysis (4)	Pervier
	12	Semimicro Qualitative Analysis (5)	Pervier
	105	Atomic Structure and the Properties of the Elements Based Thereon (3)	Reynolds
302	Research in Inorganic Chemistry (ar.)	Pervier, Reynolds	

†† These courses carry 3 credits and will be given on a quarter basis. Credit not given for first term unless course is completed second term.

Analytical Chemistry

First Term	1	Quantitative Analysis (Gravimetric) (5)	Herr
	7	Quantitative Analysis (Premedic) (4)	Herr
	123	Advanced Analytical Chemistry (3)	Herr
	301	Research in Quantitative Analysis (ar.)	Herr

Organic Chemistry

First Term	61	Elementary Organic Chemistry (4)	Lauer
	102	Organic Qualitative Analysis (4)	Wright
	110	Organic Qualitative Analysis (4)	Wright
Second Term	62	Elementary Organic Chemistry (4)	Noland
	139	Advanced Preparations (4)	Wright

Physical Chemistry

First Term	104, 105	Physical Chemistry Laboratory (1 or 2)	Wertz
	107 **	Elementary Physical Chemistry (3)	Wertz
	301	Research in Physical Chemistry (ar.)	Wertz
Second Term	105, 106	Physical Chemistry Laboratory (1 or 2)	Wertz
	108 **	Elementary Physical Chemistry (3)	Wertz
	301	Research in Physical Chemistry (ar.)	Wertz

SCHOOL OF MINES AND METALLURGY

Metallurgy

First Term	124	Special Problems in Mineral Dressing (ar.)	Cooke
	156	Physical Metallurgy (3)	Jerabek
	160	Physical Metallurgy (3)	Jerabek
	170-171	Special Problems in Physical Metallurgy (1, 2, or 3)	Jerabek
	201	Research in Process Metallurgy (ar.)	Ar.
Second Term	124	Special Problems in Mineral Dressing (ar.)	Cooke
	170-171	Special Problems in Physical Metallurgy (1, 2, or 3)	Jerabek
	201	Research in Process Metallurgy (ar.)	Ar.

Mining Engineering

First Term	15	Mine Surveying Field Work (6)	Yardley, Lacabanne
	151-152-153	Special Mining Engineering Problems (ar.)	Ar.
Second Term	151-152-153	Special Mining Engineering Problems (ar.)	Ar.
Third Term	139	Mining Field Trip (6)	Pfleider, Bruzewski

Petroleum Engineering

First Term	155-156-157	Special Problems in Petroleum Engineering (ar.)	Lacabanne
Second Term	155-156-157	Special Problems in Petroleum Engineering (ar.)	Lacabanne

** Course 108 is a continuation of 107. The entire course 107-108 must be completed before credit will be assigned (6 credits). Grades will not be sent in at the end of the first term.

DULUTH BRANCH

DIVISION OF EDUCATION AND PSYCHOLOGY

Child Welfare

Second Term	140	Behavior Problems (3).....	Hansen
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Education

First Term	Ed.61B-81B	Educational Psychology (5).....	Loy
	Ed.Ad.123	The Organization of Community School Programs (3).....	Kreitlow
	Ed.C.I.105	Audio-Visual Materials in Education (3).....	Wells
	Ed.C.I.122	Literature for Adolescents (3).....	Frogner
	Ed.C.I.135	Group Procedures in Guidance (3).....	Wenzel
	Ed.C.I.149	The Teaching and Supervision of Arithmetic in the Elementary School (3).....	Johnson
	Ed.C.I.153	Supervision and Teaching of English in the Elementary Schools (3).....	Frogner
	Ed.C.I.168	Current Developments in the Social Studies (3).....	M. Lindquist
	Ed.C.I.169	Extracurricular Activities (3).....	Kreitlow
	Ed.C.I.271	Problems in Curriculum Construction (ar.).....	Johnson, Plumb
	Ed.Psy.116	Statistical Methods in Education (3).....	Apostolakos
	Ed.Psy.120	Basic Principles of Measurement (3).....	Johnson
	Ed.Psy.133	Basic Procedures in Student Personnel Work (3).....	Plumb
	Ed.Psy.159	Personality Development and Mental Hygiene (3).....	Apostolakos
	H.Ed.141	Critical Issues in Contemporary Education (3).....	Ehlers
	H.Ed.156	History of Ideas in American Education (3).....	Ehlers
	Second Term	Ed.61A-81A	School and Society (5).....
Ed.61C		Curriculum and Methods in Elementary Education (5).....	D. Smith
Ed.81C		Curriculum and Methods in Secondary Education (5).....	Staple
Ed.Ad.115		Elementary School Organization and Administration (3).....	Wheat
Ed.Ad.116		The Teacher and Secondary School Administration (3).....	Wheat
Ed.C.I.102		Teaching the Social Studies in the Elementary School (3).....	Staple
Ed.C.I.103		Teaching Science in the Elementary School (3).....	Verrill
Ed.C.I.109		Audio-Visual Materials and Equipment Laboratory (3).....	Keith, Wells
Ed.C.I.113		The Curriculum of the Secondary School (3).....	Plumb
Ed.C.I.117		Rural Education for Administrators and Teachers (3).....	Swanson
Ed.C.I.119		The Curriculum of the Elementary School (3).....	Johnson
Ed.C.I.131		Advanced Course in Teaching the Technical Business Subjects (3).....	Dettmann
Ed.C.I.143		Teaching and Supervision of Reading in the Elementary School (3).....	D. Smith
Ed.C.I.150		Supervision and Improvement of Instruction (3).....	Johnson
Ed.C.I.271		Problems in Curriculum Construction (ar.).....	Johnson, Plumb
Ed.Psy.193		Psychology of Human Learning (3).....	Apostolakos

Health Education

First Term	3	Personal Health (2).....	Graybeal
	5	First Aid and Safety (1).....	L. Peterson

Home Economics

First Term	28	Household Equipment (3).....	Palmer
	90	Special Problems in Home Economics (3).....	Palmer

Industrial Education

First Term	33	Cabinet Making (3)	Kovach
	55	Estimating (2)	Kovach
	111	Instructional Materials Laboratory for Nonmajors (3)	Kovach

Physical Education for Men

First Term	M16C	Volleyball-Softball (1)	Wells
	M51	Mechanics of Movement (3)	L. Peterson
	58	Recreational Leadership (3)	Wells
	M63	Organization and Administration of Physical Education (3)	L. Peterson
Second Term	8	Tennis and Golf (2)	Rickert
	MW31A	Tennis (1)	Rickert
	MW31B	Golf (1)	Rickert
	MW32B	Badminton (1)	Rickert

Physical Education for Women

First Term	9A	Folk Dance (1)	Beanland
	10A	Aquatics (1)	Van Steinburg
	M17A	Archery (1)	Beanland
	W18A	Beginning Swimming (1)	Van Steinburg
	W33A	Lifesaving (1)	Van Steinburg
	42	Rhythms for Elementary Grades (1)	Beanland
Second Term	55	The Teaching of Physical Education Activities (2)	Graybeal
	114	Administration of the School Health Education Program (3)	Graybeal

Psychology

First Term	1	General Psychology (3)	Apostolakos
	2	General Psychology (3)	Hansen
	65	Advanced General Psychology (3)	Hansen
	74	Psychology in Personnel Work (3)	Wenzel
	80	Child Psychology (3)	Hansen
	84	Elementary Social Psychology (3)	Wenzel
Second Term	1	General Psychology (3)	Apostolakos
	2	General Psychology (3)	Apostolakos
	97	Individual Intelligence Testing (5)	Hansen

DIVISION OF HUMANITIES

Art

First Term	5	Introduction to Art (3)	A. Smith
	52	Art in Elementary Education (3)	A. Smith
	Art Ed.183	Advanced Course in the Teaching of Art (3)	A. Smith
Second Term	177	Workshop in Advanced Painting (6)	Kingman

English

First Term	23	Introduction to Literature (5)	Rosenthal
	58	Shakespeare (3)	Rosenthal

	74	American Literature (3)	Glick
	78	The American Novel (3)	Glick
	105	Hawthorne and Melville (3)	Glick
Second Term	54	World Literature (3)	Tezla
	57	The Interpretation of Poetry (3)	Tezla
	109	Romantic Prose and Poetry (3)	Tezla
	165	Introduction to Modern English (3)	Sturgeon

Humanities

First Term	5	Appreciation of the Arts (3)	Miller
Second Term	5	Appreciation of the Arts (3)	Miller
	6	Twentieth Century Art and Music (3)	Miller

Music

First Term	21	Introduction to Music (3)	Miller
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Philosophy

First Term	3A	Ethics (3)	Ehlers
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Speech

First Term	1	Fundamentals of Speech (3)	Ar.
	2	Fundamentals of Speech (3)	Ar
	86	Correction of Speech Disorders (3)	Pierce
	106	Discussion (3)	Ar.
	119	Introduction to Speech Correction (3)	Pierce
Second Term	3	Fundamentals of Speech (3)	Hayes
	105	Theory of Reading and Acting (3)	Hayes
	131	Creative Dramatics (3)	Hayes

DIVISION OF SCIENCE AND MATHEMATICS

Astronomy

Second Term	1	Elementary Astronomy (3)	C. Lindquist
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Botany

Second Term	10	Minnesota Plant Life (3)	Lakela
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Chemistry

First Term	3	General Inorganic Chemistry (5)	Cowles
	6	General Inorganic Chemistry (5)	Cowles
Second Term	4	General Inorganic Chemistry (5)	Moore
	7	General Inorganic Chemistry (5)	Moore

Geology

First Term	A	General Physical Geology Laboratory (2)	Lepp
	1	General Physical Geology (3)	Lepp

Mathematics

First Term	A	Basic Mathematics (3)	Elwell
	1	Higher Algebra (5)	Elwell
	30	Analytic Geometry (5)	McEwen
	80	Differential Equations (3)	McEwen
Second Term	136	Solid Analytic Geometry (3)	McEwen
	A	Basic Mathematics (3)	McEwen
	6	Trigonometry (5)	McEwen

Natural Science

First Term	4	The Physical World (3)	Olson
	5	The Physical World (3)	Olson
	7	General Biology (3)	Carlson
	8	General Biology (3)	Odlag
Second Term	6	The Physical World (4)	C. Lindquist
	9	General Biology (4)	Keith
	10	Conservation of Natural Resources (3)	Carlson

Physics

First Term	13	General Physics for Engineers (5)	Weinberg
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Zoology

First Term	4M	Human Physiology (4)	Odlag
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DIVISION OF SOCIAL STUDIES

Business and Economics

First Term	1	Principles of Economics (5)	Davidson
	34	Elementary Accounting (5)	Dettmann
	44	Elementary Statistics (3)	Meyers
	58	Foreign Trade (3)	Meyers
	71	Intermediate Accounting (2)	Dettmann
	72	Intermediate Accounting (2)	Dettmann
	81	Labor Economics (3)	Davidson
	86	Public Finance (3)	Meyers
	189	Public Finance (3)	Meyers
Second Term	1	Principles of Economics (5)	Friest
	2	Principles of Economics (5)	Roulston
	19	Office Management and Machines (3)	Friest
	35	Elementary Accounting (5)	Dettmann
	45	Elements of Statistics (3)	Meyers
	65	Business Organization and Finance (3)	Roulston
	66	Insurance Principles (3)	Meyers
	82	Social and Labor Legislation (3)	Meyers

Geography

First Term	12	Principles of Geography (5)	Witzig
	73	Western and Central Europe (3)	Witzig
	107	Soviet Union (3)	Chamberlin

Second Term	12	Principles of Geography (5).....	Belthuis
	113	Eastern Anglo-America (3).....	Belthuis

History

First Term	20	American History (3).....	Livingston
	21	American History (3).....	M. Lindquist
	22	American History (3).....	Livingston
	95	American Diplomatic History (3).....	Livingston
	98	Minnesota and the Northwest (3).....	M. Lindquist
	143D	American Diplomatic History (3).....	Livingston
	186D	Minnesota and the Northwest (3).....	M. Lindquist
Second Term	20	American History (3).....	von Glahn

Political Science

First Term	1	American National Government (3).....	Wolff
	2	American State Government (3).....	von Glahn
	25	International Relations (3).....	von Glahn
	67	Political Parties and Public Opinion (3).....	Wolff
	160	American Political Thought (3).....	Wolff
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Second Term	1	American National Government (3).....	Davidson
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Social Studies

First Term	51	The Lake Superior Region (3).....	Sielaff
	52	The Lake Superior Region (3).....	Sielaff
Second Term	53	The Lake Superior Region (3).....	Sielaff
	54	The Lake Superior Region (3).....	Sielaff
	55	The American Southeast (6).....	M. Lindquist

Sociology

First Term	1	Introduction to Sociology (5).....	Pearson
	81	Marriage and the Family (3).....	Pearson
Second Term	2	Intermediate Sociology (5).....	Pearson
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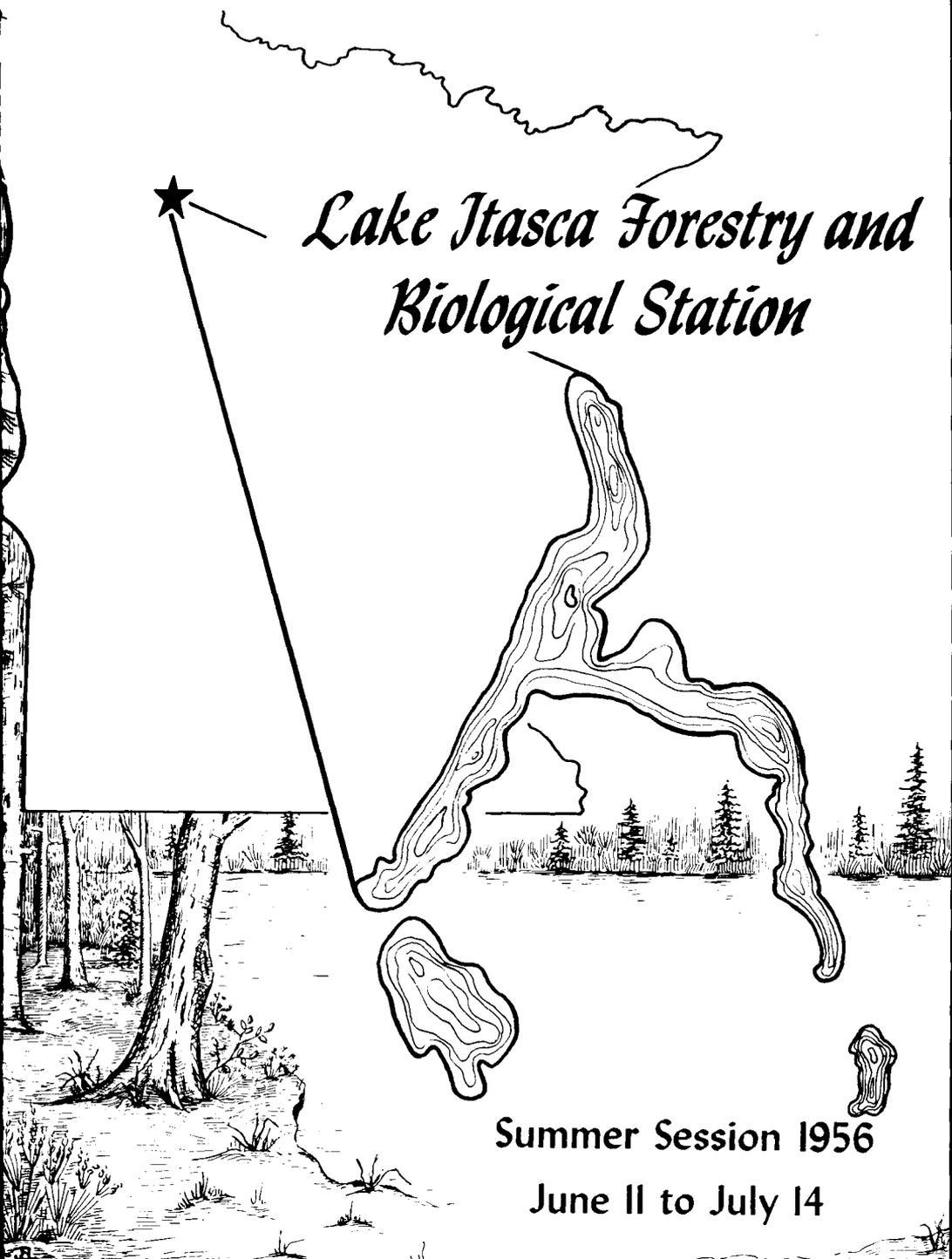
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Bulletin of the

UNIVERSITY OF MINNESOTA



*Lake Itasca Forestry and
Biological Station*



Summer Session 1956

June 11 to July 14

FOREWORD

This is a cordial invitation from the Biological Station Summer Session at Lake Itasca to you to enroll and take advantage of a rare opportunity for



orientation in field biology



field and laboratory research



assistance in the collection of class materials and in the development of methods for the teaching of biology



collegiate training of a distinguished character



association with and research advice from outstanding scientists

These opportunities are available in the most inspiring surroundings, are handled informally, and bring the student into direct relationship with undergraduate, graduate, and special students, with high school and college teachers, and with the highly selected Station personnel.

Thorvald Schantz-Hansen
Director of Biological Station

**GENERAL
INFORMATION**

SPONSORSHIP

Sponsored by the Summer Session, the Lake Itasca Forestry and Biological Station is a joint enterprise of various departments of the College of Science, Literature, and the Arts and of the College of Agriculture, Forestry, and Home Economics under the management of a resident director, Professor Thorvald Schantz-Hansen, and an associate director, Professor William H. Marshall. By agreement, the University of Wisconsin is participating in the policy and planning of the Biological Station through membership on the advisory committee.

LOCATION

The Station is on the east shore of Lake Itasca in Itasca State Park—just a mile from the headwaters of the Mississippi River in northwestern Minnesota.

TRANSPORTATION

Public transportation to the Station is by bus to Douglas Lodge—about four miles from the Station—where students will be met by Station transportation only at the beginning and at the end of the session. State Highway 92 and U. S. Highway 71 provide easy access through the towns of Bagley, Bemidji, or Park Rapids.

MAIL

Mail for students should be addressed to: Biological Station, Lake Itasca P. O., Minnesota.

INQUIRIES

Requests for bulletins and all information relating to the Biological Station should be addressed to:

Dean of the Summer Session
660 Johnston Hall
University of Minnesota
Minneapolis 14, Minnesota

Specific inquiries as to courses, accommodations, equipment, etc., will then be referred to the staff member concerned.



*Aquatic plant surveys on
the shore of Lake Mary*

**FIELD STUDY
OPPORTUNITIES**

Itasca Park—one of national renown—embraces fifty square miles of forests with an excellent system of roads and trails. Within this area are many lakes of different types providing unusual field opportunities for work in limnology, algae, aquatic flowering plants, and related fields. The forests of the park are unique. Here the northern coniferous and southern deciduous types meet and intermingle. In addition the many bog areas provide a wide variety of plant communities for study. Itasca's forests have been protected for over a half century and many never cut—here truly is an unexcelled array of virgin timber stands and the communities developing into similar types.

Forty miles to the west a spectacular break from the forests to the prairies occurs where true prairie associations can be found on the bed of ancient Lake Agassiz. To the north lie the Red Lakes and immense expanses of northern bog types.

This meeting of the three great plant regions of the eastern United States provides not only many examples of vegetation but also a singular variety of birds, mammals, and insects of southern, northern, and western origin. Opportunities to study birds closely during June and July are particularly outstanding. An abundance of interesting animals such as nesting bald eagles, breeding loons, beaver, raccoons, and deer affords many striking animal problems for study.

**COURSE WORK
AND RESEARCH**

Both graduate and undergraduate students of biology will find an excellent field laboratory for research and course work. Graduate students may devote themselves exclusively to research problem work under staff supervision and guidance. Students of wildlife management have the opportunity for the study of life history and ecology of vertebrates as well as basic courses in related fields. To teachers of biology in high schools and colleges the Station offers opportunity for course work, advanced study, and improvement through independent research. The necessary training for conducting classes in the field is also provided. Agriculture and home economics students contemplating careers in extension work will find this training in conservation and nature study useful preparation for rural extension work.

**GUEST
INVESTIGATORS**

Qualified independent guest investigators may arrange with the director for research in various fields of terrestrial and fresh-water biology. Advanced students and research workers needing laboratory space and special equipment and those wanting to carry on research during the entire field season should make prior arrangements with the resident director and the instructor involved.

**INSTRUCTIONAL
FACILITIES**

Seven well-equipped laboratories are located in three buildings. Since most of the instruction is in the field, the laboratories, although not elaborate, are adequate and well lighted.

A new laboratory, especially designed for the individual research worker, has been authorized and may be ready for the 1956 session.

*The Lakeside Laboratory
overlooks Lake Itasca*



A fine herbarium of the region, collections of insects, fungi, bird skins, and small mammal skins are available for study. Two complete sets of aerial photos of the park area made in 1938 and 1951 are maintained at the Station with adequate stereoscopic equipment.

The Station equipment includes all necessary compound and dissecting microscopes, binoculars, collecting equipment, various types of nets, row boats, and launches, and the minor accessories for adequate instruction and research.

A library-administration building provides room for quiet study. Necessary supplies and textbooks can be bought at the store maintained by the University Bookstores at the Station.

**BOARD AND
LODGING
MEALS**

Meals are served to both on-campus and off-campus students in an attractive dining hall located on the lake shore. It is operated by the administration in consultation with officers elected by students. Meals are carefully planned, well balanced, and prepared by experienced cooks. Fresh meat, vegetables, and fruit are served daily.

CABINS

There are seven cabins for men, each accommodating eight students, and six cabins for women, each accommodating seven students. Women's cabins are equipped with toilets and lavatories. A central bathhouse with laundry facilities is located near each of these groups.



*Many fungi are brought
inside for culturing*

*Collecting aquatic insects
at the Lake Itasca Station*



**MARRIED STUDENT
ACCOMMODATIONS**

Married students who wish to bring their families may find accommodations off campus in one of the many resorts in the vicinity or at the Park Service public campground which is about a mile from the Station where tenting or trailer space, water, fuel, ice, electricity, shower baths, and swimming beach are available. There are also a few cabins at the campgrounds which can be rented for short periods. A list of addresses of these facilities will be furnished on request.

PERSONAL NEEDS

Students must provide their own bed linen, towels, and blankets. Since the nights are often cool, it is suggested that you bring two or three good wool blankets. Essential personal equipment includes suitable shoes or boots for field work, a field suit or dress, a warm jacket, a raincoat, heavy socks, a swimming suit, flashlight, notebooks, pocket field books, pencils, hand lenses, dissecting sets, pins, vials, and corks.

RULES OF CAMP

Rules of camp are kept at a minimum. Weekend absences and extended field trips must be reported in advance. Off campus and within park boundaries, the State Park regulations govern.

Students are expected to keep their own quarters clean and orderly. You may bring your car but no garages are provided. The State Park entry sticker (\$1) must be bought at the entrance if cars are used off campus.



The center of many activities is this combination assembly and dining hall

RECREATION

Swimming, fishing, boating, and hiking are relaxing counterbalances for a busy educational program. Social events in the large assembly hall are handled by the students, with some guidance. Weekly popular lectures by staff or visitors are scheduled for the entire campus population.

HEALTH SERVICE

A two-ward, well-equipped infirmary, with a registered nurse in attendance, is available for the care of minor ills and injuries. Medical attention, when necessary, can be secured at Park Rapids or Bemidji. The payment of the incidental fee covers the cost of this service and entitles the student to medical service not to exceed a cost of \$10. Special services, such as X ray, infrared treatments, etc., and the cost of filling prescriptions must be paid by the student. If transportation to a hospital or doctor's office is needed, it must be provided by the student. Cost of dental work is not covered by the Health Service fee.

REGISTRATION INFORMATION ADMISSION

Courses are open to all qualified graduate and undergraduate students who have had the usual preliminary courses in biological subjects. General rules for admission to the Summer Session apply to the Biological Station. Students with previous college work who wish to attend the Summer Session only may do so without filing credentials, provided they are in good standing and are not candidates for a degree. Students are advised to consult these regulations in the general *Bulletin of the Summer Session*.

GRADUATE SCHOOL Applications for admission to the Graduate School must be sent directly to the Dean of the Graduate School, University of Minnesota, Minneapolis 14, not later than May 14. Students not seeking graduate credit may register as special students. Graduate work taken at the Lake Itasca Forestry and Biological Station may be considered for resident requirement at the University of Wisconsin upon application to the Dean of the Graduate School at Madison and upon recommendation of the department concerned.

Only courses numbered 100 or over carry graduate credit.

SCHOLARSHIPS The following awards are available for qualified students:

Alexander P. Anderson and Lydia Anderson Fellowships at \$350 each. These are available only to persons holding a degree from the University of Minnesota.

The Caroline M. Crosby Memorial Fellowship in Botany provides for tuition, room and board, travel, and miscellaneous expenses up to \$400.

Requests for information and applications for the above fellowships should be made to the Graduate School, University of Minnesota, Minneapolis 14.

Collecting aquatic invertebrates in Lake Itasca





Itasca's forests offer a wide variety of plant specimens

INSTITUTE FOR COLLEGE TEACHERS

An Institute for College Teachers of Biology will be conducted again this summer under the auspices of the National Science Foundation. Members will enroll in one graduate course, carry out an individual research program, and participate in seminars on problems related to the teaching of biology. Ten stipends of \$350 each are available. Inquiries concerning this program should be addressed to the Dean of Summer Session, 660 Johnston Hall, University of Minnesota, Minneapolis 14.

INSTITUTE FOR HIGH SCHOOL TEACHERS

Plans are being formulated for an Institute for High School Teachers of Biology to be held at the Lake Itasca Forestry and Biological Station. Teachers who would be interested in spending a summer in this field laboratory with other high school biology teachers should inquire of the Dean of Summer Session, 660 Johnston Hall, University of Minnesota, Minneapolis 14.

REGISTRATION

Whenever possible, students should complete their registration at the Office of Admissions and Records on either the St. Paul Campus or the Minneapolis Campus. In exceptional cases registration can be completed at the Station.

G.I. and Rehabilitation students registering under the G.I. Bill (P.L. 346 or P.L. 16) must have the required authorization at the time of registration.

NORMAL LOAD

Two courses are considered a normal load, although advanced students may take two courses and in addition 1 or 2 credits of a well-delimited research problem. Special permission must be secured from the director for a lighter or a heavier load.

RESERVATIONS

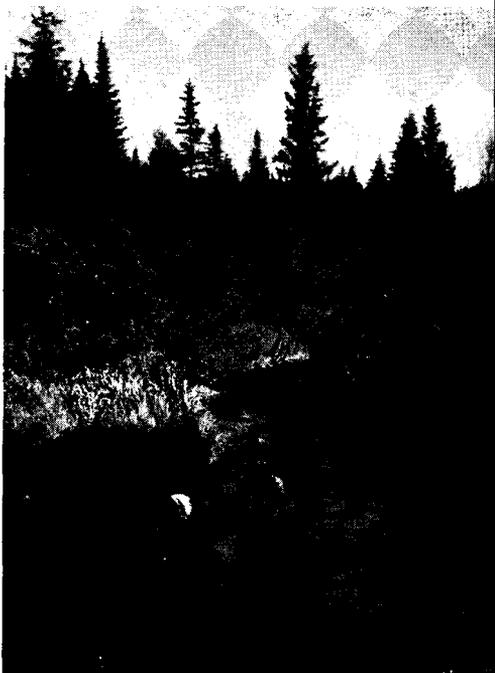
The Station cabins accommodate ninety-two students. Reservations are required. A reservation form is printed on the inside of the back cover of this bulletin.

Instructional facilities accommodate an unlimited number of off-campus students.

ROOM AND BOARD COSTS

Fees for room and board include a \$10 service charge for dormitory and dining room facilities and, in addition, an initial payment of \$60 for board. The kitchen is run on an actual cost

*Nearby streams are rich
in insect life*



basis. These costs are payable to the director at the beginning of the term, and a refund or a slight additional assessment may be made at the end of the session.

ACADEMIC FEES

The following fees are payable by each registrant on or before June 12:

Tuition fee	\$55.00
Incidental fee	8.50
Laboratory fee	10.00
	<hr/>
	\$73.50

LATE FEES

Tuition and fees are payable at the time of registration on or before June 12. After June 12 late fees will be charged as follows:

Wednesday, June 13	\$2.00
Thursday, June 14	3.00
Friday, June 15	4.00
Monday, June 18	5.00

No registration will be accepted after Thursday, June 14, without the approval of the director of the Station and the payment of the late fee.

STAFF MEMBERS

J. Roger Bray, recent visiting lecturer in botany, University of Minnesota, has been closely associated with the laboratory of plant ecology at the University of Wisconsin. He has completed studies dealing critically with the ecology of the oak savanna formation in Wisconsin and related areas.

Clyde M. Christensen, professor of plant pathology, University of Minnesota, is the author of two well-known books on fungi: *Common Edible Mushrooms* and *The Molds and Man* and has

published a third book on *Common Fleshy Fungi* based to a large extent on field work at the Itasca Station.

Samuel Eddy, professor of zoology, University of Minnesota, has carried on teaching and research in Minnesota fish and limnological problems for many years. He is author of *Northern Fishes*, *Taxonomic Keys of the Common Animals of Minnesota*, and many articles in the limnological and fisheries fields.

John T. Emlen, Jr., professor of zoology, University of Wisconsin, has just returned from a year's study of avian behavior in Africa. His studies on California quail and cliff swallows are well known to ornithologists in the fields of population and behavior.

William H. Marshall, professor of economic zoology, University of Minnesota, and associate director of the Station, specializes in wildlife management and ecology of game animals. He has published technical articles on waterfowl, fur bearers, and upland game species.

Richard E. Norris, instructor in botany, University of Minnesota, has conducted researches on the morphology, taxonomy, and culture of fresh-water and marine algae in California and for the Atomic Energy Commission.

Eugene C. Ogden, state botanist, New York State Museum, Albany, and formerly on the faculty of the University of Maine, is widely known for his distinguished researches on aquatic flowering plants such as *Potamogeton*, and has just completed a revision of Dr. N. C. Fassett's *Manual of Aquatic Plants*.

Alvah Peterson, professor of entomology, Ohio State University, has published several volumes on *Larvae of Insects* and *Entomological Equipment and Methods* as a result of lifelong studies of insects in the field.

Thorvald Schantz-Hansen, professor of forestry, University of Minnesota, is director of the Lake Itasca Forestry and Biological Station. He is co-author of *This Is Our Land* and has published many technical forestry articles.

COURSES OF INSTRUCTION

Other courses than those listed below and research problems may be arranged to suit individual needs.

An asterisk (*) indicates courses that may be taken by graduate students for independent work under Plan B. A sharp sign (#) indicates that consent of instructor must be obtained. A triangle (Δ) indicates that consent of department must be obtained.

BOTANY

Pl.Pa.56. Introduction to the Study of Fungi. See Plant Pathology.

112. **Aquatic Flowering Plants.** A study of the higher plants of aquatic and marsh habitats. Identification and collection; association of species; relations to the habitat; adaptive morphology and food value to wildlife. (4 cred.; prereq. 10 cred. in botany or zoology, or #; WS) Ogden

116. **Summer Flora of Minnesota.** A survey of the summer flowering plants and ferns of the state with particular reference to the local flora. Collection and identification of species; distribution in Minnesota; literature and taxonomic methods. Text: *Gray's New Manual of Botany*. (4 cred.; prereq. 10 cred. in botany or zoology, or #; TF) Ogden

135. **Ecology of the Itasca Region.** The study of the plant communities represented in Itasca Park and vicinity and their dynamic relationships. Also the relationships of the local communities to the vegetation of Minnesota as a whole. Use of modern methods of vegetational analysis and measurement of environmental factors. (4 cred.; prereq. Bot. 50 or 130 or For. 4; MTh) Bray

136. **Organisms, Microclimate, and Weather.** (Not offered in 1956)

138. **Analysis of Vegetation.** Emphasis is upon the statistical manipulation of quantitative phytosociologic data. Review of field sampling techniques and their use in the objective classification of vegetation. (4 cred.; prereq. Bot. 50 or 130 or For. 4; TF) Bray

155. **Fresh-water Algae.** A study of the morphology and taxonomy of the fresh-water algae with particular attention to the collection and identification of local algae. Field work to be arranged. (4 cred.; prereq. 10 cred. in botany, biology, or zoology, or #; TF) Norris

Pl.Pa.156. **Advanced Study of Fungi.** See Plant Pathology.

157. **Bryophytes and Pteridophytes.** (Not offered in 1956)

196.* **Problems in Ecology, Taxonomy, Bryology, or Algology.** Advanced studies based on individual field work and research. (Cred. ar.; prereq. #) Bray, Ogden, Norris

208.* **Research Problems in Taxonomy.** (Cred. ar.; prereq. #) Ogden

224.* **Research Problems in Ecology.** (Cred. ar.; prereq. #) Bray

236.* **Research Problems in Cryptogams.** (Cred. ar.; prereq. #) Norris

**ENTOMOLOGY
AND ECONOMIC
ZOOLOGY**

59. **Field Entomology.** A study of the insect fauna in various natural habitats of the park and surrounding areas. The course includes field trips, collection and classification of insects, as well as studies of general morphology, life histories, and habits of local species under ecological conditions governing the distribution of insect fauna of the region. Text: Berrer and DeLong, *An Introduction to the Study of Entomology*. (4 cred.; jr., sr.; prereq. Zool. 1-2-3 or equiv.; TF) Peterson

68. **Natural History of the Higher Vertebrates.** (Not offered in 1956)

124. **The Biology of Immature Insects.** A field and laboratory course treating of habits, habitat, life history, and identification of immature insects with particular emphasis on aquatic forms. Text: Peterson, *Larvae of Insects, Parts I and II*. (4 cred.; prereq. 15 cred. in zoology and Ent. 52 or equiv. or Δ ; WS) Peterson

162. **Ecology of Terrestrial Vertebrates.** Field work demonstrating methods of studying vertebrate populations and their relationship to local environments. Text: Dice, *Natural Communities*. Field projects, analyses, and lectures. (4 cred; prereq. Ent. 68 or Zool. 57-58 and Ent. 63, or equiv. and Bot. 50; MTh) (There will be a "cost basis charge" for mileage on field trips) Marshall

196.* **Special Problems in Entomology and Economic Zoology.** Advanced work in entomology and economic zoology and ample opportunity for individual research, especially in various phases of faunistic studies in terrestrial, aquatic, and forest entomology and economic zoology. (Cred. ar.; prereq. #) Marshall, Peterson

**PLANT
PATHOLOGY
AND BOTANY**

56. **Introduction to the Study of Fungi.** The structure, development, and identification of fungi, especially those of economic importance. (4 cred.; jr., sr.; prereq. 9 cred. in botany, or #; MTh) C. M. Christensen

156. **Advanced Study of Fungi.** General characters of fungi; especially those used in identification; cultural and taxonomic procedures and practices. (4 cred.; prereq. 9 cred. in botany, or #; MTh) C. M. Christensen

210.* **Special Problems in Mycology.** Research work along the following suggested lines: taxonomy of natural groups, fungus flora of particular regions, localities, or habitats; morphology or physiology of special forms. (Cred. ar.; grad.; prereq. Myc. 105-106-107) C. M. Christensen

ZOOLOGY

55. **Natural History of Invertebrates and Fishes.** A taxonomic and ecological survey of the local fauna, including life histories and habitats. Text: Eddy and Hodson, *Taxonomic Keys of the Common Animals of Minnesota*. (4 cred.; prereq. Zool. 1-2-3 or equiv.; WS) Eddy

107. **Protozoology.** (Not offered in 1956)

115. **Advanced Natural History of Invertebrates and Fishes.** An advanced taxonomic and ecological survey of the local fauna including a detailed and independent ecological study of several taxonomic groups. Texts: Eddy and Hodson, *Taxonomic Keys of the Common Animals of Minnesota*; Ward and Whipple, *Fresh-water Biology*. (4 cred.; prereq. 15 cred. in zoology; WS) Eddy
119. **Limnology.** A study of the conditions for life in the water and distribution of aquatic animals. Text: Welch, *Limnology*. (4 cred.; prereq. 15 cred. in zoology; MTh) Eddy
135. **Advanced Ornithology.** Field and laboratory studies of ecology and life histories of the birds in the Itasca Park region. (4 cred.; prereq. 15 cred. in zoology; TF) Emlen
143. **Animal Parasites.** (Not offered in 1956)
- 197.* **Problems in Ornithology, Ecology, and Limnology.** Principles and further work in special lines adapted to needs of individual students. (Cred. ar.; prereq. Zool. 1-2-3 and #) Eddy, Emlen

**CONDENSED
COURSE
SCHEDULE**

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Bot.135	Bot.116	Bot.112	Bot.135	Bot.116	Bot.112
Ent.162	Bot.138	Ent.124	Ent.162	Bot.138	Ent.124
Pl.Pa.56	Bot.155	Zool.55	Pl.Pa.56	Bot.155	Zool.55
Pl.Pa.156	Ent.59	Zool.115	Pl.Pa.156	Ent.59	Zool.115
Zool.119	Zool.135		Zool.119	Zool.135	

GRADUATE STUDENT THESES

- GORDON, W. E. Ontogenetic xeromorphy in the wild grape (*Vitis vulpina* L.). Ph.D. Thesis. 1941.
- SKUDLARK, JOSEPH E. A comparative limnological study of two deep Minnesota lakes. M.A. Thesis. 1944.
- HELLBERG, J. M. Studies of the vertical distribution of plankton in Lake Itasca, Minnesota, during August 1947. M.S. Thesis. 1948.
- HOOPER, F. F. The summer standing crop of a small Minnesota lake. Ph.D. Thesis. 1948.
- LEE, F. B. A comparison of bird occurrence and activity in two climax forests at Itasca Park, Minnesota. M.S. Thesis. 1948.
- HENDRICKS, H. A. The microfauna of the sandy beaches of three Minnesota lakes. M.A. Thesis. 1949.
- COLE, G. A. An ecological study of the microbenthic fauna of two Minnesota lakes. Ph.D. Thesis. 1949.

- MALONEY, J. E. A study of the relationship of food consumption of the bluegill, *Lepomis macrochirus Rafinesque*, to temperature. M.S. Thesis. 1949.
- OWENS, O. V. Some aspects of the ecological life histories of *Impatiens biflora* Walt. and *I. pallida* Nutt. M.S. Thesis. 1949.
- FREEMAN, R. S. The biology and life history of *Monoecocestus* Beddard, 1914 (Cestoda): Anoplocephalidae (from the porcupine), with notes on Minnesota Oribatordea (Acarina). Ph.D. Thesis. 1950.
- QUIMBY, D. C. The life history and ecology of the jumping mouse (*Zapus hudsonius*). Ph.D. Thesis. 1950.
- FASHINGBAUER, B. A. The effects of defoliation by the forest tent caterpillar, *Malacosoma disstria*, Hbn.: and spraying for the control of the forest tent caterpillar upon bird life; and the effect of spraying for the control of the forest tent caterpillar upon amphibians. M.S. Thesis. 1951. 221 pages.
- KRAFT, K. J. The ants of Itasca State Park, Minnesota. M.S. Thesis. University of North Dakota. 1952.
- LEISMAN, G. The rate of organic matter accumulation on the sedge mat zones of bogs in the Itasca State Park region of Minnesota. M.S. Thesis. 1952.

RESEARCH PUBLICATIONS

- HODSON, A. C. An ecological study of the forest tent caterpillar, *Malacosoma disstria*, Hbn. in Northern Minnesota. Univ. of Minn. Agric. Exp. Sta. Tech. Bull. 148. 1941. 55 pages.
- CHRISTENSEN, C. M. A bluestaining fungus inhabiting the heartwood of certain species of conifers. *Phytopathology*, 32:735-37. 1942.
- . Two cases of unusual development of fruiting bodies. *Mycologia*, 34:400-402. 1942.
- ISHII, N. New parasite records from the ruffed grouse. *Jour. of Parasitology*, 28:92. 1942.
- BUELL, M. F. and W. E. GORDON. Hardwood-conifer forest contact zone in Itasca Park, Minnesota. *Amer. Midl. Nat.*, 34:433-39. 1945.
- DAWLEY, C. W. Distribution of aquatic mollusks in Minnesota. *Amer. Midl. Nat.*, 38:671-97. 1947.
- BUELL, M. F. and R. L. WILBUR. Life form spectra of the hardwood forests of the Itasca Park region, Minnesota. *Ecology*, 29:352-59. 1948.
- CHANDLER, A. C. New species of the genus *Schistotaenia*, with a key to the known species. *Trans. Amer. Microscopical Soc.*, 67:169-76. 1948.
- HOOPER, FRANK F. The effect of Derris Root (Rotenone) upon plankton and bottom fauna organisms of a small Minnesota lake. *Proc. Minn. Acad. Sci.*, 16:29-33. 1948.
- CONWAY, V. M. The bogs of central Minnesota. *Ecol. Mono.*, 19:173-206. 1949.
- FREEMAN, R. S. Temperature, oribatid mites and the development of *Monoecocestus* (Cestoda: Anoplocephalidae). *Jour. of Parasitology*, 35(6):57. 1949.
- . Notes on the morphology and life cycle of the genus *Monoecocestus* Beddard, 1914 (Cestoda: Anoplocephalidae) from the porcupine. *Jour. of Parasitology*, 35(6):605-12. 1949.
- HOOPER, FRANK F. Age analysis of a population of the ameuriid fish *Schilbeodes mollis* (Hermann). *Copeia*, 1949(1):34-38. 1949.
- FASSETT, N. C. The juvenile state of *Elymus canadensis*. *Amer. Midl. Nat.*, 43:762. 1950.
- ABDEL-MALEK, E. T. Menthol relaxation of helminths before fixation. *Jour. of Parasitology*, 37:321. 1951.
- BUELL, M. F. and J. E. CANTLON. A study of two forest stands in Minnesota with an interpretation of the prairie-forest margin. *Ecology*, 32:294-316. 1951.
- CHANDLER, A. C. Studies on Metacercariae of *Perca flavens* in Lake Itasca, Minnesota. *Amer. Midl. Nat.*, 45:711-21. 1951.
- HOOPER, FRANK F. Limnological features of a Minnesota seepage lake. *Amer. Midl. Nat.*, 46(2):462-81. 1951.
- MARSHALL, W. H. Predation on shrews by frogs. *Jour. of Mammalogy*, 32(2):219. 1951.
- . Accidental death of a porcupine. *Jour. of Mammalogy*, 32(2):221. 1951.
- OWNBEY, G. B. Natural hybridization in the genus *Cirsium*—*I. C. discolor* (Muhl ex Willd.) Spreng x *C. muticum* Michx. *Bull. Torrey Bot. Club*, 78:233-53. 1951.

- QUIMBY, D. C. The life history and ecology of the jumping mouse, *Zapus Hudsonius*. Ecol. Mono., 21:61-95. 1951.
- SPIETH, H. T. The breeding site of *Drosophila lacicola* Patterson. Science, 113(2931):232. 1951.
- STERN, W. L. and M. F. BUELL. Life form spectra of New Jersey Pine forest and Minnesota Jack Pine forest. Bull. Torrey Bot. Club, 78:61-65. 1951.
- ABDEL-MALEK, E. T. *Cercaria chandleri*, a new echinostome species from the snail *Helisorma corpulentum*, in Lake Itasca, Minnesota. Trans. Amer. Microscopical Soc., 71:277-81. 1952.
- CHANDLER, A. C. Two new species of *Oochoristica* from Minnesota skunks. Amer. Midl. Nat., 48:69-72. 1952.
- ABDEL-MALEK, E. T. Life history of *Petasiger chandleri* (Trematoda Echinostomatidae) from the pied-billed grebe, *Podilymbus podiceps podiceps*, with some comments on other species of *Petasiger*. Jour. of Parasitology, 39:152-58. 1953.
- BUELL, M. F. and W. A. NIERING. Vegetation of a raised bog near Itasca Park, Minnesota. Bull. Torrey Bot. Club, 80:123-30. 1953.
- LEISMAN, G. A. The rate of organic matter accumulation on the sedge mat zones of bogs in the Itasca State Park region of Minnesota. Ecology, 34:81-101. 1953.
- WARREN, BRUCE. A new type of metacercarial cyst of the genus *Apophallus*, from the perch, *flavescens*, in Minnesota. Amer. Midl. Nat., 50(2):397-401. 1953.
- CHANDLER, A. C. A new nematode, *Chlamydooprocta itascensis* n.gen., n.sp. (Spiruridae) from a skunk, *Mephitis mephitis* in Minnesota. Amer. Midl. Nat., 51:313-15. 1954.
- . New strigeids from Minnesota birds and mammals. Amer. Midl. Nat., 52:133-41. 1954.
- BUELL, M. F. and F. H. BORMAN. Deciduous forests of Ponemah Point, Red Lake Indian Reservation, Minnesota. Ecology, 36:646-58. 1955.
- HICKEY, J. J., P. B. HOFSLUND, and H. F. BORCHERT. Bird nests in the Itasca State Park area, 1954. Flicker, 27:16-21. 1955.
- MARSHALL, W. H. and M. F. BUELL. A study of the occurrence of amphibians in relation to a bog succession, Itasca State Park, Minnesota. Ecology, 36:381-87. 1955.
- MARSHALL, W. H. Summer weights of raccoons in northern Minnesota. Accepted for publication in Jour. of Mammalogy.
- SEIM, A. L., M. F. BUELL, and R. I. EVANS. Bryophyte growth-forms and cover in a jack pine stand, Itasca Park, Minnesota. Bryologist, 58:326-29. 1955.

LAKE ITASCA FORESTRY AND BIOLOGICAL STATION

Request for Reservation

Name _____ Date _____

Address _____

Status (circle one) : Grad.; Adult Special; Research; Undergrad.

Freshman, Sophomore, Junior, Senior; and College _____

G.I. (P.L. 346 or P.L. 16) or Korean Veteran (P.L. 550)

Occupation (if not full-time student) _____

Previous Station attendance (years) _____

Degree expected (when and where) _____

Courses to be taken _____

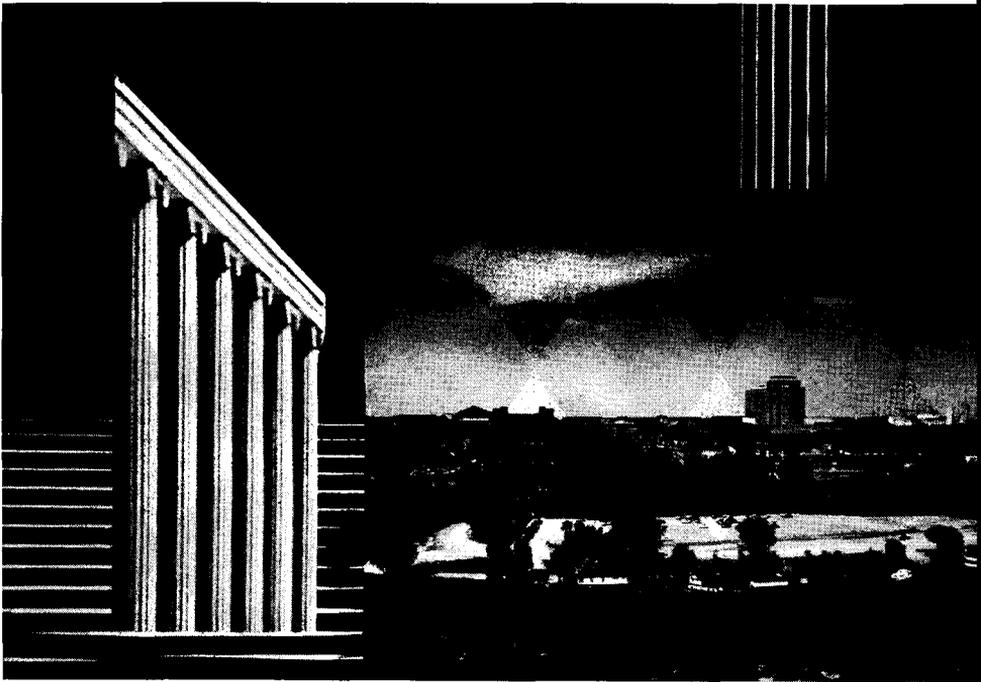
Date of arrival _____ Car or bus? _____

(Meal service begins June 11, breakfast. Buses will be met at Douglas Lodge.)

Please mail this form to Dean, Summer Session, 660 Johnston Hall, University
of Minnesota, Minneapolis 14, Minnesota



Bulletin of the
UNIVERSITY OF MINNESOTA



Summer Session 1956

First term - June 11 to July 14

Second term - July 16 to August 18

How To Use This Bulletin

Symbols Used in Course Descriptions

The following symbols are used throughout the course descriptions and will not carry any page footnotes:

- * An asterisk after a course number indicates those courses through which it is possible for graduate students to prepare required Plan B papers.
- † A dagger after a course number indicates that all quarters of the course preceding the dagger must be complete before credit will be granted for any quarter of the course.
- ‡ A double dagger following a sequence course number indicates that the course may be taken out of sequence.
- § A section mark in the parenthetical statement means that credit will not be given if the equivalent course listed after the section mark has been taken for credit.
- ¶ A paragraph mark preceding a course number in the parenthetical statement means "concurrent registration," i.e., the course so indicated may be taken simultaneously.
- # A sharp mark in the parenthetical statement means that students must obtain the consent of the *instructor* before attempting to register for the course.
- △ A triangle mark in the parenthetical statement means that students must obtain the consent of the *division, department, or school* involved before attempting to register for the course.
- ** Two asterisks after a course number indicate that a special fee is charged. See section on Course Fees.

Scheduling Code and Course Descriptions

This bulletin contains announcements of the courses offered in the several colleges and schools of the University. Departmental statements also indicate certain requirements as to entrance and credits. For more detailed statements of these matters, reference should be made to the *Bulletin of General Information* and the regular bulletin of the college concerned.

Following each course is a statement, in parentheses, of credits, classes of students eligible, prerequisites, class hours, days of the week, and location of the class. Thus: (3 cred.; jr., sr., grad.; prereq. 12, 13; II MTWThF; FolH 117) means that the course carries 3 credits, is open to juniors, seniors, and graduate students, has for prerequisites courses 12 and 13 in the department under which the course is listed, meets at the second hour on Monday, Tuesday, Wednesday, Thursday, and Friday in Folwell Hall, room 117. For building abbreviations see back cover.

Department offices will supply information on instructors, hours, and rooms not listed or listed as arranged (ar.).

Courses 1 to 49 carry credit in the Junior College; courses 50 to 99 carry credit in the Senior College; courses 100 to 199 carry Senior College credit, and graduate credit for those registered in the Graduate School; courses 200 and above are open only to those registered in the Graduate School.

Building Abbreviations

See back cover.

Campus Maps

See pages 138 and 139.

UNIVERSITY OF MINNESOTA

Board of Regents

The Board of Regents is composed of The Honorable Ray J. Quinlivan, St. Cloud, First Vice President and Chairman; The Honorable George W. Lawson, St. Paul, Second Vice President; The Honorable James F. Bell, Minneapolis; The Honorable Edward B. Cosgrove, Le Sueur; The Honorable Daniel C. Gainey, Owatonna; The Honorable Richard L. Griggs, Duluth; The Honorable Marjorie J. Howard, Excelsior; The Honorable Lester A. Malkerson, Minneapolis; The Honorable Charles W. Mayo, Rochester; The Honorable Karl G. Neumeier, Stillwater; The Honorable A. J. Olson, Renville; and The Honorable Herman F. Skyberg, Fisher.

Administrative Committee

James Lewis Morrill, President
Malcolm M. Willey, Vice President, Academic Administration
William T. Middlebrook, Vice President, Business Administration
E. W. Ziebarth, Dean of the Summer Session
Ike J. Armstrong, Director of Athletics
Theodore C. Blegen, Dean of the Graduate School
Ruth E. Boynton, Director of Students' Health Service
J. William Buchta, Chairman, University College Committee
Doyle M. Coffee, Captain, U.S.N., ROTC Representative
Walter W. Cook, Dean of the College of Education
William H. Crawford, Dean of the School of Dentistry
Raymond W. Darland, Provost of the Duluth Branch
Harold S. Diehl, Dean of the College of Medical Sciences
Austin A. Dowell, Assistant Dean, College of Agriculture, Forestry, and Home Economics
Edwin L. Haislet, Director of Alumni Relations
Richard L. Kozelka, Dean of the School of Business Administration
David W. Louisell, Acting Dean of the Law School
Laurence R. Lunden, Treasurer and Comptroller
Harold Macy, Dean of the Institute of Agriculture
Errett W. McDiarmid, Dean of the College of Science, Literature, and the Arts
Horace T. Morse, Dean of the General College
Julius M. Nolte, Dean of University Extension
William L. Nunn, Director of University Relations
Charles H. Rogers, Dean of the College of Pharmacy
Athelstan F. Spilhaus, Dean of the Institute of Technology
Edward B. Stanford, Director of Libraries
Robert Edward Summers, Dean of Admissions and Records
William T. S. Thorp, Assistant Dean, Director of School of Veterinary Medicine
Edmund G. Williamson, Dean of Students

Calendar

First Term

June	11	Monday	Orientation and registration
June	12	Tuesday	First term classes begin; fees due for students in all colleges
July	4	Wednesday	Independence Day, holiday
July	12	Thursday	Commencement, 8 p.m.
July	14	Saturday	First term closes

Second Term

July	16	Monday	Registration and payment of fees
July	17	Tuesday	Second term classes begin
August	16	Thursday	Commencement, 8 p.m.
August	18	Saturday	Second term closes

Class Hour Schedule

	Minneapolis Campus	St. Paul Campus
I Hour	8:00- 8:50	7:30- 8:20
II Hour	9:00- 9:50	8:30- 9:20
III Hour	10:00-10:50	9:30-10:20
IV Hour	11:00-11:50	10:30-11:20
V Hour	12:00-12:50	11:30-12:20
VI Hour	1:00- 1:50	12:30- 1:20
VII Hour	2:00- 2:50	1:30- 2:20
VIII Hour	3:00- 3:50	2:30- 3:20
IX Hour	4:00- 4:50	3:30- 4:20
X Hour	5:00- 5:50	4:30- 5:20

Convocation, 8:00 p.m., Thursday

(See Official Daily Bulletin for announcement)

No application form need be filed by students with previous college work who plan to attend during the 1956 Summer Session only. See Admission and Registration for further details.

1956 SUMMER SESSION

The University of Minnesota is on the quarter system. Work equivalent to that taken in 1 quarter of the academic year may be taken in the Summer Session but for convenience the Summer Session is divided into 2 terms of 5 weeks each.

The staff of the Summer Session is drawn largely from the scholars who teach in the academic year.

Duluth Branch

The Duluth Branch offers the associate in arts, the bachelor of arts, and the bachelor of science degrees at the undergraduate level and the master of arts degree, with majors in education or curriculum and instruction, at the graduate level.

The curriculums include preprofessional, teacher-education, and 4-year liberal arts programs. Dates of the session and tuition are the same as for the University of Minnesota in the Twin Cities.

Overlooking Lake Superior, the Duluth Campus has the advantages of the cool North Shore climate and the scenic Minnesota Arrowhead country.

The eighth annual summer workshop in painting will feature Dong Kingman, a leading American artist. The Duluth session offers unique opportunities for persons interested in rural education. Special attention is given the problems of teachers who wish to complete work for the bachelor of science degree.

For bulletin and detailed information about this campus, write to the Office of Student Personnel Services, University of Minnesota, Duluth Branch, Duluth 5.

SPECIAL FEATURES

The special programs that follow are noteworthy excerpts from our regular curriculum, or they are institutes sponsored by University departments in co-operation with the Summer Session. For additional information write to Dean of Summer Session, 690 Johnston Hall, University of Minnesota, Minneapolis 14.

Institute for High School Teachers of the Physical Sciences

From June 18 to July 21 the Departments of Physics and Chemistry will conduct a program of refresher courses in the basic and fundamental phases of their sciences and additional courses in the recent advances in these sciences. The program is designed explicitly for the needs of high school teachers and will occupy their full time. Scholarships covering tuition and living expenses will be available. Six credit hours in the Graduate School will be given to those who satisfactorily complete the work and are seeking a Master's degree in education.

Those interested in the Institute should write to Dean J. W. Buchta, 225 Johnston Hall, University of Minnesota, Minneapolis 14.

Institute for High School Teachers of Mathematics

From June 18 to July 21 the Department of Mathematics will conduct a program in the basic and applied aspects of mathematics as these are related to the pedagogical needs of high school teachers. Scholarships covering tuition and living expenses will be available. Six credits in the Graduate School will be given to those who have been admitted to the Graduate School and who satisfactorily complete the work in the program. These credits will be applicable toward advanced degrees for those whose major subject is education and whose minor subject is mathematics and for those whose major subject is mathematics.

Those interested in making application for the Institute should write to B. R. Gelbaum, Associate Professor of Mathematics, 119 Folwell Hall, University of Minnesota, Minneapolis 14.

Workshop on School Psychology

This Workshop, presented jointly by the College of Education, the Institute of Child Welfare, and the Department of Psychology, is designed to provide information, instruction, and observation experience on problems and methods, both to persons now employed as school psychologists and as a means of further preparing persons already trained in psychological fields for the rapidly developing specialty of school psychology.

The Workshop, which is to run through the second term, offers 9 graduate credits, although some registrations can be accepted from adult special students. All Workshop participants will take a basic course, Introduction to School Psychological Services (Educational Psychology 152), and a laboratory-seminar course (Educational Psychology 153 or Child Welfare 200). Both of these courses are limited to students accepted as members of the Workshop. In addition, each registrant will elect one 3-hour course from the curriculums of sponsoring or related departments.

For further information regarding the Workshop and for application forms, write to Dean of Summer Session, 690 Johnston Hall, University of Minnesota, Minneapolis 14.

Language Arts

Several departments are co-operating in a special first-term program in the Language Arts . . . reading, speaking, writing, listening, children's literature. Supplementing the courses will be two Institutes at the Center for Continuation Study, to be held June 25 through June 29 and August 20 through August 24, respectively. These Institutes will emphasize sound practices for elementary and secondary school instruction in the language arts.

Driver Education

The course in Driver Education (101 under Curriculum and Instruction) will provide the special background required for high school instructors in driver training. Sections will be available both terms on the Minneapolis Campus. Because registration is limited, interested summer students should apply in advance for this work.

Workshop for Industrial Arts Teachers

In the first term, Howard Nelson and William A. Kavanaugh will conduct a workshop on the industrial arts program for junior high

schools. The present strong interest in improving junior high school programs makes this a particularly useful workshop for industrial arts teachers who wish to evaluate and replan their own work at the junior high school level.

Junior High School Programs

One of the national leaders in the movement for improving junior high school programs, Professor Roscoe Cramer, will give a course on junior high school problems in the first term (167 under Educational Administration).

Language Teaching

For high school and junior college teachers of French, German, and Latin, there will be three special courses in the first term (187A, 187B, 187C under Curriculum and Instruction). The course for each language will deal with the analysis of syntactical materials, free composition, appreciation of style, creative translation, and the development of effective teaching techniques for these areas. Many teachers will want to combine one of these courses with others in the languages and with the work of the language houses.

Special Program for Teachers of the Visually Handicapped

The American Foundation for the Blind is assisting the University of Minnesota in an important first-term offering for teachers of the visually handicapped. Included will be a workshop on educational procedures and school curriculum adaptation with blind children, scheduled at Tuttle Demonstration School where observation will be provided; a course on teaching Braille, with a section for beginners and one for those with a working knowledge of the Braille system; and a course on visual impairment (178, 179, 180 under Curriculum and Instruction). A limited number of scholarships are available through the American Foundation for the Blind. For information write to Dean of Summer Session, 690 Johnston Hall, University of Minnesota, Minneapolis 14.

Institute on Dynamics of Posture and Poise

(June 26 and 27 at Norris Gymnasium for Women)

This Institute is especially designed to present practical and tested methods for making the teaching of posture and body movement functional rather than theoretical for teachers at both the elementary and secondary levels. Those individuals who wish to correct their own posture will be interested in the discussion and demonstration of such topics as: the balanced posture while walking, sitting, standing; how to conserve energy; graceful movement; efficient ways of doing everyday activities.

Speech and Drama Institute

As a special feature of the University High School program, a Speech and Drama Institute will be open to high school students. The Institute will have 2 sections: (1) a group of 30 high school students working on forensic activities, oral interpretation of literature, extemporaneous and other public speaking, discussion, and debate (June 18 through July 20); (2) a second group of 30 for work on dramatics for high school students (June 11 through July 14). High school speech teachers are urged to

register for the regular graduate courses of the Summer Session in order that they may take advantage of the observation opportunities available in the Speech and Drama Institute in the University High School.

For a more detailed announcement concerning the Institute write to Dean of Summer Session, 690 Johnston Hall, University of Minnesota, Minneapolis 14.

Farm Shop Management

A new course, Farm Shop Management (Agricultural Engineering 130), is designed to meet the needs of high school agriculture teachers in the fields of shop program administration, demonstration, job records, and shop problems relating to the farming program of students.

Program in Audiology

Under the Department of Speech and Theater Arts, in co-operation with the Audiology Clinic at the University Hospitals, there will be four special courses and an institute for parents of deaf children. The first term courses are Hearing Disorders (Speech 152), and Clinical Practice in Audiology (Speech 157). Second term courses are Language Training for the Deaf (Speech 127), and Auditory Training (Speech 156).

The Institute which will follow the close of the second term will be designed to help the parent of the deaf child deal with the special problems involved.

Radio and Television

Two courses in radio and television at the senior college level, Radio and Television Speech (Speech 65) and Radio and Television Drama (Speech 66), will be given in the Department of Speech and Theater Arts. Advanced work at the graduate level can be arranged on an individual basis in Readings in Speech (Speech 181-182-183).

The television production unit at KUOM in Eddy Hall on the Minneapolis Campus will be in operation throughout both sessions and will provide opportunity for observation and participation on an extra-curricular basis.

Cultural Resources of the Twin Cities

The School of Home Economics will give a course in Cultural Resources of the Twin Cities (Home Economics 119). The University is located in an area rich in a broad range of the arts and this course will provide students an opportunity to take advantage of them. Included will be architecture (both public buildings and homes), home landscaping, interior design and furnishings, painting, sculpture, ceramics, costume and food, optional areas: music, theater, and film. There will be lectures by practicing professional artists and designers, field trips to art galleries, studios, public buildings, homes, and commercial establishments.

Efficient Reading

Adult reading needs are a matter of real concern. The course Efficient Reading (see index), designed for the average and above-average adult reader, provides a unique combination of activities for improving reading speed, comprehension, and vocabulary.

Public Health Nursing

Two workshops for public health nurses will provide opportunities for short-time study in rehabilitation nursing and in mental hygiene applied to supervision in public health nursing. For further information, see the section on Schools and Colleges, Public Health.

Institute on Minnesota Government and Politics

An Institute on Minnesota Government and Politics (Political Science 114) to be held the first 2 weeks of the second term, July 16-27 inclusive, is intended to introduce to those who attend the sessions the organization and operation of political parties in Minnesota, and the nomination and election of candidates for public office, including campaign management, financing, strategy, and techniques. The role of issues, political interest groups, the political parties, the media of communication in the formation of public opinion, and the expression of that opinion at the polls will be emphasized throughout. Some attention will be devoted to the national party conventions, both of which are scheduled to be held after the Institute, in mid-August.

The topics will be presented by panels consisting of persons drawn from both major political parties in Minnesota, including party officials, candidates and workers, journalists, educators, elected public officials, and leaders of political interest groups.

A related course on American Political Parties (Political Science 137) may be taken during the last 3 weeks of the second term.

Journalism and Communications

The School of Journalism program contains courses for both undergraduate and graduate students interested in professional training, and it provides courses for advisers of student publications in high schools, junior colleges, and colleges.

The School also offers 5 courses and 2 graduate seminars in the area of mass communications. Courses that carry Senior College and graduate credit include Critical Writing, The Press in a Dynamic Society, Interpretation of Contemporary Affairs, History of Journalism, and Mass Communications. A graduate seminar open to students on this level of instruction will deal each term with Special Problems in Mass Communications. For those in the advertising sequence, Advertising Copy Writing is offered.

Murphy Hall, the School of Journalism building, is the headquarters of both the National Scholastic Press Association and the Associated Collegiate Press. Students are welcome to visit these organizations and to obtain counsel on publication problems from the staffs of NSPA and ACP.

Special Nursing Course

Planning for Emergency Nursing—In preparation to meet emergency situations from either natural forces or enemy-caused action, the nursing profession has a vital role. It has responsibility for planning the organization for nursing services and for preparing nursing personnel to meet the needs of patients under emergency situations.

Recognizing the concern of nurses in this total program of emergency nursing, the School of Nursing is offering during the first term this course in planning for emergency nursing. Miss Ann Magnussen, National Direc-

tor of the American Red Cross Nursing Services, will be the visiting instructor. She is a graduate of the University of Minnesota with a degree in public health nursing. She has had broad experience and has served in many capacities in disaster work—tornadoes, floods, and fires. The principles of care of people in natural disasters are the bases of plans for the expanded service needed in natural emergencies. (See Nu.Ad. 174, School of Nursing.)

A Summer Travel Course in European Art

The summer travel course in European art will be conducted by the Department of Art under the auspices of the Summer Session. It will cover the main phases of ancient, medieval, Renaissance, and modern art in a series of lectures, guided visits, and discussions held at important cultural centers, museums, and cathedrals. Among the cities to be visited are Paris, Avignon, Nimes, Arles, Nice, Genoa, Pisa, Rome, Florence, Siena, Venice, Verona, Innsbruck, Salzburg, Munich, Rothenburg, Speyer, Luxembourg, Brussels, Bruges, and London. Five credits will be given in Art 59 to students successfully completing the course.

The group will depart from Montreal by steamer on June 28, spend approximately 6 weeks in Europe, and disembark in Montreal on August 30.

For information write to Dean of Summer Session, 690 Johnston Hall, University of Minnesota, Minneapolis 14.

Institute for College Teachers of Biology

An Institute for College Teachers of Biology will be conducted this summer under the auspices of the National Science Foundation at the Lake Itasca Forestry and Biological Station. Members will enroll in one graduate course, carry out an individual research program, and participate in seminars on problems related to the teaching of biology. Ten stipends will be available.

Inquiries concerning this program should be addressed to Dean of Summer Session, 690 Johnston Hall, University of Minnesota, Minneapolis 14.

Institute for High School Teachers of Biology

Plans are being formulated for an Institute for High School Teachers of Biology to be held at the Lake Itasca Forestry and Biological Station. Teachers who would be interested in spending a summer in this field laboratory with other high school biology teachers should inquire of the Dean of Summer Session, 690 Johnston, University of Minnesota, Minneapolis 14.

American Studies Program

During the summer of 1956, visiting professors in art, literature, and sociology will offer courses in various aspects of American culture, as will members of the University of Minnesota staff in these and other departments (anthropology, economics, education, history, journalism, music, philosophy, and political science). A visiting professor will also conduct an American Studies seminar.

The American Studies summer program is designed for candidates for the B.A., the M.A., and the Ph.D. degrees. Candidates for these degrees

enroll in the above courses conducted by the participating departments and in American Studies seminars designed to integrate these courses. Knowledge of a foreign civilization is also required of all candidates.

Scandinavian Area Studies

The Scandinavian Area Studies program, held alternate summers at the University of Wisconsin and the University of Minnesota, for the summer of 1956 is scheduled to be held at the University of Minnesota. For detailed information consult Professor Alrik Gustafson, Department of Scandinavian Languages, 13 Folwell Hall, University of Minnesota, Minneapolis 14.

Economic Education

A special overview of current national and international economic problems is embodied in a second-term course in Current Economic Issues (Economics 129, School of Business Administration) intended for the nonmajor, including the teacher of social science who seeks some understanding of the economic side of everyday life. The course will be of particular value to teachers who have attended or are using the materials from recent economic education workshops.

Modern Language Institute

During the first term of the Summer Session, the Modern Language Institute will sponsor residence houses, located near the campus, for graduate and undergraduate students of French, Spanish, and German. All activities will be carried on in the language elected by the student. The directors will be Associate Professor Herman Ramras for the Deutsches Haus; Associate Professor Santiago A. Cuneo for the Casa Hispánica; and Associate Professor Guy Desgranges for the Maison Française. In each house there will be native assistants.

Programs—The program will consist of regular departmental courses conducted in the morning; practical conversation sections at the residence houses in the afternoon; and lectures, round-table discussions, plays, films, music, and dances in the evening. Thus, each house will constitute a milieu for training in the language and culture of the country and will provide a unique opportunity for improvement in the spoken language.

This year opportunity for observation of and participation in language instruction on the grade school level will also be provided.

The Institute has proved valuable to students and others who desire training in speaking a foreign language . . . those planning to apply for Fulbright or SPAN scholarships, or to join other foreign study groups . . . teachers or potential teachers of French, Spanish, or German, whether or not they are working for graduate degrees . . . men and women training for positions with the government, international organizations, or private business.

Fees and Scholarships—Each language program carries 10 quarter credits for the elementary group and 9 for advanced and graduate students. A special fee of \$40, in addition to regular Summer Session fees, is charged for the program offered in a language residence house. Room and board are additional. Several scholarships are available for the Maison Française and some may be available for the Deutsches Haus.

Music Education

Of interest to teachers of both vocal and instrumental music is a new course in music education, Recent Research and Literature (Music Education 170). It is designed to help teachers evaluate their materials and appraise new publications in such a way that they can make musically and educationally appropriate choices among them for use in their schools.

Statistics

Interdisciplinary—Interdisciplinary work in statistics sponsored by the Graduate School Committee on Statistics will be given first term by the distinguished mathematical statistician, Professor S. N. Roy of the Institute of Statistics, University of North Carolina. Two courses, Analysis of Variance and Multivariate Analysis—II (Mathematics 138B) and Statistical Models in the Social Sciences (Mathematics 139B) will be offered in the Department of Mathematics in the College of Science, Literature, and the Arts, and will be of interest to all students of statistics.

Florentine Renaissance

A new course, Florentine Renaissance (Humanities 63), given for the first time last summer, will be repeated in 1956 in the second term. Based on the spring quarter course, Renaissance Heritage, it presents a more intensive study of the aesthetic, moral, and political values of our European heritage by concentrating on the brilliant rebirth of artistic and social activity that occurred in 15th- and 16th-century Florence.

Workshops in the College of Education

Information on workshops for teachers in a variety of fields is given in the College of Education section (see index).

GENERAL INFORMATION

On its Minneapolis Campus the University of Minnesota places at the disposal of the Summer Session student the facilities of eleven schools and colleges comprising this great educational institution—their faculties, libraries, laboratories, observatory, and museums—and in addition a program of recreational activities including concerts and lectures, swimming, golf, tennis, billiards, and folk and ballroom dancing.

The location of the University also makes possible the use of the cultural and recreational facilities of a large metropolitan area. Lakes and lagoons on which to canoe, swimming beaches, picnic grounds in parks and along roadsides, evening concerts on lake shores and in parks, art centers, museums, libraries, beautiful stores for shopping and browsing, a wide choice of places for dining, as well as the many professional entertainments provided by a large city, are within easy access from the campus by public or private transportation.

The Institute of Agriculture which includes the College of Agriculture, Forestry, and Home Economics and the School of Veterinary Medicine is on the St. Paul Campus and has its own library, laboratories, and recreational facilities.

The campuses are connected by an intercampus bus line which gives regular service free to students enrolled for classes on both campuses.

An interurban bus line also connects the campuses with the two cities, thus making available the added cultural advantages of two large metropolitan centers—an attraction for the Summer Session student that is unique with the University of Minnesota.

Intercampus Bus

For students who are registered for classes on both the Minneapolis Campus and the St. Paul Campus, free transportation on the intercampus bus is provided. Tickets will be issued to students registered in the College of Agriculture, Forestry, and Home Economics and the School of Veterinary Medicine at the Office of Admissions and Records, St. Paul Campus; to those registered in other colleges, at the University post office on the ground floor of Coffman Memorial Union, Minneapolis Campus.

Parking Facilities

For the summer, some space will be available in the University garages at Summer Session rates for either or both terms. Reservations may be made in advance by writing to the Department of Protection and Safety, 520 Johnston Hall, University of Minnesota, Minneapolis 14.

Parking is also available on a daily basis in the University's outdoor parking lots which are located on and adjacent to the campus at reasonable rates.

General Offices

The office of the dean of the Summer Session is in 135 Johnston Hall. The Office of Admissions and Records and the office of the Bursar are on the first floor of the Administration Building. For the convenience of students registered in agriculture and home economics, branch offices are established on the second floor of Coffey Hall, St. Paul Campus. The offices of the several schools and colleges together with the office of student affairs function in the control of students during the summer just as during any other quarter of the year.

University Library

Full library privileges are available during the summer. Among the finest university libraries in existence, the University of Minnesota Libraries contain more than 1¾ million volumes and a wide variety of periodicals and pamphlets. Large, comfortable reading rooms provide an excellent atmosphere for study.

Departmental libraries on both campuses contain special collections of value to students.

Other available library facilities in the Twin Cities area include the Minneapolis Public Library, the St. Paul Public Library, the Minnesota Historical Society, and the James Jerome Hill Reference Library of St. Paul.

University Post Offices

The University post offices are located on the ground floor of the Coffman Memorial Union on the Minneapolis Campus and in Coffey Hall on the St. Paul Campus. All regular post office services are available at these stations.

All students registered on the St. Paul Campus are assigned a post-office box located in Coffey Hall in which they will receive all mail, announcements, and University communications.

Post-office boxes are provided only for those students registered on the Minneapolis Campus who have no assigned address. Students desiring this U. S. mail service should apply in the Coffman Union post office.

Official Daily Bulletin

Throughout the summer an official bulletin is published in the *Minnesota Daily*, the student newspaper of the University of Minnesota. In addition to announcements for students and faculty, it contains programs of the various recreational activities and matters of general interest. The *Minnesota Daily* is delivered to boxes strategically placed on the campuses each morning on which it is published. *Each student is held responsible for a knowledge of such information appearing in the official notices as may affect him.*

Students' Health Service

The Students' Health Service conducts a dispensary and infirmary during the Summer Session on the same basis as any other quarter of the year, the same staff of physicians, dentists, and nurses being on duty. Through the Students' Health Service, the University makes available to students medical care, physical examinations, health consultations, and hospitalization. General service is provided free of charge. For services which are specialized and individual in character, such as dentistry, outpatient calls, drugs, etc., special fees are charged. Medical care for pre-existing conditions is not provided.

Housing and Food Service

Living Expenses—The living expenses for students at the University are never very high, and this is true especially of the Summer Session. In addition to the University-maintained cafeterias on campus, several good restaurants are to be found in the immediate vicinity of the University. Further information concerning room and board may be obtained by addressing the Director of Student Housing, 209 Eddy Hall, University of Minnesota, Minneapolis 14. It is generally more satisfactory to engage accommodations after arrival than to make reservations in advance, except in the case of reservations at Comstock Hall or Sanford Hall, dormitories for women, the Winchell Cottages for women (co-operative residences), and Centennial Hall, dormitory for men, on the Minneapolis Campus; and Meredith Hall, dormitory for women, and Dining Hall, dormitory for men, on the St. Paul Campus.

ADMISSION AND REGISTRATION

Admission

The courses of the Summer Session are open to all qualified high school graduates, regularly admitted students of the University including those attending regular session, and those with previous college work. Recent high school graduates must be regularly admitted before enrolling in the Summer Session. Students beginning their University attendance

during the Summer Session who wish to attend during the academic year must submit credentials in the usual way.

Special Students—Students with previous college work who wish to attend the Summer Session only may do so without filing credentials, provided they are in good standing and are not candidates for a degree. Such students will be classified as “special” for the Summer Session only.

Persons about 24 years of age or older who have not had previous college work and who are not candidates for a degree but wish to complete certain specific college subjects will also be considered for admission as special students for Summer Session only.

Attendance during the Summer Session in no way guarantees special students admission to the regular academic year. Special students who wish to be considered for admission to a subsequent term must file regular admission applications early in the summer.

Graduate Students—The procedure for admission of graduate students is discussed in the section on the Graduate School (see index).

Degree Candidates—Those who expect to become *candidates for a degree* at the University during the Summer Session must have filed an application for admission and have been regularly admitted to a college of the University.

All students should consult the *Bulletin of General Information* for detailed requirements governing admission and the granting of degrees. This bulletin and specific college bulletins may be obtained by writing to Office of Admissions and Records, University of Minnesota, Minneapolis 14.

Registration Dates

In order that the short terms may prove of maximum value, and that the work of the courses may not be interfered with by late entrants, students are urged to complete their registration on the following dates:

First Term

Registration..... Monday, June 11, 8 a.m. to 4 p.m.
 Fee Payment, last day without penalty..... Tuesday, June 12

Late fees are charged for the first term as follows for payment of fees on:

Wednesday, June 13.....	\$2.00
Thursday, June 14.....	3.00
Friday, June 15.....	4.00
Monday, June 18.....	5.00

No registrations are allowed for the first term after Thursday, June 14, without the special permission of the dean of the school or college concerned.

Second Term

Registration and Fee Payment... Monday, July 16, 8 a.m. to 4 p.m.

The late fees for the second term are as follows for payment of fees on:

Tuesday, July 17.....	\$2.00
Wednesday, July 18.....	3.00
Thursday, July 19.....	4.00
Friday, July 20.....	5.00

No registrations will be accepted for the second term later than Thursday, July 19, without the special permission of the dean of the school or college concerned.

No provision is made for allowing exemption from the late fees to those who are unable to reach the University during the regular registration days.

Place of Registration

First Term

June 11: Main Ballroom, Coffman Memorial Union (Minneapolis Campus students)

220 Coffey Hall (St. Paul Campus students)

Students registering in the College of Agriculture, Forestry, and Home Economics or the School of Veterinary Medicine should report to 220 Coffey Hall, St. Paul Campus, for registration materials.

Other students should report to the Main Ballroom, Coffman Memorial Union.

Students registering before or after the regular registration day, June 11, should begin registration at the Office of Admissions and Records, Minneapolis or St. Paul Campus as appropriate.

Second Term

July 16: Information Booth, Administration Building (Minneapolis Campus students)

220 Coffey Hall (St. Paul Campus students)

Students registering in the College of Agriculture, Forestry, and Home Economics or the School of Veterinary Medicine should report to 220 Coffey Hall, St. Paul Campus, for registration materials.

Other students should report to the Office of Admissions and Records Information Booth, first floor, Administration Building, Minneapolis Campus, for registration materials and instructions.

Courses Tallied in College Offices

As part of registration, all students, including graduate students, must tally for courses listed below. The student does this by obtaining an IBM class reservation card at the appropriate college tally office indicated. These class reservation cards must be attached to the student's registration blank when it is turned in to obtain statement of fees.

Agricultural Economics

180—CofH 220

Agricultural Engineering

130—CofH 220

Analytical Chemistry

1—E 136 for IT, JohH 210†† for other students

7—JohH 210††

All other courses under 200—E 136

†† These courses will be tallied in the Main Ballroom, Coffman Memorial Union, on the regular registration day, June 11.

Art

All courses under 200 except 1,
59—JohH 210††

Art Education

17, 18, 19—Bu 206††

Business Administration

All courses under 200, except
160—VH 107††

Civil Engineering

23—E 136

Communication

3—JohH 210††

Composition

All courses—JohH 210††

Curriculum and Instruction

101, 109, 119, 125, 135, 147, 150,
179, 180, 192, 240—Bu 206††

Drawing and Descriptive Geometry

All courses—E 136

Economics

3, 5, 6, 7, 24, 25, 26—JohH 210††

All other courses under 200, ex-
cept 160, 165—VH 107†† for
BA, and JohH 210†† for other
students

Educational Administration

200—Bu 206††

Educational Psychology

110, 116a, 125, 133, 134, 216a,
217a—Bu 206††

Electrical Engineering

36, 37—E 136

English (IT)

85, 86—E 136

Entomology and Economic Zoology

197—CofH 220

Family Life

All courses—JohH 210††

General College

All courses—NH 106

General Engineering

70—E 136

**History and Philosophy of Educa-
tion**

180—Bu 206††

Home Economics

34—CofH 220 for AFHE, JohH
210†† for other students

All other courses—CofH 220

Home Economics Education

191, 192, 193a—CofH 220

Horticulture

All courses under 200—CofH 220

Humanities

All courses—JohH 210††

Hydromechanics

103, 104—E 136

Industrial Engineering

All courses—E 136

Inorganic Chemistry

4, 5—CofH 220 for AFHE, E 136
for IT, and JohH 210†† for
other students

9, 10, 11, 12—E 136 for IT, JohH
210†† for other students

All other courses under 200—
E 136

Journalism

10, 55, 73—JohH 210††

Mathematics (IT)

All courses—E 136

Mathematics (SLA)

All courses—JohH 210††

Mechanical Engineering

All courses—E 136

Mechanics and Materials

All courses—E 136

Metallurgical Engineering

All courses under 200—E 136

†† These courses will be tallied in the Main Ballroom, Coffman Memorial Union, on the regular registration day, June 11.

Methods and Student Teaching

52—Bu 206††

Mining Engineering

All courses—E 136

Mortuary Science

All courses—NH 156

Music

11c, 12c—JohH 210††

Natural Science

165, 175—JohH 210††

Organic Chemistry61, 62—E 136 for IT, JohH 210††
for other students

All other courses—E 136

Personal Orientation

1—JohH 210††

Petroleum Engineering

All courses—E 136

Physical Chemistry

107, 108—JohH 210††

All other courses under 200—
E 136**Physical Education for Men**

1a, 1b, 1c, 2a, 2b, 8—JohH 210††

Physical Education for Women

7, 8, 32—JohH 210††

Physics

1a, 2a—JohH 210††

13, 14, 14a—E 136

Public Health

110, 111, 130, 131—JohH 210††

Rhetoric47—CofH 220 for AFHE, JohH
210†† for other students

All other courses—CofH 220

Social Science

All courses—JohH 210††

Speech1, 2, 3, 33, 51, 65, 66, 81, 103, 106,
107, 131, 132, 140—JohH 210††**Changes in Registration**

After a student's registration has been accepted by the recorder, any change must be approved by the Committee on Student Scholastic Standing or the dean of the college in which the student is registered. *Only in exceptional cases will any change be made after classes have begun.*

The University of Minnesota reserves the right to cancel any and all courses in which the registration is insufficient to warrant continuation of the course.

Tuition and Incidental Fees

The following fees are payable each term by each full-time student (whether resident or nonresident) at the time of registration and must be paid before registration is complete:

Tuition fee (per term)	\$50.00
Incidental fee†† (per term)	8.50
Total fee (per term)	\$58.50

†† These courses will be tallied in the Main Ballroom, Coffman Memorial Union, on the regular registration day, June 11.

‡‡ The incidental fee of \$8.50 per term is charged each student for which the student receives the privileges of the Coffman Memorial Union, the Health Service, and the recreation program including the *Minnesota Daily*.

The following fees are payable each term at the time of registration by each student taking 4 credits or less (whether resident or nonresident) and must be paid before registration is complete:

Part-time tuition fee (4 credits or less) (per term)	\$39.00
Incidental fee†† (per term)	8.50
Total fee (per term)	<u>\$47.50</u>

NOTE—Regular tuition fees as provided during the academic year will be charged all students in Nursing. In Law, Veterinary Medicine, Medicine, and Dentistry, residents pay the regular Summer Session tuition fee, nonresidents pay tuition at the summer rate or academic year rate, whichever is higher. Special tuition fees are collected at the Biological Station. All students pay the Summer Session incidental fee.

Graduate students who have completed all of their graduate work with the exception of their thesis will be allowed to register for *thesis work only* upon the payment of \$26 tuition per term and the incidental fee.

Eligible Summer Session staff members pay at the following rates: more than 3 credits, \$23 per term; 3 credits or less or thesis only, \$11.50 per term; plus incidental fee.

Refer to the index for fees in the following schools and stations:

- Medical School
- School of Dentistry
- Itasca Forestry and Biological Station
- Law School
- School of Nursing
- School of Veterinary Medicine

Course Fees

All fees are per term unless otherwise indicated

All course fees except the following have been abolished effective summer 1956. Students taking the following courses will pay course fees in addition to tuition as follows:

Civil Engineering \$35.00—23 (summer camp)	30.00 for one (no cr.) individual lesson per week—A, B, C, D, E, F
Itasca Biological Station \$10.00—Laboratory fee	30.00 for one (2 cr.), \$60.00 for two (4 cr.) individual lessons per week—11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27
Modern Language Institute (Summer Session) \$40.00 per term—French (22, 58, 109); or German (22, 66, 107); or Spanish (22, 58, 109)	50.00—13B 60.00—204
Music \$15.00—Class lessons in 11C, 12C 25.00—60B, 61B, 62B	Music Education \$30.00 for one (2 cr.), \$60.00 for two (4 cr.) lessons per week—225E

†† The incidental fee of \$8.50 per term is charged each student for which the student receives the privileges of the Coffman Memorial Union, the Health Service, and the recreation program including the *Minnesota Daily*.

Physical Education (men)

Towel and locker fee for students using PE facilities for activity, \$2.50 per quarter payable at department.

Uniforms (optional for class or recreation activity), \$2.00 per quarter payable at department.

Physical Education (women)

\$3.25 (maximum \$6.50 per quarter)—All activity courses

Public Health

\$100.00—169, 190

Deposit Cards

Deposit cards may be purchased from the bursar (or from the cashier, Coffey Hall, for Agricultural Biochemistry). Chemistry and Agricultural Biochemistry cards are \$10; Pharmacy and Physiological Chemistry cards are \$5.

Laboratory material and breakage will be charged against your deposit card. Any unused balance will be refunded at the end of the course.

You must present your deposit card to be assigned a laboratory desk. Veterans (P.L. 346, 16, 894) will receive information from their instructor concerning deposit cards and laboratory assignments.

Special Fees**Music Practice Room**

\$1.00 per term for one, \$2.00 for two, 50 cents for each additional hour per week—all instruments except organ

.20 per hour—small organ

.40 per hour—large organ

Speech and Hearing Clinic—Non-students

Articulatory cases, per 10 weeks—\$15.00 for 1, \$25.00 for 2, \$30.00 for 3, \$35.00 for 4, \$40.00 for 5 lessons per week.

Stuttering, per session—\$100.00 for full-time remediation

Speech and Hearing Clinic—Students

\$5.00 per term—special clinical treatment

Miscellaneous

\$5.00—Credential examination

5.00—Large diploma

2.50—Master's thesis binding

25.00—Ph.D. thesis binding

5.00—Special examination

Refund of Fees

Students who cancel their Summer Session registration without class attendance shall be allowed a full (100 per cent) refund of fees. Students who cancel after having attended classes shall be allowed a refund of fees on the following basis:

Length of Term	80 Per Cent Refund for Attendance	60 Per Cent Refund for Attendance	No Refund for Attendance of More Than
5 weeks	during 1st week	during 2nd week	2 weeks
4 weeks	1 to 4 days	5 to 8 days	8 days
3 weeks	1 to 3 days	4 to 6 days	6 days
2 weeks	1 to 2 days	3 to 4 days	4 days
1 week	1 day	2 days	2 days

Auditors

Fees for auditors are the same as for students registered for credit. Permission to attend classes as auditors may be granted by the dean of

the college or school with the consent of the department concerned. The procedure for registration as auditor is the same as for registration for credit, except that "auditor" should be indicated on the registration sheet. It is expected that auditors will be registered in at least one course for credit, but this regulation may be waived in exceptional cases.

Amount of Work

A maximum of 9 credits or two 5-credit courses is considered a full program for either term. Registration for a greater number requires special permission from the Committee on Student Scholastic Standing or the dean of the school or college in which the student is registered.

Examinations

Examinations are normally held at the last scheduled class hour for each course.

Regulations Governing Granting of Degrees

The Board of Regents will confer the degree appropriate to the course pursued subject to all the following conditions:

1. **Curriculum Requirements**—Certification by the University recorder of the completion of all requirements of the course of study as outlined in the college announcement, or its equivalent as determined by the faculty of the college offering the course.

2. **Recommendation by the Faculty.**

3. **Residence Requirement**—The student must earn at least 1 year's credit in residence in this University. If the term of residence is only 1 year, that year must be the senior year. In any case, the student must spend 2 quarters of the senior year in residence. This last requirement may be waived under such rules as may be established by each college for such exemptions. In addition, special residence requirements must be met in several of the schools and colleges. Extension courses (not correspondence study courses) completed in Minneapolis, St. Paul, or Duluth may apply toward the residence requirement.

4. **Payment or satisfactory arrangement** of all financial obligations due the University.

5. **Attendance at Commencement**—A candidate for a degree is required to be present at the commencement exercises at which his degree is conferred. Commencement exercises for Summer Session candidates will be held:

- First termThursday, July 12, 8 p.m.
- Second termThursday, August 16, 8 p.m.

A student who fails to attend may not receive his diploma until the expiration of 1 year, unless in the meantime he attends commencement exercises or unless excused from such attendance by the dean of the college.

6. **Graduation Fee**—each degree, \$10.

7. **Placement Service Fee**—required of candidates for degrees from:

Institute of Technology	\$2.50
College of Education (except Nursing Education)	\$5.50

GRADUATE SCHOOL

The Graduate School presents unusual opportunities for advanced study and research in many fields. It brings together in a single organization all the programs and offerings of the University at the level of advanced instruction that may lead to the higher degrees of master of arts, master of science, and doctor of philosophy.

The privileges of the Graduate School are open, upon application, to those with satisfactory character and professional qualifications who have received Bachelor's degrees from recognized colleges and universities and whose records demonstrate that they are adequately prepared for successful work in their chosen major fields of study. Applications are considered by the Graduate School as such and by graduate advisers in the departments in which the applicants propose to carry major work and with due consideration of the available facilities for accepting additional graduate students. In many instances applicants are required to present evidence supplementary to that contained in their official transcripts. This evidence may take the form of tests such as the Graduate Record Examination, the Miller Analogies Test, or the Ohio Psychological Examination.

Admission

Students must make application for admission at least 4 weeks before the opening of the Summer Session which they expect to attend in order to avoid delay and last-minute disappointment as well as possible penalty for late registration. Applicants who do not hold a degree from the University of Minnesota must present a transcript in duplicate of their undergraduate work. Applicants who hold a degree from the University of Minnesota are expected to present a certified copy of their scholastic record. Applications should be sent to the Dean of the Graduate School, University of Minnesota, Minneapolis 14.

Candidacy for a Degree

Admission to the Graduate School does not admit a student to candidacy for a degree. Admission to such candidacy is contingent upon the ability of the student and the quality of his work in the Graduate School of the University of Minnesota. Admission to candidacy indicates a judgment by members of the graduate faculty that the student shows sufficient promise to be permitted to proceed toward a degree. Under no circumstances will a student be admitted to candidacy until he has been in residence for at least 1 quarter or 1 term of the Summer Session and until he has removed any deficiencies which may have conditioned his admission to the Graduate School.

Following the completion of from 9 to 15 graduate credits, at least 3 of which must be in the major, the student who expects to obtain a Master's degree should apply for admission to candidacy for that degree on a blank provided for the purpose. This application should be submitted as soon as a student has earned sufficient credits to be eligible for candidacy. The *application for candidacy* will be reviewed by an appropriate committee normally from the major department, division, or college. This committee will recommend to the dean, through the appropriate Graduate Group Committee, the acceptance or rejection of the application for candidacy. The dean or the reviewing committee may

require any evidence which is thought pertinent to the consideration of the application.

Master's Degree, Plan A

The *course work* for the Master's degree according to Plan A may be completed in 4 separate summer terms of 5 weeks each. In this case, the candidate will be expected to register for thesis work either in residence or *in absentia* to complete the equivalent of 3 quarters. All requirements for the Master's degree under Plan A must be completed within 6 years after the initiation of the degree program.

The Master's degree under Plan A may be earned by qualified students who complete a minimum of 27 quarter credits, 18 in the major and 9 in the minor, who meet special requirements such as that of a reading knowledge of a foreign language, and who present a satisfactory thesis and pass the required final written and/or oral examinations.

Theses of Summer Session students must be complete and registered in the Graduate School office at least 6 weeks before the end of the term in which they take the degree (first term: Thursday, May 31, 1956; second term: Thursday, July 5, 1956).

Master's Degree, Plan B

The requirements under this plan in matters of admission, residence, transfer of credits from other institutions, and language requirements follow Plan A. Plan B differs in substituting for the thesis a heavier course requirement which, if met in Summer Sessions, means more than the minimum four sessions of course work possible under Plan A. All requirements for the Master's degree under Plan B must be completed within 7 years after the initiation of the degree program.

Under Plan B, candidates for the Master's degree must complete, with an average of B, a minimum of 45 quarter credits in courses listed in the *Bulletin of the Graduate School*. At least 21 credits shall be in a single field of concentration. At least 18 credits shall be in related fields, and it is understood that this work shall include at least 2 *fields other than the major*. The Master's degree under Plan B, as compared with Plan A, is somewhat less a test of research interest and is more adapted to those who, for example, as teachers or school administrators, will profit by a broader range of knowledge in the fields with which they are professionally concerned. The requirements under Plan B are meant to forward the students' advanced education, not on a different level but for a somewhat different purpose than in the case of the requirements for Plan A. The transfer from one plan to the other may be made only with the approval of the adviser and the appropriate Graduate Group Committee.

Under Plan B, at least 9 quarter credits either in the field of concentration or in related fields must be in advanced courses, seminars, or independent work under faculty supervision and requiring the preparation of written reports representing the quality but not the range of a Master's thesis. *Courses which offer an opportunity to meet this 9-hour requirement are marked in this bulletin with an asterisk (*)*.

A full statement of the requirements for advanced degrees may be found in the Graduate School bulletins.

Students must register in the Graduate School if their work is to count toward an advanced degree.

All requests for information concerning graduate work, including admission to the Graduate School, should be addressed to the dean of the Graduate School.

INSTITUTE OF AGRICULTURE

There are many courses, primarily for graduate students, in the College of Agriculture, Forestry, and Home Economics and in the School of Veterinary Medicine. Most departments correlate thesis and problem work with work in the Agricultural Experiment Station.

Information concerning admission to the Graduate School should be obtained from the dean of the Graduate School. Students wishing information regarding courses at the graduate level should confer with the graduate staff of the department or school in which they will be working.

Undergraduate students also will find courses for their needs.

High school teachers of agriculture may take advanced courses in those agricultural fields which are applicable to the requirements of the Department of Agricultural Education.

The School of Home Economics will offer courses for undergraduate students and qualified graduate students in both terms. Courses leading to graduate degrees through Summer Session attendance will be offered in home economics education.

College of Agriculture, Forestry, and Home Economics

AGRICULTURAL BIOCHEMISTRY (Ag.Bi.)

First Term and Second Term

203. Research Problems. (Page 46 ††) (2-5 cred.; grad.; prereq. #: ar.) Staff

AGRICULTURAL ECONOMICS (Ag.Ec.)

First Term

180. Farm Accounting. Principles involved in keeping, supervising, and analyzing farm records. Meets for first three weeks only. (3 cred.; jr., sr., grad.; prereq. 2; I-II MTWThF; HH 311) Engene

200. General Seminar in Agricultural Economics. Special problems for individual work by qualified students. (3 cred.; grad.; prereq. # in advance of registration; ar.) Staff

Second Term

201. General Seminar in Agricultural Economics. (See 200, first term) Staff

AGRICULTURAL EDUCATION

See index

†† For description see *Bulletin of the Graduate School* for 1954-56

AGRICULTURAL ENGINEERING (Ag.En.)

First Term

130. **Farm Shop Management.** Planning high school farm shops including building layouts, equipment organization, tool and supply selection, and storage methods. Administering shop programs, demonstrations, job records and shop problems relating to the student's farming program. (3 cred.; jr., sr., grad.; prereq. Ag.Ed. 91, Ag.En. 40, 41 and 3 additional credits in agricultural engineering, or #) Henderson

Sec. 1, Lect. I-II TTh, En 50
Lab. I-II MWF, En 50

Sec. 2, Lect. V-VI TTh, En 50
Lab. V-VI MWF, En 50

AGRONOMY AND PLANT GENETICS (Agro.)

First Term and Second Term

AGRONOMY

- 201.* **Research in Farm Crops.** (Page 51 ††) (Cred. ar.; grad.; prereq. 121, 123; ar.) Dunham, Schmid

PLANT GENETICS

- 241.* **Research in Plant Genetics.** (Page 51 ††) (Cred. ar.; grad.; ar.) Myers, Burnham, Rinke, Lambert, Thomas
244. **Laboratory Methods in Plant Breeding.** (Page 51 ††) (1½ cred.; grad.; ar.) Staff

ANIMAL HUSBANDRY (An.Hu.)

First Term and Second Term

- 213.* **Research in Animal Husbandry.** Special problems assigned to students to be worked out under the supervision of a faculty member. (3-5 cred.; grad.; ar.) Ferrin, Hanson, Harvey, Winters

DAIRY HUSBANDRY (Dy.Hu.)

First Term and Second Term

- 208.* **Research in Dairy Production.** (Page 87 ††) (Cred. ar.; prereq. preliminary grad. work; ar.) Petersen, Williams, Clifton, Graham
- 209.* **Research in Dairy Manufacturing.** (Page 87 ††) (Cred. ar.; prereq. preliminary grad. work; ar.) Combs, Coulter, Thomas, Morris
- 215.* **Research in Dairy Bacteriology.** (Page 87 ††) (Cred. ar.; prereq. preliminary grad. work; ar.) Olson, Jezeski

ENTOMOLOGY AND ECONOMIC ZOOLOGY (Ent.)¶¶

First Term

197. **Introduction to Research.** Preparation for investigational work in lines of entomology. Advanced laboratory, field, and library work; training in the preparation of bibliographies and manuscripts; special problems. (Cred.

†† For description see *Bulletin of the Graduate School* for 1954-56.

¶¶ For additional courses in the first term see Lake Itasca Forestry and Biological Station.

ar.; jr., sr., grad.; prereq. 9 hrs. entomology, and other prescribed work; ar.) Mickel, Hodson, Holdaway, Marshall, Richards, Cutkomp, Haydak, Smith, Beer, Cook, Price

- 204. Research in Entomology.** Ample opportunity for research work in various phases of entomology will be afforded properly qualified students. This work will be individual. Students who plan to undertake special problems should correspond with the department relative to methods of collection and preparation of material. (Cred. ar.; grad.; ar.) Mickel, Hodson, Holdaway, Marshall, Richards, Cutkomp, Haydak, Smith, Beer, Cook, Price

Second Term

- 13. Field Zoology.** Offered at Itasca Park. (2 cred.) Krogstad
- 197. Introduction to Research.** (See first term)
- 204. Research in Entomology.** (See first term)

FORESTRY (For.)

OFFERED ON THE ST. PAUL CAMPUS

First Term and Second Term

- 200.* Research Problems in Silviculture.** (Ar.) Hansen, Schantz-Hansen, Schneider, Duncan
- 203.* Research Problems in Forest Management.** (Ar.) Schantz-Hansen, Schneider, Hall
- 205.* Research Problems in Forest Economics.** (Ar.) Beazley, Hall, Kaufert, Sullivan
- 207.* Research Problems in Wood Technology.** (Ar.) Kaufert, Hossfeld, Rees
- 213.* Research Problems in Forest Utilization.** (Ar.) Kaufert, Hossfeld, Rees
- 218.* Research Problems in Forest Measurements and Photogrammetry.** (Ar.) Brown, Meyer
- 220.* Research Problems in Forest Tree Genetics.** (Ar.) Pauley
- 221.* Research Problems in Forest Influences.** (Ar.) Duncan
- 222.* Research Problems in Forest Policy.** (Ar.) Hall, Beazley

OFFERED AT ITASCA FORESTRY AND BIOLOGICAL STATION^{¶¶}

Second Term

July 30 to September 7

Open only to students who have completed at least 2 quarters of forestry, or 1 year in a junior college or other college. Preparatory courses in botany, dendrology, and zoology are desirable. The schedule is arranged to occupy the student's full time for 5½ days per week. Largely field or laboratory work. In addition to the regular field work in For. 5 and 6, special field trips to federal, state, and private forestry operations are required. Required of all forestry students including transfer stu-

^{¶¶} For additional courses in the first term see Lake Itasca Forestry and Biological Station.

dents in the Forest Management and Forestry-Wildlife Management curriculums.

- 2. **Important Forest Plants.** (Page 67 ††) (2 cred.) Rees
- 5. **Field Forest Ecology.** (Page 67 ††) (2 cred.) Hansen
- 6. **Field Measurements.** (Page 67 ††) (2 cred.) Brown
- Ent.13. **Field Zoology.** Field and laboratory work on insect life and the natural history of common animals in the Itasca Park area. (2 cred.) Krogstad
- Soil.3A. **Field Forest Soils.** Field and laboratory studies in forest soils. (1 cred.) Arneman

HOME ECONOMICS (H.E.)

First Term

- F.L.15. **The Home and Its Furnishing.** Present-day problems in choice of a house; house plans as they affect family living; comparative costs and financing; selection of location; exterior and interior design; selection and arrangement of appropriate furnishings and accessories. (3 cred.; open to all; II MTWThF; WeH 206) Myren
- 27. **Related Art Problems.** Emphasis on home furnishings. Using house furnishing materials, the student learns good treatment and combinations of colors, forms, and textures; studies the relationship of design to materials, techniques; the needs of people and suitability to use. Some craft problems included. (3 cred.; soph.; prereq. 21; III-IV MTWThF; HE 359) Esteros
- 34. **Nutrition Problems.** A consideration of the problems commonly met by adults and children in typical families. (4 cred., §76, or 170 and 171; 3rd qtr. soph.; prereq. 31, 40, physiology or human biology; lect. I MTWThF, lab. II MWF; HE 125) Peterson
- 49. **Household Equipment.** The principles that should guide in the selection, operation, care, and convenient arrangement of equipment in the home. (3 cred.; soph.; prereq. Ag.En. 35, or ‡; III-IV MTWThF; HE 124-128) Stulberg
- 53. **Advanced Clothing.** Problems in designing and tailoring a fitted, lined wool jacket; use of a plaid or striped fabric in the designing and construction of a garment; social and economic problems involved in children's clothing. (3 cred.; prereq. 4, 50 or †50; VII-VIII MTWThF; HE 328) Ar.
- 71. **Demonstrations.** Purposes and techniques of food demonstrations. (1 cred.; 3rd qtr. jr., sr.; prereq. 41; VI-VII TTh; HE 57, 150) Trammell
- 86. **Home Management Laboratory.** (Students should not register for a first period class.) Residence for 5 weeks in 1 of the 2 home management houses, with direct experience in managing and sharing the various activities and responsibilities involved in the group living of the students in residence. (4 cred.; jr., sr.; open only to students registered in the regular year; prereq. 85 or †85, 40, 41 advised) Jeary, Stephens
- 115. **Economic and Social Aspects of Clothing.** Trends in clothing consumption; clothing expenditure patterns; clothing budgets for low-income and dependent groups; motivation in dress; sociological and economic aspects of fashion in dress; ready-to-wear industry. (3 cred.; prereq. 50, Ag.Ec. 3; II MTWThF; HE 201) Ar.
- 119. **Cultural Resources of the Twin Cities.** Study of the broad range of arts represented in the Twin Cities area. Lectures by instructor and practicing professional artists, field trips, selected readings. Areas from which selec-

†† For description see *Bulletin of the College of Agriculture, Forestry, and Home Economics* for 1955-57.

tion will be made for class discussion and individual study: architecture, including interior design (homes and public buildings), gardens, painting, sculpture, ceramics, music, theater, costume, and food. (2-3 cred.; VIII-IX MWF; HE 350) Esteros

139. **Advances in the Management and Preparation of Food.** Recent developments in food materials and methods of preparation; their implications in the management of time, money, and energy expenditures. (3 cred.; prereq. 40 or equiv.; III MTWThF; HE 125) Trammell
180. **Home Planning and Furnishing.** Problems in planning and furnishing a home to meet family needs. Aesthetic, economic, social, and managerial aspects are considered. Each student develops a plan for a house and its furnishings. Field trips. (5 cred., §G.C. 16, F.L. 15, H.E. 24 or 57; prereq. 27, 49, 120 recommended, or #; VII TTh and VIII-IX MTWThF; HE 360) Myren
184. **Home Management Principles.** A study and discussion of managerial aspects of homemaking; work simplification of household activities; financial records and budget-making for the individual and the family. (3 cred.; jr., sr., grad.; prereq. 40, 41 advised; III MTWThF; HE 201) Jeary
185. **Family Relationships.** Factors that promote satisfaction in family living, and interrelationships of the family and the community. (3 cred.; jr., sr., grad.; prereq. 17, 86, H.E.Ed. 90, or #; VI MTWThF; HE 201) Gallagher
- 295.* **Home Economics Problems.** Investigation of selected problems in home economics in fields such as foods, nutrition, and related art. Independent study and written reports. (1-5 cred.; prereq. #; ar.) Esteros, Leichsenring, Noble

Second Term

86. **Home Management Laboratory.** (See first term) Segolson
- 295.* **Home Economics Problems.** Investigation of selected problems in home economics in the field of nutrition. Independent study and written reports. (1-5 cred.; prereq. #; ar.) Pilcher

HOME ECONOMICS EDUCATION

See index

HORTICULTURE (Hort.)

First Term and Second Term

- 190-191-192. **Special Problems.** (Page 148 ††) (2-4 cred.; prereq. #; ar.) Staff
- 247.* **Reports on Special Horticultural Topics.** (Page 148 ††) (Cred. ar., maximum 9 cred.) Staff
- 249.* **Research in Horticultural Crop Breeding.** (Cred. ar., maximum 9 cred.) Currence, Krantz, Hutchins, Wilcox

PLANT PATHOLOGY AND BOTANY (Pl.Pa.)¶¶

First Term and Second Term

- 206.* **Research in Plant Pathology.** (Page 170 ††, description for 203-204-205) (Cred. ar.; grad.; PP) J. J. Christensen, Eide, Hart, C. M. Christensen, Dodsall, Kernkamp, King, Kommedahl, French, DeVay

†† For description see *Bulletin of the Graduate School* for 1954-56.

¶¶ For additional courses in the first term see Lake Itasca Forestry and Biological Station.

- 210.* **Special Problems in Mycology.** (Page 170 ††) (Cred. ar.; grad.; prereq. 105-106-107; PP) J. J. Christensen, C. M. Christensen, Dosedall
- 257.* **Research Problems in Applied Plant Physiology.** (Page 171 ††) (Cred. ar.; grad.; AgBot) Landon, DeVay
- 263.* **Research Problems in Agricultural Botany.** (Page 171 ††) (Cred. ar.; grad.; AgBot) J. J. Christensen, Kommedahl

POULTRY HUSBANDRY (Po.Hu.)

First Term and Second Term

- 214.* **Research in Poultry Husbandry.** Research problems assigned to meet the needs of the student. (Cred. ar.; grad.; prereq. #; ar.) Ar.
- 215.* **Research in Poultry Nutrition.** (Cred. ar.; grad.; prereq #; ar.) Johnson
- 216.* **Research in Poultry Breeding.** (Cred. ar.; grad.; prereq. #; ar.) Shoffner
- 218.* **Research in Poultry Products.** (Cred. ar.; grad.; prereq. #; ar.) Swanson

RHETORIC (Rhet.)

First Term

22. **Public Speaking.** A practical course in the fundamentals of speech making. Particular emphasis upon organizing the speech and projecting it to the audience. (3 cred.; soph., jr., sr.; prereq. satisfaction of freshman communication requirements; IV MTWThF; En 307) Nichols
47. **Efficient Reading.** Designed for students, teachers, and business or professional people of average reading ability wishing to improve speed, comprehension, and vocabulary. Techniques valuable in achieving or maintaining superior scholastic or professional status. Maximum use of recently developed visual aids. Of special value to teachers interested in laboratory-type experience in adult reading techniques. Not a remedial course. (3 cred.; section limited to 30 students) Mondale, Wright
- Sec. 1, I MTWThF, ForH 85 Sec. 3, III MTWThF, ForH 85
Sec. 2, II MTWThF, ForH 85 Sec. 4, IV MTWThF, ForH 85
51. **Exposition.** Essays and articles, technical writing, application letters, review of English usage. (3 cred.; jr., sr.; prereq. satisfaction of freshman communication requirements; III MTWThF; En 308) Nichols

Second Term

22. **Public Speaking.** (See first term) (IV MTWThF; En 307) Drake
47. **Efficient Reading.** (See first term) Seymour, Wright

Sec. 1, I MTWThF, ForH 85 Sec. 3, III MTWThF, ForH 85
Sec. 2, II MTWThF, ForH 85 Sec. 4, IV MTWThF, ForH 85

SOILS (Soil.)

First Term and Second Term

- 202.* **Research Problems in Soils.** (Page 218 ††) (2-5 cred.; grad.; prereq. #; ar.) Martin, Burson, Caldwell, MacGregor, Schmidt, Blake, Arneman, Rust

†† For description see *Bulletin of the Graduate School* for 1954-56.

Second Term

- 3A. Field Forest Soils.** Soil texture, structure, consistence, reaction, and color. Field study and description of soil profiles. Use of soil maps in forestry. (1 cred.; given at Itasca) Arneman

School of Veterinary Medicine (Vet.)‡‡

All classes scheduled by arrangement

First Term and Second Term

DIVISION OF VETERINARY ANATOMY (V.Anc.)

- 191. Special Studies in Veterinary Anatomy.** Individual problems for further study in gross anatomy, histology, embryology, neurology, hematology, and histological techniques. (1-5 cred. per term; registration for more than one term permitted; prereq. 151 or equiv., #) Kitchell, Weber

DIVISION OF VETERINARY BACTERIOLOGY AND PUBLIC HEALTH (V.Bac.)

- 128. Problems in Veterinary Bacteriology and Public Health.** (Cred. ar.; prereq. 103 or equiv., #) Pomeroy, Roepke, Lindorfer
- 205. Advanced Veterinary Bacteriology.** Special topics, techniques, collateral reading, and conferences. (Cred. ar.; prereq. #) Pomeroy, Fenstermacher, and staff.

DIVISION OF VETERINARY PATHOLOGY AND PARASITOLOGY (V.Pa.P.)

- 157. Veterinary Post-Mortem Pathology.** (1-3 cred.; registration for more than one term permitted; jr., sr., grad.; prereq. 153 or equiv., #) Sautter, Kernkamp
- 158. Veterinary Surgical Pathology.** Study of neoplasms, surgical biopsies, post-mortem material, together with a review of pertinent literature. (1-3 cred.; jr., sr., grad.; prereq. 153, #) Sautter, Kernkamp
- 201. Advanced Animal and Poultry Pathology.** Studies of clinical material, collateral reading, and conferences. (Cred. ar.; prereq. #) Sautter, Fenstermacher, Kernkamp

DIVISION OF VETERINARY PHYSIOLOGY AND PHARMACOLOGY (V.P.P.)

- 130. Problems in Animal Physiology.** (Cred. ar.; jr., sr., grad.; prereq. 105, 106 or Phsl. 106, 107, #) Sellers

DIVISION OF VETERINARY SURGERY AND RADIOLOGY (V.S.R.)

- 210. Advanced Veterinary Radiology.** Radiological diagnostic procedures and interpretation as applied to veterinary medicine. (Cred. ar.; prereq. 121 or equiv., #) Spurrell
- 220. Advanced Veterinary Surgery.** Pre- and post-operative evaluation and treatment, anaesthesia, and surgery of the various systems in small or large animals. (Cred. ar.; prereq. 103 or equiv., #) Arnold

‡‡ Tuition fees per term in Veterinary Medicine are \$50 for resident and \$100 for non-resident students, and incidental fee per term is \$8.50. Students taking less than a full program will pay at the summer rate or academic year rate, whichever is higher.

Lake Itasca Forestry and Biological Station

(June 11—July 14)

During the *first term* of the Summer Session an excellent opportunity for the study of terrestrial and fresh-water biology in its most fundamental aspects is presented by the Biological Station of the University of Minnesota, located at Itasca State Park, approximately 220 miles northwest of the Twin Cities.

These classes will be conducted co-operatively by various departments in the College of Agriculture, Forestry, and Home Economics and the College of Science, Literature, and the Arts. Classes will be held at the Station beginning June 11, ending July 14.

Interested persons may find the following opportunities offered:

1. Elementary and advanced instruction for college undergraduates, graduate students, high school and nature study teachers, and others interested.
2. Opportunities for graduate students who may wish to pursue biological investigation in the lakes, fields, or forests close to the Station.
3. Opportunities for teachers of botany, zoology, and biology.
4. Opportunities for guest investigators for independent research in terrestrial and fresh-water biology.

For a special bulletin describing in detail the opportunities and facilities at the Station and for reservations write to Dean of the Summer Session, 690 Johnston Hall, University of Minnesota, Minneapolis 14.

Institute for High School Teachers

Plans are being formulated for an Institute for High School Teachers of Biology to be held at the Station for teachers interested in spending a summer in this field laboratory with other high school biology teachers. For more detailed information regarding this program write to Dean of Summer Session, 690 Johnston Hall, University of Minnesota, Minneapolis 14.

Institute for College Teachers

An Institute for College Teachers of Biology will be conducted at the Station this summer under the auspices of the National Science Foundation. Members will enroll in one graduate course, carry out an individual research program, and participate in seminars on problems related to the teaching of biology. Ten stipends are available. For more detailed information regarding this program write to Dean of Summer Session, 690 Johnston Hall, University of Minnesota, Minneapolis 14.

Admission and Registration ††

The courses are open to all qualified graduate and undergraduate students who have had usual preliminary courses in biological subjects.

Application for admission to the Graduate School should be sent directly to Dean of Graduate School, University of Minnesota, Minne-

†† See section on general admission and registration.

apolis 14. Students must make such application at least 4 weeks before the opening of the Biological Station Summer Session. (See also information under Graduate School.) Attention is called to the fact that, pending admission to the Graduate School, students can register as adult special students. Credit so earned may be transferred, upon petition, to a graduate record if the student is later admitted to the Graduate School. If the student is not admitted to the Graduate School the credit earned as an adult special student will not be given official validation toward a graduate degree.

All students must make reservations. Students on the Twin Cities campuses make reservations at the College Office on the St. Paul Campus. Students unable to reach this campus should write to the dean of the Summer Session for reservation forms. Students should note that a reservation is not registration. All on-campus students must complete their registration at the admissions office on either campus as early as possible but not later than June 8. Off-campus students may register upon arrival at the Biological Station on June 11 if registration before arrival is impossible.

Fees and Expenses

Registrations will be accepted during May and June but not later than June 12.

The following fees are payable by each registrant on or before June 12 and must be paid before registration is completed:

Tuition fee	\$55.00
Incidental fee	8.50
Laboratory fee	10.00
Total fees for the term	\$73.50

In addition, it is estimated, on the basis of the experience of other groups of students, that board which is on a cost basis will be approximately \$60 for the 5 weeks. A charge of \$10 is made for room in the dormitories and cabins of the Biological Station and is to be paid to the director during the first week of the session.

Laboratory fee includes the use of microscopes, nets, boats, various class supplies, and accessories.

The estimated cost of \$143 for the 5-week session does not include traveling expenses, clothing, laundry, and minor incidental personal expenses.

Tuition and fees are payable on or before June 12. After that date the late fee will be charged according to the following schedule:

Wednesday, June 13	\$2.00
Thursday, June 14	3.00
Friday, June 15	4.00
Monday, June 18	5.00

No registration will be accepted after Thursday, June 14 without the approval of the director in charge.

For detailed description of courses write to Dean of the Summer Session, 690 Johnston Hall, University of Minnesota, Minneapolis 14, for special *Bulletin of the Lake Itasca Forestry and Biological Station.*

Courses of Instruction

First Term

BOTANY (Bot.)

- Pl.Pa.56. Introduction to the Study of Fungi.** (See Plant Pathology)
- 112. Aquatic Flowering Plants.** (4 cred.; prereq. 10 cred. in botany or zoology, or #; WS) Ogden
- 116. Summer Flora of Minnesota.** (4 cred.; prereq. 10 cred. in botany or zoology or #; TF) Ogden
- 135. Ecology of the Itasca Region.** (4 cred.; prereq. Bot. 50 or 130 or For. 4; MTh) Bray
- 136. Organisms, Microclimate, and Weather.** (Not offered in 1956)
- 138. Analysis of Vegetation.** (4 cred.; prereq. Bot. 50 or 130 or For. 4; TF) Bray
- 155. Fresh-Water Algae.** (4 cred.; prereq. 10 cred. in botany, biology, or zoology, or #; TF) Norris
- Pl.Pa.156. Advanced Study of Fungi.** (See Plant Pathology)
- 157. Bryophytes and Pteridophytes.** (Not offered in 1956)
- 196.* Problems in Ecology, Taxonomy, or Algology.** (Cred. ar.; prereq. #) Bray, Ogden, Norris
- 208.* Research Problems in Taxonomy.** (Cred. ar.; prereq. #) Ogden
- 224.* Research Problems in Ecology.** (Cred. ar.; prereq. #) Bray
- 236.* Research Problems in Cryptogams.** (Cred. ar.; prereq. #) Norris

ENTOMOLOGY AND ECONOMIC ZOOLOGY (Ent.)

- 59. Field Entomology.** (4 cred.; jr., sr.; prereq. Zool. 1-2-3 or equiv.; TF) Peterson
- 68. Natural History of the Higher Vertebrates.** (Not offered in 1956)
- 124. The Biology of Immature Insects.** (4 cred.; prereq. 15 cred. in zoology and Ent. 52 or equiv. or Δ ; WS) Peterson
- 162. Ecology of Terrestrial Vertebrates.** (4 cred.; prereq. Ent. 68 or Zool. 57-58 and Ent. 63, or equiv. and Bot. 50; MTh) (There will be a "cost basis charge" for mileage on field trips) Marshall
- 196.* Special Problems in Entomology and Economic Zoology.** (Cred. ar.; prereq. #) Marshall, Peterson

PLANT PATHOLOGY AND BOTANY (Pl.Pa.)

- 56. Introduction to the Study of Fungi.** (4 cred.; jr., sr.; prereq. 9 cred. in botany, or #; MTh) C. M. Christensen
- 156. Study of Fungi for Advanced Students.** (4 cred.; prereq. 9 cred. in botany, or #; MTh) C. M. Christensen
- 210.* Special Problems in Mycology.** (Cred. ar.; grad.; prereq. Myc. 105-106-107) C. M. Christensen

ZOOLOGY (Zool.)

- 55. Natural History of Invertebrates and Fishes.** (4 cred.; prereq. Zool. 1-2-3 or equiv.; WS) Eddy

107. **Protozoology.** (Not offered in 1956)
115. **Advanced Natural History of Invertebrates and Fishes.** (4 cred.; prereq. 15 cred. in zoology; WS) Eddy
119. **Limnology.** (4 cred.; prereq. 15 cred. in zoology; MTh) Eddy
135. **Advanced Ornithology.** (4 cred.; prereq. 15 cred. in zoology; TF) Emlen
143. **Animal Parasites.** (Not offered in 1956)
- 197.* **Problems in Ornithology, Ecology, and Limnology.** (Cred. ar.; advanced students; prereq. Zool. 1-2-3 or equiv. and #) Staff

SCHOOL OF BUSINESS ADMINISTRATION

Admission

For admission to the School of Business Administration a student must have satisfied the requirements as listed in 1 of the 2-year pre-business courses in either the College of Science, Literature, and the Arts, the Institute of Agriculture, or the Institute of Technology. These requirements may be completed at another institution. A student must have a minimum of 90 credits, with 1 honor point per credit or a smaller number of credits determined as follows: for every 5 honor points in excess of 1 per credit, the number 90 is diminished by 1.

Special Students

High school graduates who have reached the age of 24 and can furnish evidence that they have had business experience in an executive capacity may be admitted as special students. If later they decide to become candidates for a degree, they must complete the requirements for admission.

Students in Other Schools or Colleges of the University

Regularly enrolled students in other schools or colleges of the University may be admitted to such courses in the School of Business Administration as are authorized by the faculties of the School of Business Administration and the school or college concerned. Such students are urged to select their business subjects in accordance with a definite plan and, as far as possible, to complete a systematic course of business study.

Note—Special provision has been made this summer for the direction of graduate students working on theses. For further information, inquire at the office of the dean of the School of Business Administration.

Courses fulfilling the requirements of independent work and the preparation of written reports for the Master's degree, Plan B, shall be of graduate level and shall be made part of an approved program only upon recommendation of the candidate's adviser and the instructor for the course.

First Term

Econ.3. Elements of Money and Banking. Basic principles of money and a description of the various types of financial institutions, their functions and relations to the whole economic organization. (3 cred., §B.A. 57; 2nd and 3rd qtr. fr., soph.; IV MTWThF; VH 6) Ar.

Econ.5. Elements of Statistics. Elementary concepts in statistical method. Statistical description; sources of data, techniques of presentation (tabular, graphic); frequencies, averages, index numbers; dispersion. Collection of data; sampling; sampling error and reliability. Inference. (3 cred., §Econ. 5A, 5B, or Soc. 45; 3rd qtr. fr., soph.; I MTWThF; VH 113) Neter

Econ.6. Principles of Economics. Fundamental principles of economics intended to serve as a foundation for advanced courses in business administration and economics. (3 cred.; soph., jr., sr.)

Sec. 1, I MTWThF, VH 2, Ar.

Sec. 2, III MTWThF, VH 113, Ar.

Sec. 3, V MTWThF, VH 2, Ar.

- Econ.24. Principles of Accounting.** The balance sheet, profit and loss statement and the recording process; uses of accounting data and special methods of recording. (3 cred., §B.A. 54; 3rd qtr. fr., soph.; II MTWThF; VH 6) Zulauf
- Econ.26. Principles of Accounting.** Long term liabilities, owners' equity, determination of income and analysis of financial statements. (3 cred., §B.A. 55; soph.; prereq. Econ. 25; II MTWThF; VH 306) Lund
- Econ.50. Insurance Principles.** Theory of risk and insurance; types of insurable risks; types of insurers; fundamentals of life and disability, property, and liability insurance contracts; sales, underwriting, actuarial, finance, and claims functions of insurers; internal and external regulation; social insurance. (3 cred., §Econ. 107; jr., sr.; prereq. Econ. 7 or equiv.; V MTWThF; VH 1) Williams
- B.A.51. Business Law: Contracts.** The law of contracts. (3 cred.; jr., sr.; prereq. Econ. 7 or equiv.; I MTWThF; VH 1) Wright
- B.A.54. Elementary Accounting.** (B.A. 54 and 55 form a combination of Econ. 24-25-26.) Accounting statements and the recording process; use of accounting data by management. (4 cred., §Econ. 24; to be counted as Junior College course when transferred to the College of Science, Literature, and the Arts; soph. [summer only], jr., sr.; II MTWThF and 2 hr. ar.; VH 2) Jaedicke
- B.A.58. Elements of Public Finance.** Survey of institutions, policy problems, and economic effects of public expenditures, budgeting, taxes, debts, and fiscal policy. This is a condensed course given especially for School of Business Administration students. (3 cred., §Econ. 189, 191-192; jr., sr.; prereq. Econ. 7 or equiv.; III MTWThF; VH 207) Borak
- B.A.66. Managerial Costs.** A general survey of cost accounting from the point of view of the executive who must use cost information in the conduct of his business. (3 cred., §B.A. 130, 152; jr., sr.; prereq. Econ. 26 or equiv.; III MTWThF; VH 306) Jaedicke
- Econ.73. Manpower Economics and Labor Problems.** Covers: (1) the marketing of manpower resources; (2) the institutional structure of labor markets; (3) economic and social problems arising out of labor marketing processes; and (4) methods, procedures, and proposals for solving these problems. (3 cred., §Econ. 161; jr., sr.; prereq. Econ. 7 or equiv.; IV MTWThF; VH 1) Cheit
- B.A.74. Business Statistics A.** Explanation and criticism of statistical techniques for dealing with economic time series; trend, seasonals, cycles; index numbers. Basic concepts in acceptance sampling; statistical control of quality in manufacturing operations. (3 cred., §B.A. 112; jr., sr.; prereq. Econ. 5 or equiv.; II MTWThF; VH 1) Neter
- Econ.75. Corporation Finance.** The corporation in comparison with other types of business units. Attention is given to organization and capital structure, raising fixed and circulating capital, treatment of corporate earnings, incentives to and forms of combination, and trusteeship and reorganization. (3 cred., §Econ. 155; jr., sr.; prereq. Econ. 3 and 7 or equiv.; IV MTWThF; VH 207) Borak
- Econ.81. Intermediate Economic Analysis: Firms and Households.** The analysis of individual decision-making, by firms and households, under conditions of monopoly, competition, and monopolistic competition. (3 cred., §Econ. 144; jr., sr.; prereq. 20 cred. in social science including Econ. 7 or equiv.; I MTWThF; VH 207) Ar.
- B.A.89. Production Management.** Location and layout of industrial plants; types of operating organizations; shop personnel; standards of operation; purchasing and inventory control; routing, scheduling, and dispatching of product; scientific management; practical problems in production con-

- trol. (3 cred., §B.A. 187; jr., sr.; prereq. Econ. 7 or equiv.; I MTWThF; VH 301) Wickesberg
- Econ.107. Insurable Risks and Insurance.** Risk and its adverse economic effects; methods of handling risk; theory of insurance and insurable risks; insurable personal, property, and liability risks; risk management; personal, property, and liability insurance contracts; production, underwriting, actuarial finance, and claims functions of insurers; industry and government regulation; social insurance. (3 cred., §Econ. 50; jr. and sr. with #, grad.; prereq. Econ. 7 or equiv.; V MTWThF; VH 1) Williams
- B.A.112. Time Series Analysis and Quality Control.** Covers: (1) the explanation and criticism of statistical techniques applied to time series analysis, (2) index numbers, and (3) statistical control of quality. (3 cred., §B.A. 74; jr. and sr. with #, grad.; prereq. Econ. 5 or equiv.; II MTWThF; VH 1) Neter
- B.A.114. Retail Store Management.** Comprehensive treatment of retailing principles and methods; relation of retailing to other parts of the economy; problems associated with the operation of stores of various types. (3 cred.; jr., sr., grad.; prereq. B.A. 77; III MTWThF; VH 2) Werner
- B.A.116. Property and Liability Insurance I.** Nature and relative importance of insurable property and liability risks; analysis of property and liability insurance contracts; insurance surveys—the optimum property and liability insurance program. (3 cred.; jr., sr., grad.; prereq. Econ. 50 or 107; III MTWThF; VH 6) Williams
- Econ.124. Theory of Employment, National Income, and the Price Level I.** Determination of the equilibrium values for real output, employment, the price level and the rate of interest under specified assumptions regarding the demand for and supply of money, the demand for and supply of labor, technical conditions of production and the investment and consumption functions. (3 cred.; jr., sr., grad.; prereq. Econ. 80 or equiv.; III MTWThF; VH 205) Ar.
- B.A.130. Managerial Cost Accounting.** Cost accounting and analysis from the point of view of its use by management in making decisions and setting policies, and in establishing controls over costs. (3 cred., §B.A. 66, 152; jr. and sr. with #, grad.; prereq. Econ. 26 or equiv.; III MTWThF; VH 306) Ar.
- Econ.144. Economic Analysis: Firms and Households.** The analysis of individual decision-making, by firms and households, under conditions of monopoly, competition, and monopolistic competition. (3 cred., §Econ. 81; jr. and sr. with #, grad.; prereq. Econ. 7 or equiv.; I MTWThF; VH 207) Ar.
- B.A.150. Intermediate Accounting I.** Principles and procedures involved in the valuation of assets and the determination of periodic income. (3 cred.; jr., sr., grad.; prereq. Econ. 26 or equiv.; I MTWThF; VH 6) Lund
- B.A.152. Cost Accounting.** Basic principles of cost accounting; job order and process cost systems. (3 cred., §B.A. 66 or 130; jr., sr., grad.; prereq. Econ. 26 or equiv.; II MTWThF; VH 207) Eaton
- Econ.155. The Modern Corporation.** Incorporation. The various types of corporate securities and their uses. Financial plans for industrial, utility, and other types of corporations. Financial affairs of an established business. General financial problems of the holding company, consolidations, mergers, and reorganizations. (3 cred., §Econ. 75; jr. and sr. with #, grad.; prereq. Econ. 3 and 7 or equiv.; IV MTWThF; VH 207) Borak
- B.A.159. Advanced Accounting.** Branch accounting, consolidated statements, estates and trusts, concerns in financial difficulties, and other specialized problems. (3 cred.; jr., sr., grad.; prereq. B.A. 151 and Math. 20; IV MTWThF; VH 306) Eaton

- B.A.160. Readings in Business Administration.** Special readings to be arranged with the student to cover areas in business administration especially useful to his individual program and objectives, but not available in the regular course offerings. (Cred. ar.; jr., sr., grad.; prereq. consent of adviser and instructor in field covered) Staff
- Econ.160. Readings in Economics.** Special readings to be arranged with the student to cover areas in economics especially useful to his individual program and objectives but not available in the regular course offerings. (Cred. ar.; jr., sr., grad.; prereq. consent of adviser and instructor in the field covered) Staff
- Econ.161. General Manpower Economics and Labor Problems.** Includes: (1) marketing of manpower resources; (2) institutional structure of labor markets; (3) economic and social problems arising out of labor marketing processes; and (4) methods, procedures, and proposals for solving these problems. This course covers the basic materials of Econ. 73 plus advanced discussion and special assignments. (3 cred., §Econ. 73; jr. and sr. with \$, grad.; prereq. Econ. 7 or equiv.; IV MTWThF; VH 1) Cheit
- Econ.163. Union Government and Policies.** An analysis of the structural nature and the operation of contemporary American unions, the nature of the internal administration and government of unions, and the economic and social issues arising out of relationships with managements as found in matters of hours, wages, and other conditions of employment. (3 cred.; jr., sr., grad.; prereq. Econ. 73 or 161; IV MTWThF; VH 2) Seltzer
- Econ.165. Current Trends in Industrial Relations.** Class meets once each week for 1 hour to discuss new developments in various phases of industrial relations. Discussion of trends, new problem areas, new research studies and findings, and other up-to-date happenings in industrial relations in management, unions, and the government. Sessions are led by the Industrial Relations Center staff members who are actively engaged in research and consultation. (1 cred.; jr., sr., grad.; prereq. B.A. 167; ar.) Staff
- Econ.169. Labor Legislation: Economic Security.** An analysis of (1) the origins and development of economic and social problems of the individual worker; (2) executive, legislative, and judicial attempts to deal with these problems; and (3) economic and social consequences of the developments. Treatment of "protective labor legislation" involving child labor, hours and wages, industrial accidents and illness, old age, and unemployment. (3 cred.; jr., sr., grad.; prereq. Econ. 73 or 161; II MTWThF; VH 113) Seltzer
- Econ.176. Introduction to International Economics.** The techniques of international economic analysis. The approach, while primarily theoretical, will indicate the relevance of the theory to current problems. The balance of payments; the foreign exchanges, free trade versus protection; techniques of trade control; international commercial policies; contemporary international economic problems and institutions. (3 cred.; jr., sr., grad.; prereq. Econ. 7 or equiv.; IV MTWThF; VH 113) Coen
- B.A.184. Scientific Management in Industry.** The origin and development of the movement to apply the methods of science to the management of industrial enterprises, the effects upon individual plant management and the influence upon "rationalism" in industrial society. (3 cred.; sr., grad.; prereq. B.A. 89 or 187; II MTWThF; VH 301) Wickesberg
- B.A.187. Administration of Production.** This nontechnical course develops the production function of business from the general management viewpoint. (3 cred., §B.A. 89; jr. and sr. with \$, grad.; prereq. Econ. 7 or equiv.; I MTWThF; VH 301) Wickesberg
- Econ.189. Economics of Public Finance.** Survey of public expenditures, budgeting, taxes, debts, and fiscal policy, with special emphasis on economic effects. Special attention is given to tax principles, practices, and policies.

(3 cred., §B.A. 58, Econ. 191-192; jr., sr., grad.: prereq. Econ. 7 or equiv.; III MTWThF; VH 207) Borak

Econ.251. Seminar in Industrial Relations. (3 cred.; grad.; ar.) Yoder

B.A.299. Graduate Research in Business Administration. (Cred. ar.; grad.) Staff

Econ.299. Graduate Research in Economics. (Cred. ar.; grad.) Staff

Second Term

Econ.7. Principles of Economics. (Continuation of Econ. 6) (3 cred.; soph., jr., sr.; prereq. Econ. 6)

Sec. 1, I MTWThF, VH 6. Ar.

Sec. 3, V MTWThF, VH 2, Ar.

Sec. 2, IV MTWThF, VH 207, Ar.

Econ.25. Principles of Accounting. Adjusting entries, work sheets, closing entries, cash inventories, depreciation, and an introduction to cost accounting. (3 cred., §B.A. 55; soph.; prereq. Econ. 24 or equiv.)

Sec. 1, II MTWThF, VH 2,
Reighard

Sec. 2, III MTWThF, VH 306, Ar.

B.A.55. Elementary Accounting. (Combined course—continuation of B.A. 54) Accounting valuation of assets, liabilities, and owners' equity; introduction to cost accounting; analysis of financial statements. (4 cred., §Econ. 25-26; to be counted as Junior College course when transferred to the College of Science, Literature, and the Arts; soph. [summer only], jr., sr.; prereq. B.A. 54; I MTWThF and 2 hrs. ar.; VH 306) Meyers

Econ.64. Economics of Money and Banking. Banking policy viewed from the social standpoint with primary reference to the problems of the Federal Reserve System. Selected problems in monetary policy; monetary reconstruction and monetary reform. (3 cred., §Econ. 142; jr., sr.; prereq. Econ. 3 and 80 or equiv.; IV MTWThF; VH 2) Smith

B.A.65. Analysis of Financial Statements. Interpretation and analysis of financial statements. Credit, investment, and managerial analysis of financial statements. Consolidated statements. Industrial, public utility, railroad statements. (3 cred., §B.A. 139, 151; jr., sr.; prereq. Econ. 26 or equiv.; III MTWThF; VH 2) Reighard

B.A.71. Transportation: Services and Charges I. Survey and economic aspects of national transportation policy; rail, highway, air, and water transportation facilities, services, rates, regulation, and current transportation problems. (3 cred., §Econ. 172; jr., sr.; prereq. Econ. 7 or equiv.; IV MTWThF; VH 1) Harper

Econ.73. Manpower Economics and Labor Problems. (See first term) (I MTWThF; VH 1) Mahoney

B.A.77. Survey in Marketing. Introductory analysis of (1) marketing institutions and their control; (2) market areas; (3) marketing costs; and (4) the operation of supply and demand in marketing. (3 cred., §Econ. 185; jr., sr.; prereq. Econ. 7 or equiv.; II MTWThF; VH 207) Lewis

Econ.80. Intermediate Economic Analysis: Income and Employment. The determinants of national income, employment, and price level, with particular attention to aggregate consumption and investment. (3 cred., §Econ. 143; jr., sr.; prereq. 20 cred. in social science including Econ. 7 or equiv.; I MTWThF; VH 207) Ar.

Econ.85. Government Regulation of Business. The economic aspects of legislation affecting the market processes. Topics studied include the economic origins of business limitations of free competition, the regulation of public utilities, the purposes and effect of anti-trust laws and laws relating to

- "unfair business practices," and government assistance to economic groups. (3 cred., §Econ. 175; jr., sr.; prereq. Econ. 81 for majors, suitable background in law or political science for others, or #; III MTWThF; VH 1) Buttrick
- Econ.103. Advanced Price Theory.** Theories of choice as applied to firms and resource owners, and the usefulness of such theories in predicting market behavior. (3 cred.; jr. and sr. with #, grad.; prereq. Econ. 81 or 144; II MTWThF; VH 113) Boddy
- B.A.113. Sales Management.** The management of selling activities including sales policies and planning, sales promotion, sales organization and channels of distribution, selection, training and compensation of salesmen, control of sales performance, sales budgets, and cost control. Extensive use of case materials. (3 cred.; jr., sr., grad.; prereq. B.A. 77 or Econ. 185; IV MTWThF; VH 6) Lewis
- Econ.125. Theory of Employment, National Income, and the Price Level II.** Effects of governmental monetary and fiscal policies upon the equilibrium levels of output, employment, prices, and interest rates. An introduction to dynamic analysis. (3 cred.; jr., sr., grad.; prereq. Econ. 124; II MTWThF; VH 205) Buttrick
- Econ.129. Current Economic Issues.** A special survey of current economic problems and their analysis, designed for the nonmajor, and of particular interest to teachers who wish to broaden their knowledge and to be brought up to date in their teaching of social studies courses. (3 cred.; jr., sr., grad.; III MTWThF; VH 205) Smith
- B.A.139. Corporate Statements.** Preparation of corporate statements and analysis from management, investment, and credit viewpoint. Report required analyzing statement of an assigned corporation. (3 cred., §B.A. 65, 151; jr. and sr. with #, grad.; prereq. Econ. 26 or equiv.; III MTWThF; VH 2) Reighard
- Econ.142. Monetary and Banking Policy.** An advanced course in money and banking policy viewed from the social standpoint with primary reference to the problems of the Federal Reserve System. Selected problems in monetary policy; monetary reconstruction and monetary reform. (3 cred., §Econ. 64; jr. and sr. with #, grad.; prereq. Econ. 3 and 80 or equiv.; IV MTWThF; VH 2) Smith
- Econ.143. Economic Analysis: Income and Employment.** The determinants of national income, employment, and price level, with particular attention to aggregate consumption and investment. (3 cred., §Econ. 80; jr. and sr. with #, grad.; prereq. Econ. 7 or equiv.; I MTWThF; VH 207) Ar.
- B.A.146. Investments.** A general or "cross cut" survey of the external and internal factors influencing the prices of securities, and of the principles of an investment policy for the individual investor. Emphasis is placed upon objective analysis from source materials of factors explaining price differentiation. (3 cred.; jr., sr., grad.; prereq. Econ. 75 or 155; III MTWThF; VH 6) Matthews
- B.A.151. Intermediate Accounting II.** Principles and procedures involved in the valuation of liabilities and stockholders' interest, and in analysis of financial statements. (3 cred., §B.A. 65, 139; jr., sr., grad.; prereq. B.A. 150; I MTWThF; VH 113) Matthews
- B.A.153. Cost Accounting.** (Continuation of B.A. 152) An introduction to budgetary control, standard costs, and distribution cost accounting. Analysis and interpretation of cost data for specialized uses. (3 cred.; jr., sr., grad.; prereq. B.A. 152; II MTWThF; VH 306) Meyers
- B.A.156. Finance Management.** The duties of the financial manager of a modern business. The various sources from which capital may be secured, the best use of a company's funds, and special financial problems which

arise in the typical business. (3 cred.; jr., sr., grad.; prereq. Econ. 75 or 155; I MTWThF; VH 2) Ar.

B.A.160. Readings in Business Administration. (See first term)

Econ.160. Readings in Economics. (See first term)

Econ.161. General Manpower Economics and Labor Problems. (See first term)
(I MTWThF; VH 1) Ar.

B.A.167. Introduction to Industrial Relations. A survey of policy and practice in manpower management. The course provides a professional viewpoint toward major functions, including policy formulation, determination of labor needs, job analysis, recruitment, selection, training and safety, service rating, employment stabilization, collective bargaining, and wage and salary administration. (3 cred.; jr., sr., grad.; prereq. Econ. 73 or 161; II MTWThF; VH 1) Belcher

B.A.168. Advanced Personnel Administration. Administrative aspects of industrial relations in both unions and management. Mechanisms and practices of manpower management policy determination and review. Development and use of personnel records and reports. (3 cred.; jr., sr., grad.; prereq. B.A. 167 or B.A. 167 with #; III MTWThF; VH 113) Heneman

Econ.172. Economics of Transportation. The economics of the agencies of modern transportation, including rail, water, highway, air, and pipe line. Relative advantage of each agency, national transportation policy, regulation, rate-making, taxation, co-ordination of services. (3 cred., §B.A. 71; jr., sr., grad.; prereq. 20 cred. in social science, including Econ. 7 or equiv.; IV MTWThF; VH 1) Harper

Econ.175. Government Regulation of Market Behavior. A study of the administrative and legislative controls in the United States in the following areas: general restraints of trade and monopoly, regulation of the standards of fair competition, licensing and regulation of entry into trade and professions, and the regulation of public utility rates and services. The emphasis will be on the economic and legal analysis of federal regulation, but state and local regulation will be studied. (3 cred., §Econ. 85; jr. and sr. with #, grad.; prereq. Econ. 81 or 144 for majors, suitable background in law or political science for others, or #; III MTWThF; VH 1) Buttrick

B.A.180D. Senior Topics: Industrial Relations. Designed to develop a familiarity with and evaluation of professional procedures and techniques employed in each of the major functions of manpower management. Individual and group projects prepare the student for employment in industrial relations at the staff level. (3 cred.; sr., grad.; admission limited to majors in industrial relations and to others who have satisfactorily completed B.A. 167 or equiv.; prereq. B.A. 167; IV MTWThF; VH 113) Belcher

Econ.185. Economics of Marketing. Covers: (1) the role of market distribution in our total economy; (2) the costs of market distribution; (3) regional specialization and market distribution; (4) public, quasi-public, and corporate control of market distribution; and (5) the role of the consumer in market distribution. (3 cred., §B.A. 77; jr., sr., grad.; prereq. Econ. 7 or equiv.; II MTWThF; VH 207) Lewis

B.A.299. Graduate Research in Business Administration. (See first term)

Econ.299. Graduate Research in Economics. (See first term)

INSTITUTE OF CHILD WELFARE (C.W.)

See *Workshop on School Psychology* under Special Programs

The Institute of Child Welfare was organized for three purposes: research in child development; training future workers with children; and bringing information to parents on the care and training of children. The Institute offers graduate and undergraduate courses and conducts a nursery school and kindergarten for demonstration and research purposes.

Nursery School and Kindergarten

The Nursery School and Kindergarten will be in session from 8 a.m. to 12 noon, beginning June 12 and closing July 13. Applications for the enrollment of children will be received at the office of the Institute. The fee will be \$35 for tuition, which includes a mid-morning snack. Parents are responsible for the transportation of their children to and from the school.

First Term

- 80. **Child Psychology.** (3 cred.; jr., sr.; prereq. Psy. 1-2; III MTWThF; CW 218) Overlade
- 130. **Development of Skill, Language, and Thought in the Child.** (3 cred.; sr., grad.; prereq. 12 cred. in psychology or equiv.; I MTWThF; CW 222) Overlade
- 140. **Behavior Problems.** (3 cred.; sr., grad.; prereq. 12 cred. in psychology, educational psychology, or sociology; II MTWThF; CW 222) Cummings
- 150. **Childhood Education.** Survey of early childhood education. (3 cred.; sr., grad.; prereq. 12 cred. in education; VI MTWThF; CW 222) Helgerson
- 170. **Parent Education.** (3 cred.; sr., grad.; prereq. 15 cred. in psychology, education, home economics, or sociology; IV MTWThF; CW 222) Cummings
- 270.* **Readings and Research in Child Development.** Independent readings and reports in any field such as physical growth, mental development, social behavior, nursery school theory, parent education, etc., which meets the approval of instructor. (Cred. ar.; grad. only; ar.) Staff

The following courses are also offered by the Institute of Child Welfare: Ed.T.77, Student Teaching in the Nursery School, and Ed.T.78, Student Teaching in the Kindergarten, listed under Methods and Student Teaching, in the College of Education; Ed.C.I. 162, Laboratory in Nursery School and Kindergarten Instructional Practices, and Ed.C.I. 163, Plastic Materials, Story Telling, and Social Studies for Young Children, listed under Curriculum and Instruction, in the College of Education.

Second Term

- 131. **Development of Personality and Social Behavior in the Child.** (3 cred.; sr., grad.; prereq. 12 cred. in psychology or equiv.; I MTWThF; CW 222) Templin
- 132. **Later Childhood and Adolescence.** (3 cred.; sr., grad.; prereq. 12 cred. in psychology or equiv.; II MTWThF; CW 222) Bassham

- 140. Behavior Problems.** (3 cred.; sr., grad.; prereq. 12 cred. in psychology, educational psychology, or sociology; IV MTWThF; CW 222) Bassham
- 142. Psychology of Atypical Children.** (3 cred.; sr., grad.; prereq. 12 cred. in psychology or equiv.; III MTWThF; CW 222) Templin
- 200.†† Observation and Experimental Study of Children.** Supervised observation of clinical and remedial procedures with children; case discussions; planning of individual projects. (3 cred.; registration limited to members of the Workshop on School Psychology; VI-VII MTWThF; CW 218) Overlade
- 270.* Readings and Research in Child Development.** (See first term) Staff

†† Graduate students should consult their advisers concerning the advisability of registering for this workshop under E.Psy. 153 or C.W. 200.

SCHOOL OF DENTISTRY

The School of Dentistry will not offer courses regularly scheduled in the dental curriculum unless the necessity arises to offer instruction for students who may fail and will need to remove such failures before being promoted to the next succeeding class. The clinic will remain open, however, for those who wish to receive instruction in clinical work or for those who may not have completed specified clinical or laboratory requirements for promotion.

The following instructors will be available:

First Term—Wittich, Hall, Clark, Speidel, Wykhuis, Yock, Gorlin, Jensen, Holland, Serr

Second Term—Wittich, Hall, Clark, Speidel, Wykhuis, Yock, Gorlin, Jensen, Holland, Serr, Jernall

Dentistry fees during the summer quarter are: full-time tuition, resident \$100, nonresident \$210; less than a full program may be paid for at the summer rate or academic year rate, whichever is higher. There will be an incidental fee of \$17.

COLLEGE OF EDUCATION

Courses in elementary and secondary education listed in the following pages may be used for *renewal of teaching certificates*. Former teachers re-entering the profession should consult the advisers in elementary and secondary education or the dean's office, College of Education, concerning a program for renewal of certificates.

Students should note that under the division headings Curriculum and Instruction, Educational Administration, Educational Psychology, and Methods and Student Teaching, the courses are grouped for those interested in elementary, secondary, and higher education fields. Under each of the four divisions, courses of general interest are listed *General Courses* and these are followed by the offerings in *Elementary Education*, *Secondary Education*, and *Higher Education*.

Professional courses in education presuppose completion of Junior College requirements in the University of Minnesota or the equivalent in colleges of similar grade elsewhere. Graduation from the 2-year curriculum of Minnesota state teachers colleges is accepted as equivalent. Students in the College of Education with this training may be admitted to any course for which they have satisfied the prerequisite.

For all general matters relating to admission, advanced standing, credits, honor points, curriculums, and requirements for graduation, students should consult the *Bulletin of the College of Education*, 1954-56.

Summer Session students who are not candidates for a degree do not need to make application for admission nor present credentials (see Admission and Registration). Students expecting to become candidates for a Bachelor's degree, however, should apply for admission as regular students in the College of Education by filling out the application form in the Office of Admissions and Records and filing in that office any credentials on the basis of which they wish to request advanced standing. They should also seek as early as possible the advice of the major adviser in the department concerned in order to learn the requirements of the curriculum they will need to complete. Adult special students are not regular degree candidates.

Counseling Services

The staff of the Student Personnel Office of the College will be available during both terms for consultation concerning admission, requirements of the teaching profession, and for counseling. Appointments should be made in 206 Burton Hall.

Committee on Student Scholastic Standing

Undergraduate students with questions concerning program adjustments and substitutions for required work should consult their advisers or the chairman of the Committee on Student Scholastic Standing. The office of the adviser for this committee will be 206 Burton Hall (Mr. Glotzbach) during both terms.

Workshops

Graduate Credit for Workshops—The amount of graduate credit in workshops which may be used on a Master's degree program is limited.

Graduate students planning to register for any workshop should consult their advisers concerning the possibility of using credit for the workshop in their graduate programs.

Workshops in Higher Education—Two workshops in higher education will be jointly sponsored by the College of Education and the North Central Association of Colleges and Secondary Schools. In the first term, the workshop will be scheduled from June 11 to July 6 for the study of problems in the liberal arts related to teacher education. In the second term, the workshop, scheduled from July 23 to August 17, has been planned for teachers college staff members studying the problems of teacher education. Applicants for either workshop should write to Dean of the College of Education, University of Minnesota, Minneapolis 14. (See Curriculum and Instruction, course 228.)

Workshop for School Administrators—As a part of the advanced graduate program (1 year beyond the Master's degree) leading to the certificate of Specialist in Education—School Administration, a workshop on the Improvement of Instruction in the Elementary School is scheduled for the first term. (See Curriculum and Instruction, course 240.) The course will require half-time work from the participants for the full term of 5 weeks. The group will be limited in size, and the completion of a Master's degree program for school superintendents is required for enrollment. A special announcement concerning the Specialist in Education program will be sent by the dean's office, College of Education, on request.

Workshop in Teaching Display—In the first term, a 2-week workshop will provide assistance for workers in distributive education on their many problems in teaching display. Further information about the display workshop may be obtained on request to 105 Burton Hall, University of Minnesota, Minneapolis 14. (See Curriculum and Instruction, course 147.)

Workshop and Special Courses in Industrial Education—See index, Industrial Education.

Summer Demonstration High School

The University High School, grades 7 to 12, will be in session in Peik Hall during the last 4 weeks of the first term and the first week of the second term. Instruction will be offered in the language arts, modern languages, social studies, science, and typing. Individual and group work in remedial reading and arithmetic will be provided. In addition, speech and drama institutes will be open to high school students. The summer program will emphasize remedial instruction and the enrichment of the student's background.

Admission to the University High School Summer Session is open to any pupil of normal high school age. Children of teachers or other professional workers who are attending the Summer Session of the University are especially welcomed. For information regarding fees and registration procedure, address the Principal, University High School, Minneapolis 14.

Students registered in Student Teaching (52 under Methods and Student Teaching) will be assigned to observation and student teaching in the classes of the high school. The facilities of the high school are available to the college classes in special methods and to other classes for demonstration purposes. (I, II, III, IV MTWThF.)

Summer Demonstration Elementary School

An elementary school, grades 1 to 6 inclusive, will be in operation during the last 4 weeks of the first term. A special resource classroom for blind children will be conducted in this elementary school. The school will be staffed by the principal and teachers of the Tuttle School which is used as the demonstration elementary school of the College of Education by a co-operative agreement with the Board of Education of the city of Minneapolis. The school, conducted on an activity basis, may be observed by students of elementary school methods and supervision. A laboratory course in elementary school practices is available. (See Curriculum and Instruction, course 186.) (I, II, III, IV TWThF; Tuttle School, Talmadge Ave. and 18th Ave. S.E.)

Psycho-Educational Clinic

The Psycho-Educational Clinic will be in operation during both terms for purposes of training, research, and service. The clinic program will include remedial reading classes for children whose difficulties have been previously diagnosed and for whom special remedial work has been recommended. These children will attend school 2 hours daily (9 to 11 a.m.), Monday through Friday, and the full 2-hour period will be used for individualized instruction. In addition, the Psycho-Educational Clinic will provide diagnosis and recommendation for school problem cases from the state on the same basis as during the school year. The services of the clinic, including the remedial reading classes, will provide demonstrations for various College of Education classes, as well as clinical practice opportunities for advanced students registered under Educational Psychology 150 and 151. Information may be obtained from the Director, Psycho-Educational Clinic, Pattee Hall, University of Minnesota, Minneapolis 14.

Nursery School and Kindergarten

The Institute of Child Welfare maintains a nursery school and kindergarten in the first term. (See Institute of Child Welfare.) These schools are also available for demonstration and observation. Courses offered by the Institute and listed under Institute of Child Welfare are given for teachers who wish nursery school and kindergarten training and for others interested in child development.

Offerings in Statistics

Graduate students interested in statistics will find basic courses listed under Educational Psychology. Those planning to major in statistics should refer to courses offered under the Mathematics Department, College of Science, Literature, and the Arts. (See Analysis of Variance and Multivariate Analysis II [Mathematics 138B], and Statistical Models in the Social Sciences [Mathematics 139], both given during the first term.)

Minimum Fee for Graduate Students

Graduate students who have completed all their graduate work with the exception of the thesis will be allowed to register for the Summer Session for thesis work only, upon the payment of a fee of \$26 per term plus incidental fee.

Detailed Description of Courses

For detailed description of courses and curriculums in education see the *Bulletin of the College of Education*, 1954-56.

Notice Concerning Starred Courses

Graduate students who wish to work on individual problems to count toward the 9 credits in problems courses required for the Master's degree under Plan B may register for this credit in any course starred (*) in the following list. Other students taking these courses will not be held to the same quality of individual problems work, nor will written reports always be required of them. (See Graduate School.)

AGRICULTURAL EDUCATION (Ag.Ed.)

First Term

- 82. Teaching Agriculture in the Secondary School.** Fundamentals of teaching agriculture to high school students; use of the home, farm, and community in structuring courses of study; the *Future Farmers of America*, the *Vo-Ag Planning and Record Book*; organization and management of the farm and school shop; building and utilizing teaching units. (4 cred.; jr., sr.; prereq. Ed. 55B; III-IV MTWThF; Hr 302) Kitts
- 124. Teaching Units in Livestock Breeding.** Development of teaching units based on recent research in the science of livestock breeding. Construction of resource units, demonstrations, and materials of instruction for adult, young farmer, and high school classes. (3 cred.; prereq. Agro. 31, or #; VI-VII MTWThF first 3 weeks, ar. last 2 weeks; Hr 301) Swanson
- Ag.En.130. Farm Shop Management.** (See Agricultural Engineering.)
- 154.* Rural Education and Community Leadership.** An appraisal of community educational agencies; the process of and responsibilities for community leadership; the role of the school in the rural community; co-ordination of the school with nonschool educational agencies. (3 cred.; I-II MTWThF; Hr. 301) Swanson
- 171. Procedures in Teaching Agriculture.** Emphasizes working out the problems in detail in order that results might be directly applicable to a particular farming situation. Evaluation of procedure on a basis of improved farming practices. (3 cred.; prereq. #; I-II MTWThF; Hr 302) Granger
- 180. Teaching Units in Soils.** Development of teaching units based on recent research in soil science. Construction of resource units, demonstrations, and materials of instruction for adult, young farmer, and high school classes. (3 cred.; prereq. Soil. 2 or 4, or #; III-IV MTWThF first 3 weeks, ar. last 2 weeks; Hr 301) Swanson and soils staff
- 221. Field Problems.** The development and study of special problems in the field of the individual student's choice. (3 cred.; grad.; ar.) Peterson, Kitts, Swanson
- 232.* Research in Agricultural Education.** (Designed especially for students meeting the Plan B requirement.) Investigation in problems of education for farm people. Selecting research problems, preparing bibliographies, analyzing and interpreting data, and preparing manuscripts. (3-9 cred.; grad.; ar.) Peterson, Kitts, Swanson

Second Term

- 91. Supervised Student Teaching.** Observation and participation in the learning-teaching process. Teaching experience and program analysis under

supervision of selected teachers. Organization and execution of activities necessary to successful teaching of agriculture in Minnesota high schools. (6 cred.; jr.; ar.) Kitts, Swanson

221. Field Problems. (See first term) Peterson, Kitts, Swanson

232.* Research in Agricultural Education. (See first term) Peterson, Kitts, Swanson

ART EDUCATION (Ar.Ed.)

The Department of Art Education offers professional training and guidance for teaching and supervisory positions in the field of art. Art education provides opportunities to combine a creative art career with a teaching position, a combination popular with many outstanding contemporary artists.

During summer sessions the department places a strong emphasis on nonspecialist courses for elementary and secondary teachers who plan to integrate art with other subjects. For art education majors the summer program emphasizes graduate work toward advanced degrees.

See also Department of Art, College of Science, Literature, and the Arts.

First Term

- 17. Pictorial Expression for Elementary Education.** Provides a background survey of art in life and education. Materials, techniques, and ideas important to children's art expression, relationship to adult expression, and significance in educational growth. (3 cred.; VI-VII MTWThF; TSF 259) Bratlee
- 18. Design Activities for Elementary Education.** (See Ar.Ed. 17) Relationships between art and nature. Problems in invention, arrangement and decoration, color, lettering, posters, bulletin board displays, etc. (3 cred.; I-II MTWThF; J 109) Hastie
- 19. Functional Arts and Crafts in Elementary Education.** (See Ar.Ed. 17) Influence of art on modern life. Typical opportunities for integrated experiences. Clothing, architecture and interior design, community planning, commercial and industrial design, puppetry, dramatics, intercultural relations, holiday projects, etc. (3 cred.; III-IV MTWThF; TSF 259) Bratlee
- 158. Art Education in Europe.** Examination of current practices, problems, and achievements in art education in countries of Western Europe with particular reference to sources for and comparisons with practices in American art education. (3 cred.; III MTWThF; J 109) Gayne
- 184. Improving Art Programs in the Elementary School.** Improving current practices through critical evaluation and utilization of research findings and introduction of new materials. Development of closer co-operation between classroom teachers and art education specialists. (3 cred.; prereq. teaching experience or #; IV MTWThF; J 109) Gayne
- 189. Application of Aesthetic Theory in Education.** Contemporary theories of art, their psychological and philosophical foundations with experimental evidence. Open to teachers, supervisors, and administrators concerned with making art function in general education at all levels. (3 cred.; VI MTWThF; J 109) Hastie
- 295. Problems in Art Education.** Individual specialization and creative projects selected. Projects may include advanced studio practice or technical solution of problems involving research or reading in a chosen field. (Cred. ar.; prereq. special permission of major adviser; ar.) Gayne, Hastie
- 296. Seminar in Art Education.** Reports, evaluation of problems, recent literature. Participation by art education staff and guest specialists from re-

lated departments and from off campus. Open to advanced students in education. (1 cred.; VII Th; J 105) Staff

Second Term

- 17. **Pictorial Expression for Elementary Education.** (See first term) (I-II MTWThF; TSF 259) Wold
- 18. **Design Activities for Elementary Education.** (See first term) (III-IV MTWThF; TSF 259) Wold
- 184. **Improving Art Programs in the Elementary School.** (See first term) (I MTWThF; J 109) Gayne
- 295. **Problems in Art Education.** (See first term) Gayne
- 296. **Seminar in Art Education.** (See first term) (VI Th; J 105) Staff

EDUCATIONAL ADMINISTRATION (Ed.Ad.)

First Term

GENERAL COURSES

- 117. **Schools in Rural Areas.** Administrative and curricular problems peculiar to rural areas, with sociological changes in small towns and farm life. Building a school program suited to the culture and needs of people in smaller towns and villages. (3 cred.; III MTWThF; JohH 106) Archer
- 124. **Public School Administration.** The organization, administration, and general support of public schools in state and local school districts. (3 cred.; sr.; prereq. 9 cred. in education; I MTWThF; NH 211) Wakefield
- 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. (3 cred.; prereq. 227; II MTWThF; FolH 3) Prentis
- 225. **Pupil Personnel Administration.** Child accounting records and reports, attendance department, school census, pupil adjustment and progress, pupil health and safety, and legal aspects of pupil personnel administration. (3 cred.; prereq. 124; III MTWThF; P 110) Lane
- 226. **School Plant Planning and Management.** Plant program planning and financing, including operation and maintenance of public school buildings. (3 cred.; prereq. 227; I MTWThF; JohH 313) Prentis
- 227. **Teacher and Employee Administration.** Selection and placement of school employees, salary schedules, conditions of service, records and reports, and legal aspects of teacher and employee personnel administration. (3 cred.; prereq. 225; IV MTWThF; FolH 5) Lane
- 228.* **Special Problems in Educational Administration.** Designed primarily for superintendents and principals qualified to make intensive studies of specific problems related to the administration of a school system. (1-3 cred.; prereq. 225; VII-VIII T; FolH 203) Lane, Prentis, Wakefield
- 230. **Public Relations for Schools.** Theory and practice of educational interpretation. Principles involved; machinery and personnel; techniques of working with groups; the teacher's contacts with the community; the role of the pupil; professional and lay organization. (3 cred.; prereq. 225; II MTWThF; JohH 307) Wakefield
- 236. **Field Study in Educational Administration.** Is a part of the requirements for the certificate, Specialist in Education. The 10 credits which may be earned in this course will be given on the basis of a written report covering an approved field study. Students may register for the general plan-

ning and organization of their field study without credit. (0-10 cred.; grad.; prereq. #; VII-VIII M; JohH 306) Domian

ELEMENTARY EDUCATION

115. **Administration of the Elementary School.** Problems relating to the organization for instruction and classification of pupils in elementary schools with critical examination of current practices. (3 cred.; prereq. 9 cred. in education; I MTWThF; NH 45) Curtin
118. **The Community School.** Philosophy, purposes, organization and functioning of the community school, including a study of its relationships with the area it serves. (3 cred.; sr., grad.; II MTWThF; Psy 115) Archer

SECONDARY EDUCATION

167. **The Junior High School.** Sources of the movement; purposes, functions, and limitations; types of reorganization; fundamental problems of reorganization; reorganization of subject matter. (3 cred.; sr., grad.; prereq. 9 cred. in education; I MTWThF; JohH 114) Cramer
218. **Recent Literature in Secondary Education.** (Cred. ar.; VII-VIII T; JohH 113) R. Keller, Mitchell
264. **Administration of Instructional Activities in the Secondary School.** (3 cred.; II MTWThF; FolH 301) Mitchell
265. **Administration of the Noninstructional Activities in the Secondary School.** (3 cred.; III MTWThF; PeikH 145) Anderson
- 270.* **Special Problems in Secondary Education.** (Cred. ar.; prereq. #; VII-VIII T; JohH 105) Bossing, R. Keller, Mitchell

HIGHER EDUCATION

274. **The Junior College.** Present status of the junior college, its development, functions, organization, curriculum, and probable trends. (3 cred.; IV MTWThF; JohH 115) R. Keller

Second Term

GENERAL COURSES

124. **Public School Administration.** (See first term) (I MTWThF; P 2) Wakefield
210. **Financial Aspects of Public School Business Administration.** (See first term) (II MTWThF; P 210) Prentis
225. **Pupil Personnel Administration.** (See first term) (III MTWThF; P 110) Lane
226. **School Plant Planning and Management.** (See first term) (I MTWThF; P 210) Prentis
227. **Teacher and Employee Administration.** (See first term) (IV MTWThF; P 110) Lane
- 228.* **Special Problems in Educational Administration.** (See first term) (VII-VIII T; JohH 309) Lane, Prentis, Wakefield
230. **Public Relations for Schools.** (See first term) (II MTWThF; P 2) Wakefield
236. **Field Study in Educational Administration.** (See first term) (VII-VIII M; JohH 309) Domian

ELEMENTARY EDUCATION

115. **Administration of the Elementary School.** (See first term) (I MTWThF; Pt 202) Curtin

- 200. Seminar in Elementary School Administration.** Especially for elementary school principals. Problems of administration and organization of instruction in the elementary school. (3 cred.; grad.; limited to 40 students; admission by advance application to dean's office, College of Education; prereq. grad., experience as elementary school principal; VI-VII MTWThF; PeikH 255) Archer, Goossen, Curtin, Ruddell

SECONDARY EDUCATION

- 218. Recent Literature in Secondary Education.** (See first term) (VII-VIII T; Bu 103) R. Keller, Mitchell
- 263. Organization of the Secondary School.** (3 cred.; II MTWThF; PeikH 175) F. Abel
- 264. Administration of Instructional Activities in the Secondary School.** (See first term) (III MTWThF; PeikH 145) Mitchell
- 270.* Special Problems in Secondary Education.** (See first term) (VII-VIII T; Bu 103) Bossing, R. Keller, Mitchell

CURRICULUM AND INSTRUCTION (Ed.C.I.)

First Term

GENERAL COURSES

- 101. Driver Education.** Materials and methods for driver education; building a plan for driver education for a specific school; behind-the-wheel training. Valid Minnesota driver's license required. Content planned to meet requirements of State Department of Education for driver education in the schools. (2 cred.; limited to 32 students; VI-IX MTWThF June 18 to 29; ForH 20, 30) Neal and ar.
- 105. Audio-Visual Materials in Education.** (3 cred.; sr., grad.; I MTWTh and 1 hr. ar.; WeH 206) Pearson
- 106. Co-ordinating an Audio-Visual Education Program.** (3 cred.; prereq. 105 or #; III MTWThF; WeH 206) Pearson
- 145. Reading Difficulties.** (3 cred.; prereq. course in reading or basic training in counseling or school psychological work; IV MTWThF; P 110) Bond
- 151. Diagnosis and Treatment of Learning Difficulties.** Evaluation of the results of teaching; diagnosis of pupil difficulty; development and prevention; tests as aids in teaching; following up a testing program. (3 cred.; IV MTWThF; NH 209) Clymer
- 171. Curriculum Laboratory Practice.** A practice course in the analysis and construction of units, courses of study, and curriculums according to needs, interests, level, and specialization. (3 cred.; prereq. 170A or B, #; ar.) Bossing
- 174-175-176. Clinical Methods and Practice in Speech Pathology.** (3 cred. each; prereq. Spch. 61, 67, 119, 162, and 163 or ¶Spch. 163; ar.) Bryngelson
- 178. Educational and Social Implications of Visual Impairment.** A lecture course which discusses the anatomy and physiology of the eye with emphasis on the etiological factors and their effects on the individual, some consideration of screening techniques, visual efficiency, the relationship of information concerning the eye to the educational program, information through field trips, film analysis of forms, etc. (3 cred.; I MTWThF; ForH 15) G. Abel and ar.
- 179. Principles and Methods of Teaching Braille.** The mastery of the Braille system as a means of communication and as a basic tool in the education

of blind children, development of written lessons and work-sheets which can be used by blind children, and analysis and discussion of reading readiness materials. Use of various types of Braille writing equipment, and observation of blind children using the Braille system. Use of the system in mathematics, music, and all other forms of Braille. (3 cred.)

Sec. 1, VI MTWThF, Tuttle School,
Petrucci (for beginners)

Sec. 2, VI MTWThF, Tuttle School,
Petrucci (for those with
working knowledge of the
Braille system)

180.55 Workshop: Educational Procedures and School Curriculum Adaptation with Blind Children. Workshop procedures will be applied to the exploration of the various areas of instruction important in the education of blind children. Lectures and films will form the orientation necessary in the basic areas, and opportunities to observe procedures with blind children in a resource room in the regular demonstration school will be available. Structured observation in the demonstration school and small group meetings will be planned for 2 days each week. Aside from the broad curriculum areas of the regular elementary school program, there will be special "plus" curriculum exploration in such areas as orientation and mobility, efficient living skills, guidance and counseling for children who are blind, and other topics, on the basis of requests from the students. (3 cred.; limited to 25 students; admission by advance application to director of Psycho-Educational Clinic; 9:30 to 12 MTWThF; ForH 15, June 12-15, last 4 weeks, Tuttle School) G. Abel, Kenmore

205.* Problems in Audio-Visual Education. (Cred. ar.; prereq. #; ar.) Pearson

227.* Problems in Rural Education. (Cred. ar.; prereq. Ed.Ad. 117; ar.) Archer

243. Recent Research in Reading. Critical analysis of methodology and findings of current research in the field of reading. Appraising research methods, population limitations, and educational implications. (3 cred.; prereq. #; III MTWThF; JohH 306) Bond, Clymer

271.* Problems in Curriculum Construction. (Cred. ar.; prereq. #; ar.) Archer, Bossing, Boeck, Goossen, D. Johnson, Curtin, Ruddell

273.* Problems in Reading. (Cred. ar.; prereq. 143 or 144 or #; V T; Bu 103) Bond, Clymer

ELEMENTARY EDUCATION

60. The Teaching of Reading in the Elementary School. (3 cred.; prereq. Ed. 71B or equiv.; IV MTWThF; P 210) Odland

61. The Teaching of the Social Studies in the Elementary School. (3 cred.; prereq. Ed. 71C or equiv.; III MTWThF; CW 222) Schwab

62B. The Teaching of Arithmetic in the Intermediate Grades. (3 cred; prereq. Ed. 71B or equiv.; II MTWThF; P 2) Ruddell

102. Teaching the Social Studies in the Elementary School. (3 cred.; prereq. Ed. 71C or equiv.; II MTWThF; P 110) Schwab

103. Teaching of Science in the Elementary School. Emphasis on resources and materials, and their application to the elementary grades. (3 cred.; sr., grad.; prereq. Ed. 71A-B or teaching experience; III MTWThF; P 210) Boeck

119. Elementary School Curriculum. (3 cred.; prereq. Ed. 71C or equiv.)

Sec. 1, I MTWThF, PeikH 175,
Jarolimek

Sec. 2, III MTWThF, PeikH 175,
Jarolimek

§§ Graduate students planning to register for any workshop should consult their advisers concerning the possibility of using credit for the workshop in their graduate program.

- 121. Selecting Literature for the Elementary School.** Research backgrounds in curriculum units, children's interests in reading, difficulty of reading materials, and principles of selection and use of books in the elementary school. Opportunity will be given to survey books available and to apply the principles and information learned. Recommended for majors in reading, for elementary teachers with degrees who want to go beyond mere acquaintance with the field of children's books; and for those who have already graduated without needed background in children's literature. (3 cred.; I MTWThF; JohH 115) D. V. Smith
- 123. Speech in the Elementary School.** Lectures, discussion, individual projects. Role of the elementary teacher in promotion of good speech, prevention of speech problems, and handling of speech defects. Projects related to the teacher's own teaching situation. (3 cred.; sr.; I MTWThF; FolH 2) Henrikson
- 143. Teaching and Supervision of Reading in the Elementary School.** (3 cred.; prereq. 9 cred. in education; II MTWThF; NH 211) Odland
- 149. Teaching and Supervision of Arithmetic in the Elementary School.** (3 cred., §62A or B; prereq. Ed. 71C or equiv.; III MTWThF; P 2) Ruddell
- 150. Supervision and Improvement of Instruction.** (3 cred.; prereq. Ed. 71C or equiv.)
 Sec. 1, II MTWThF, Pt 202, Goossen
 Sec. 2, IV MTWThF, AH 111, Goossen
- 153. Supervision and Teaching of English in the Elementary Schools.** (3 cred.; prereq. Ed. 71C or equiv.; IV MTWThF; JohH 122) Chase
- 162. Laboratory in Nursery School and Kindergarten Instructional Practices.** (3 cred.; open to experienced teachers; other professional workers admitted by special permission; IV MWF and hrs. ar.; CW 218) Headley
- 163. Plastic Materials, Story Telling, and Social Studies for Young Children.** (3 cred.; open to experienced teachers; other professional workers admitted by special permission; VI MWF and hrs. ar.; CW 218) Headley
- 186. Laboratory in Elementary Instructional Practices.** Daily observation of elementary classes with discussion of techniques, emphasis on activity units, visual aids, enriched materials, individual differences, and socialized situations. Students enrolling in this course must carry at least one other course in the College of Education. (2 cred.; experienced teachers only; observation 4 hrs. weekly ar. MTWThF, Tuttle School; lect. VI WTh; NH 216) Jensen
- 240. Improvement of Instruction in the Elementary School.** A graduate practicum intended for those who have a Master's degree in School Administration; study of current programs and procedures in the improvement of instruction in the elementary school; examination of current research on instructional methods in the major instructional fields, planning programs for the improvement of instruction; instructional materials. (4 cred.; grad.; limited to 35 students; III-IV MTWThF; JohH 307, 309) Curtin, Cramer
- 261.* Special Problems in the Improvement of Instruction.** (Cred. ar.; prereq. ‡; ar.) Goossen, Curtin, Ruddell

SECONDARY EDUCATION

- 113. High School Curriculum.** (3 cred.; prereq. Ed. 55A-B or equiv.; II MTWThF; Ph 170) Bossing
- 114. Development of the Core Curriculum.** Consideration will be given to the development of the core curriculum idea; its philosophical, psychological,

and educational bases; problems involved in the function and the preparation of the core teacher. (3 cred.; I MTWThF; JohH 126) Bossing

125. **Occupational Information Laboratory.** (3 cred.; limited to 25 students; prereq. #; II MTWThF; AH 111) White
131. **Advanced Course in Teaching the Technical Business Subjects.** (3 cred.; I MTWThF; Bu 103) Price
135. **Group Procedures in Guidance.** (3 cred.; limited to 35 students; prereq. 9 cred. in education, E.Psy. 133, or #; IV MTWThF and V TTh; NH 216) Borow
- 137A. **Materials and Methods in Co-operative Part-Time Classes.** (3 cred.; IV MTWThF; Bu 103) Meyer
139. **Co-ordination Techniques.** (3 cred.; II MTWThF; Bu 103) Meyer
140. **Teaching of Speech.** (3 cred.; jr., sr., grad.; prereq. Spch. 1-2-3 or 5-6 or equiv., or #; II MTWThF; FolH 307) D. K. Smith
144. **Teaching of Reading in Secondary Schools.** (3 cred.; prereq. 9 cred. in education; II MTWThF; PeikH 175) Chase
147. **Workshop in Teaching Display.** A 2-week workshop for co-ordinator-instructors of occupational part-time programs in high schools and junior colleges. Content includes interior display, window display, and showcard writing. Workshop members will have practice in using flannel board, peg board, Deca Pole, mannequins, show cases, and other display equipment. Lectures and demonstrations by display artists and trips to display departments and fixture distributors will be arranged. Class members will take home units of instruction in display for use in the classroom. (2 cred.; limited to 20 students; 1:30 to 4:00 p.m., June 18 to 29; Bu 103) E. Nelson
155. **Materials Laboratory for Social Studies Teachers.** A seminar in the study of printed and audio-visual materials, with reference to their use in social studies classes. (3 cred.; prereq. #; IV MTWThF; JohH 105) McCune
156. **Trends in Business Education.** (3 cred.; III MTWThF; Bu 103) Price
158. **Materials and Methods in Office and Clerical Practice.** (3 cred.; VII MTWThF; JohH 307) Paleen
- 187A. **The Teaching of the Analysis of the French Language.** (2 cred.; IV MTWThF; FolH 202) Falk
- 187B. **The Teaching of the Analysis of the German Language.** (2 cred.; II MTWThF; FolH 103) Menze
- 187C. **The Teaching of the Analysis of the Latin Language.** (3 cred.; III MTWThF; FolH 4) Bock
192. **Mathematics Laboratory.** A study of the sources and types of materials, laboratory projects and techniques of using mathematical devices and instruments, visual aids, and community resources. (3 cred.; limited to 25 students; prereq. grad. or experienced teacher; IV MTWThF and V TTh; PeikH 315) D. Johnson
- 199E. **Internship.** (Cred. ar.; available for M.Ed. students in recreation; ar.) Fitzgerald
- 201.* **Problems in Teaching the Social Studies.** (Cred. ar.; prereq. 168, 204, or #; ar.) McCune
- 225.* **Special Problems in Supervision of Instruction in Secondary Schools.** (Cred. ar.; prereq. #; VII-VIII T; JohH 306) R. Keller
- 238.* **Problems in Distributive Education.** (Cred. ar.; prereq. #; ar.) Meyer

- 239.* **Problems in Business Education.** (Cred. ar.; prereq. #; ar.) Price
266. **Supervision of High School Instruction.** (3 cred.; prereq. E.Psy. 293 or #: IV MTWThF; FoIH 209) Ringo
- 287.* **Advanced Course in the Teaching of Science.** (3 cred.; grad.; IV MTWThF; PeikH 375) Boeck
- 294.* **Advanced Course in Curriculum and Methods in Secondary School English.** (3 cred.; prereq. Ed.T. 75A-B-C or equiv.; II MTWThF; JohH 106) D. V. Smith
- 296.* **Special Problems in Teaching English.** (Cred. ar.: ar.) D. V. Smith

HIGHER EDUCATION

- 228.*§§ **Workshop: Problems of Higher Education and Teacher Education.** (6 cred.; grad.; ar. MTWThF, June 11 to July 6; ar.) Cooper, Eckert, Corcoran, McKeefery, and consultants
250. **Higher Education in the United States.** (3 cred.; prereq. year of graduate study in any field or 18 cred. in education; I MTWThF; JohH 105) Eckert
252. **Effective College Teaching.** (3 cred.; prereq. year of graduate study in any field or 18 cred. in education; III MTWThF; JohH 105) McCune

Second Term

GENERAL COURSES

101. **Driver Education.** (See first term) (Limited to 32 students; VI-IX July 30 to August 10; ForH 20, 30) Neal and ar.
105. **Audio-Visual Materials in Education.** (See first term) (I MTWTh and 1 hr. ar.; WeH 206) Pearson
109. **Audio-Visual Materials and Equipment Laboratory.** (3 cred.; limited to 30 students; prereq. 105 or #105, or #; III and IV MTWThF; WeH 206) Pearson
133. **Consumer Education in the Schools.** (3 cred.; II MTWThF; Bu 103) Price
145. **Reading Difficulties.** (See first term) (IV MTWThF; NH 207) Tinker
171. **Curriculum Laboratory Practice.** (See first term) Bossing
- 174-175-176. **Clinical Methods and Practice in Speech Pathology.** (See first term) Bryngelson
- 205.* **Problems in Audio-Visual Education.** (See first term) Pearson
- 227.* **Problems in Rural Education.** (See first term) Archer
- 271.* **Problems in Curriculum Construction.** (See first term) Archer, Bossing, Boeck, Goossen, D. Johnson, Curtin, Ruddell
- 273.* **Problems in Reading.** (See first term) (V T; Bu 103) Tinker, Reynolds, Clymer

ELEMENTARY EDUCATION

102. **Teaching the Social Studies in the Elementary School.** (See first term) (III MTWThF; AH 111) Jarolimek

§§ Graduate students planning to register for any workshop should consult their advisers concerning the possibility of using credit for the workshop in their graduate program.

103. **Teaching of Science in the Elementary School.** (See first term) (I MTWThF; PeikH 375) Boeck
119. **Elementary School Curriculum.** (See first term) (II MTWThF; AH 111) Jarolimek
121. **Selecting Literature for the Elementary School.** (See first term) (IV MTWThF; AH 111) Odland
143. **Teaching and Supervision of Reading in the Elementary School.** (See first term) (III MTWThF; P 210) Clymer
146. **Current Developments in Language Expression in the Elementary School.** (3 cred.; prereq. Ed. 71C or equiv.; II MTWThF; JohH 313) Archer
149. **Teaching and Supervision of Arithmetic in the Elementary School.** (See first term) (II MTWThF; Ph 133) Ruddell
150. **Supervision and Improvement of Instruction.** (See first term) (IV MTWThF; Bu 111) Goossen
- 261.* **Special Problems in the Improvement of Instruction.** (See first term) Goossen, Curtin, Ruddell

SECONDARY EDUCATION

113. **High School Curriculum.** (See first term) (II MTWThF; AH 108) Bossing
122. **Literature for Adolescents.** (3 cred.; prereq. Ed. 55B or junior-senior high school teaching experience; I MTWThF; PeikH 175) Kegler
125. **Occupational Information Laboratory.** (See first term) (Limited to 25 students; III MTWThF; Bu 111) White
135. **Group Procedures in Guidance.** (See first term) (Limited to 35 students; IV MTWThF and V TTh; NH 216) Borow
136. **Organization and Administration of Distributive Education.** (3 cred.; III MTWThF; Bu 103) Meyer
141. **Co-operative Part-Time Work Experience Programs.** (3 cred.; I MTWThF; Bu 103) Meyer
144. **Teaching of Reading in Secondary Schools.** (See first term) (II MTWThF; Ph 166) Tinker
161. **Curriculum Construction in Business Education.** (3 cred.; prereq. 113; IV MTWThF; Bu 103) Price
168. **Current Developments in the Social Studies.** (3 cred.; grad.; IV MTWThF; CW 206) McCune
- 170B. **Curriculum and Course of Study Construction.** (3 cred.; prereq. 113 or 119, or #; I MTWThF; AH 108) Bossing
- 199E. **Internship.** (See first term) Fitzgerald
- 201.* **Problems in Teaching the Social Studies.** (See first term) McCune
- 225.* **Special Problems in Supervision of Instruction in Secondary Schools.** (See first term) (VII-VIII T; Bu 103) R. Keller
- 238.* **Problems in Distributive Education.** (See first term) Meyer
- 239.* **Problems in Business Education.** (See first term) Price
266. **Supervision of High School Instruction.** (See first term) (IV MTWThF; PeikH 175) F. Abel

HIGHER EDUCATION

- 228.*§§ **Workshop: Problems of Higher Education and Teacher Education.** (See first term) (Ar. MTWThF, July 23 to August 17; CCS) Grim, Boeck, Mork, Allen, and consultants

EDUCATIONAL PSYCHOLOGY (E.Psy.)

First Term

GENERAL COURSES

60. **Introduction to Measurement and Statistics.** (3 cred.; prereq. 6 cred. in psychology; VI MTWThF; NH 213) Collier
110. **Educational Measurement in the Classroom.** Principles and methods for construction, evaluation, and improvement of educational measurement in classroom instruction. (3 cred.; VII MTWThF; NH 213) D. Johnson
116. **Introduction to Statistical Methods in Education.** (Not equivalent to 216, 216a) Simpler statistical techniques in educational work. Comprehension of literature using elementary statistical concepts and methods. (3 cred.; not open to Master's or Ph.D. degree candidates who will take more than 1 quarter of statistics; prereq. 116a or #; III MTWThF; NH 213) Collier
- 116a. **Introduction to Statistical Methods in Education—Laboratory.** (2 cred.; limited to 16 students; prereq. 116; V-VI MWF; Bu 221) MacEachern
125. **Group Dynamics in Education.** Survey of selected literature on group dynamics; practical application of social-psychological concepts to the analysis of group behavior. (3 cred.; limited to 30 students; VI-VII MTWThF; VH 210) Flanders
140. **Instruments and Techniques of Measurement.** (3 cred.; sr., grad.; prereq. 110 or 117 or equiv.; IV MTWThF and V ThF; Bu 111) Edson
150. **Clinical Practice in Remedial Teaching.** Practice in remedial tutoring of individual children who have experienced difficulty in school learning. (3 cred.; prereq. Ed.C.I. 145 or 151 and #; II-III MTWThF and 1 hr. ar.; Pt 108) Reynolds, Clymer
151. **Clinical Practice in Educational Diagnosis.** Practice in diagnosis of school learning problems. Includes measurement, interview technique, preparation of case reports, etc. Work with children referred to the Psycho-Educational Clinic. (3 cred.; prereq. 142 or Ed.C.I. 145 and #; VI-VIII MTWThF; Pt 108) Reynolds, Balow
159. **Personality Development and Mental Hygiene.** (3 cred.; IV MTWThF; AH 108) Swan
184. **Education of the Slow-Learning Child.** (3 cred.; prereq. 182; IV MTWThF; Pt 202) Reynolds
193. **Psychology of Human Learning.** (3 cred.; sr., grad.; VI MTWThF; NH 209) Mork
- 208.* **Methods in Educational Research.** Methods and techniques employed in the investigation and report of educational problems. Suggested for all candidates for graduate degrees. (3 cred.; grad.; II MTWThF; Bu 111) P. O. Johnson

§§ Graduate students planning to register for any workshop should consult their advisers concerning the possibility of using credit for the workshop in their graduate program.

216. **Statistical Methods in Education.** Designed to lay the foundations of statistical theory and to give practice in applying the theories in the solution of educational and psychological problems. (3 cred.; grad.; I MTWThF; Bu 111) P. O. Johnson
- 216a. **Statistical Methods in Education—Laboratory.** (2 cred.; limited to 16 students; VII-VIII MWF; Bu 221) MacEachern
- 233.* **Problems in Guidance and Personnel Work.** (Cred. ar.; ar.) Dugan, Borow, Edson
- 253.* **Research Problems.** (Cred. ar.; prereq. #; ar.) Dugan, P. O. Johnson, Edson, Flanders, Mork, Reynolds
290. **Individual Differences.** (3 cred.; III MTWThF; ForH 120) Flanders
- 293.* **Psychology of Learning.** (3 cred.; prereq. 12 cred. in psychology and educational psychology; II MTWThF; Ph. 133) Mork

SECONDARY EDUCATION

133. **Basic Procedures in Student Personnel Work.** (3 cred.; prereq. 9 cred. in education; I MTWThF)
- Sec. 1, AH 111, White
- Sec. 2, NH 213, Borow
134. **School Counseling Procedures.** (3 cred.; limited to 30 students; prereq. 110 or 117 or equiv., 133 and #; I MTWThF; JohH 122) Dugan
282. **Practice in High School Personnel Work.** (3 cred.; prereq. #; III MTWThF; AH 108) Swan

Second Term

GENERAL COURSES

110. **Educational Measurement in the Classroom.** (See first term)
- Sec. 1, III MTWThF, CW 218,
D. Johnson
- Sec. 2, IV MTWThF, CW 218,
D. Johnson
116. **Introduction to Statistical Methods in Education.** (See first term) (IV MTWThF; P 210) Stecklein
- 116a. **Introduction to Statistical Methods in Education—Laboratory.** (See first term) (Limited to 16 students; V-VI MWF; Bu 221) MacEachern
117. **Basic Principles of Measurement.** (3 cred.; prereq. 116 or 216 or Psy. 70 or equiv.; III MTWThF; PeikH 175) Collier
150. **Clinical Practice in Remedial Teaching.** (See first term) (II-III MTWThF and 1 hr. ar.; Pt 108) Reynolds, Clymer
151. **Clinical Practice in Educational Diagnosis.** (See first term) (VI-VIII MTWThF; Pt 108) Reynolds, Balow
152. **Introduction to School Psychological Services.** Psychological services to children in public schools. Problems of relationship of the psychologist to teachers, administrators, parents, and the community, and as a specialist dealing with problems of normal children including diagnosis and treatment of educational and psychological disabilities. Lectures and discussions. (3 cred.; prereq. #; III MTWThF; P 2) Gray
- 153.§§ **Seminar and Laboratory in School Psychological Services.** Practical problems confronting the school psychologist. Seminar research reports,

§§ Graduate students should consult their advisers concerning the advisability of registering for this workshop under E.Psy. 153 or C.W. 200.

field visits, clinic observation, and supervised experience in case study. (3 cred.; prereq. ‡; admission by advance application to Institute of Child Welfare; VI-VII MTWThF; CW 218) Gray

159. **Personality Development and Mental Hygiene.** (See first term) (I MTWThF; WuH 201) Jones
182. **Education of Exceptional Children.** Overview of the field of special education. Especially for classroom teachers, counselors, supervisors, and administrators; also the initial course for students working for special class certificates. Reports on individual work equivalent to 1 credit. (3 cred.; prereq. Ed. 55B or 71C or equiv.; IV MTWThF; Pt 202) Reynolds
185. **Education of the Auditorially Handicapped Child.** Workshop techniques, including observation of laboratory class for hearing handicapped children, and individual and small group conferences. (3 cred.; III-IV MTWThF; Pt 108 and ar.) Ar.
193. **Psychology of Human Learning.** (See first term) (VI MTWThF; NH 209) Mork
217. **Statistical Methods in Education.** (3 cred.; grad.; I MTWThF; Bu 111) Collier
- 217a. **Statistical Methods in Education—Laboratory.** (2 cred.; limited to 16 students; VII-VIII MWF; Bu 221) MacEachern
- 233.* **Problems in Guidance and Personnel Work.** (See first term) Dugan, Borow
- 253.* **Research Problems.** (See first term) Dugan, Mork, Reynolds

SECONDARY EDUCATION

133. **Basic Procedures in Student Personnel Work.** (See first term) (II MTWThF; Bu 111) White
134. **School Counseling Procedures.** (See first term) (Limited to 30 students; II MTWThF; NH 107) Dugan

GENERAL EDUCATION (Ed.)

First Term

- 75A. **Introduction to Elementary School Teaching.** (5 cred.; prereq. Psy. 2; I-II MTWThF; CW 218) Balow

Second Term

- 75B. **Introduction to Elementary School Teaching.** (5 cred.; prereq. 75A; I-II MTWThF; CW 218) Balow

HISTORY AND PHILOSOPHY OF EDUCATION (H.Ed.)

First Term

110. **Intercultural Education.** A study of racial, religious, and nationality problems with special reference to their importance for the schools. (3 cred.; IV MTWThF; JohH 310) Kosaki
141. **Critical Issues in Contemporary Education.** (3 cred.; II MTWThF; Ph 166) Clopton

156. History of Ideas in American Education. Selected readings in American political, economic, and social development with reference to the emerging system of public education. (3 cred.; I MTWThF; JohH 310) Clopton

180. The School and Society. (3 cred.; sr.; limited to 60 students in each section; prereq. Ed. 55A-B or 71A-B)

Sec. 1, III MTWThF, NH 209,
Dupuis

Sec. 2, VI MTWThF, JohH 122,
Dupuis

241.* Problems in the History and Philosophy of Education. (Cred. ar.; prereq. #; ar.) Clopton, Dupuis

Second Term

131. Comparative Education. Compares European, Asiatic, and American systems and philosophies of education. Emphasis on exploring the possibilities of international education. (3 cred.; II MTWThF; EE 237) Beck

180. The School and Society. (See first term) (Limited to 60 students in each section)

Sec. 1, III MTWThF, EE 237,
Beck

Sec. 2, IV MTWThF, AH 108,
Atherton

241.* Problems in the History and Philosophy of Education. (See first term) Beck

HOME ECONOMICS EDUCATION (H.E.Ed.)

First Term

191. Advanced Course in the Teaching of Home Economics. Materials, equipment, and teaching procedures based on newer concepts of learning and changing social and economic needs of families. The course offers the teacher an opportunity to study problems related to her own situation at the secondary or higher educational level. (3 cred.; sr., grad.; prereq. 91, 93, or #; V MTWThF; HE 103) Clewell

193A. Home Economics Curriculum (Secondary Level). Contributions of home economics at elementary and secondary levels; techniques employed in curriculum planning and reconstruction. (3 cred.; prereq. 94 or #; I MTWThF; HE 103) Clewell

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. (3 cred.; prereq. #; IV MTWThF; HE 129) Rose

293.* Problems in Home Economics Education. Designed to meet the needs of advanced students for independent study of current educational problems. (1-9 cred.; prereq. 294 recommended, #; ar.; HE 117) Rose

Second Term

192. Evaluation in Home Economics. Measuring progress toward important goals in different areas of home economics; available tests and other evaluation materials; construction and refinement of various evaluation instruments. Elementary statistical techniques useful to home economics teachers. (3 cred.; sr., grad.; prereq. 91, 93, Ed. 55A-B; VI MTWThF; HE 103) Ford

293.* Problems in Home Economics Education. (See first term) (Ar.; HE 107) Ford

INDUSTRIAL EDUCATION (Ind.)

First Term

- 101. Tests in Industrial Subjects.** Study and application of principles of evaluation with emphasis on shop and drawing subjects. (3 cred.; jr., sr., grad.; prereq. Ed. 55B; IV MTWThF; TNCW 113) Kavanaugh
- 106. Industrial Education Workshop—Industrial Arts in the Junior High School.** (Curriculum, projects, teaching materials, etc.) A laboratory course for experienced teachers who wish to upgrade themselves through contact with current thinking and practices concerning industrial arts in the junior high school. Workshop members will work on individual problems and will also pool their efforts in producing a kit of curriculum and instructional materials for each participant. (3-6 cred.; prereq. teaching experience or #; III-IV and VI-VII MTWThF; TNCW 1) H. Nelson, Kavanaugh
- 107. Co-ordination.** Province and duties of co-ordinators in trade schools, part-time programs, and cosmopolitan high schools. Information, guidance, and training for those having interest in this new type of school work. (3 cred.; prereq. 60 and 61, or 125 or #; I MTWThF; TNCW 116) Widdowson
- 109. Conference Leading for Industry.** Purposes, advantages, and limitations of conference method. Instruction in techniques of conference procedure. Experience in planning, leading, and evaluating conferences and in writing summaries. (3 cred.; prereq. #; III MTWThF; TNCW 116) Widdowson
- 200.* Research Problems.** (3-6-9 cred.; prereq. approval of candidacy for Master's degree; individual conferences with advisers) Micheels, H. Nelson, Kavanaugh
- 251. Research in Industrial Education.** Survey of research techniques, methods, and studies; critical analysis; selection of research problems; formulation of design and work plans; reports of progress; organization and presentation. (3 cred.; prereq. #; II MTWThF; TNCW 113) Micheels

Second Term

- 103. Instructional Aids.** Consideration of various instructional aids, including audio-visual materials and individual instruction sheets; planning, constructing, using. (3 cred.; prereq. 70 or equiv.; III MTWThF; TNCW 113) Kavanaugh
- 110. Vocational Guidance.** 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. (3 cred.; prereq. Ed. 55B or #; II MTWThF; TNCW 113) H. Nelson
- 200.* Research Problems.** (See first term) (IV MTWThF; TNCW 103) H. Nelson, Kavanaugh

METHODS AND STUDENT TEACHING (Ed.T.)

First Term

NURSING EDUCATION

- 51A. The Teaching of Nursing.** (2 cred.; open only to students who will also be registered for 2 cred. in this course in the second term; see instructor; prereq. Ed. 55B or 55N; VI MWF; ForH 345) Norris, Dunning

ELEMENTARY EDUCATION

- 77.†† **Student Teaching in the Nursery School.** Five half-days each week spent in classroom participation under supervision. (3 cred.; sr.; prereq. 55, 56, 57, and 58 plus #; ar.) Helgerson
- 78.†† **Student Teaching in the Kindergarten.** Five half-days each week spent in classroom participation under supervision. (3 cred.; sr.; prereq. 55, 57, 58, and 59 plus #; ar.) Helgerson

SECONDARY EDUCATION

- 52.†† **Student Teaching.** Open only to students who need a limited number of credits in student teaching to graduate at the end of the first summer term or to students who wish to qualify for the junior high school endorsement. (Cred. ar.; limited to 40 students; ar.; PeikH) Grim
- 84A-B-C. **Practice and Field Work in Recreation Leadership.** (2 cred.; prereq. recreation major; ar.) Fitzgerald
- 85A-B-C. **Practice and Field Work in Recreation.** (2 cred. for majors, 1 cred. for minors; prereq. recreation majors or minors; ar.) Fitzgerald

Second Term

NURSING EDUCATION

- 51A. **The Teaching of Nursing.** (See first term) (VI MWF; ForH 345) Norris, Dunning

SECONDARY EDUCATION

- 84A-B-C. **Practice and Field Work in Recreation Leadership.** (See first term) Fitzgerald
- 85A-B-C. **Practice and Field Work in Recreation.** (See first term) Fitzgerald

MUSIC EDUCATION (Mu.Ed.)

See also Department of Music, College of Science, Literature, and the Arts

First Term

51. **Teaching of Music.** For nonmusic majors. Appreciation, music history, methods, materials. (3 cred.; prereq. Mu. 1; I MTWThF; ScH 4) C. Nelson
52. **Teaching of Music.** For nonmusic majors. Appreciation, music history, methods, materials. (3 cred.; prereq. 51; II MTWThF; ScH 4) C. Nelson
- 60††-61-62. **Supervision and Teaching of Music.** (3 cred. each.; sr.; prereq. 50B, 53, Ed. 55B, #; VIII W; ScH 4) Ivory
104. **Advanced Topics in Vocal Music Education.** Survey of objective and empirical research and literature on voice development in individual, class, and choral work. Individual surveys of performance practices and organization of vocal groups in public schools; compilation of lists of vocal music in accordance with sets of objective criteria. (3 cred.; sr.; prereq. #; III MTWThF; ScH 4) Caswell
105. **Advanced Topics in Instrumental Music Education.** Individual selection of topics in instrumental music education for intensive study. Biblio-

†† Students registering for this course must make out the application required for methods courses and student teaching. Forms are available in the office of the director of student teaching, 210C Burton Hall.

graphical methods, use of library resources. (3 cred.; sr.; prereq. #; III MTWThF; ScH 3) Ivory

160. Organization and Supervision of Vocal-Instrumental Music in Secondary Schools. Practical problems in school music; individual projects, group activities, general discussions; classroom management, techniques of supervision, scheduling, unit construction, instruments, repertory. (3 cred.; sr.; prereq. 6 cred. in music education, 9 cred. in music, and 6 cred. in general education; II MTWThF; ScH 104) Ivory, Caswell

224.* Research Problems. (3-9 cred.; grad.; prereq. knowledge of elementary statistics; VIII T; ScH 4) Ivory, Caswell

225E. Advanced Applied Music.** (2-4 cred.; prereq. entrance exam.; ar.; ScH 107) Ar.

Second Term

51. Teaching of Music. (See first term) (II MTWThF; ScH 4) Caswell

52. Teaching of Music. (See first term) (IV MTWThF; ScH 4) Ivory

170. Recent Research and Literature. Analysis of current research findings and evaluation of newly published teaching materials in light of the findings. Appraisal of research techniques in music education. (3 cred.; sr.; III MTWThF; ScH 4) Ivory, Caswell

224.* Research Problems. (See first term) (VIII T; ScH 4) Ivory, Caswell

225E. Advanced Applied Music.** (See first term) Ar.

PHYSICAL EDUCATION FOR MEN (P.E.M.)

First Term

1A. Beginning Golf. (1 cred.; no prereq.; V-VI MWF; Golf Course) Bolstad

1B. Intermediate Golf. (1 cred.; no prereq.; V-VI TThF; Golf Course) Bolstad

1C. Beginning Swimming. (1 cred.; no prereq.; VI MTWThF; CH) Mueller

5A. Touch Football, Calisthenics, Tactics. (1 cred.; no prereq.; I MTWThF; CH) Shawbold

5B. Gymnastics—Apparatus and Tumbling. (1 cred.; no prereq.; II MTWThF; CH) Shawbold

5C. Stunts, Contests, Softball. (1 cred.; no prereq.; III MTWThF; CH) Shawbold

9A. Fundamental Rhythms, Folk Dance. (1 cred.; no prereq.; V MTWThF; NGW) Ar.

9B. Square and Ballroom Dance. (1 cred.; no prereq.; VII MTWTh; NGW) Ar.

50. Human Anatomy. A study of the structure of the body and the principles and mechanics of bodily movements. (3 cred.; IV MTWThF; CH) Osell

73†-74-75. Directed Teaching. Actual practice in teaching physical education activities. (2 cred. each; prereq. 55, Ed. 55B; 10-12 hours a week ar.; CH) Mueller

†† Students registering for this course must make out the application required for methods courses and student teaching. Forms are available in the office of the director of student teaching, 210C Burton Hall.

- 101. Principles of Physical Education.** Aims, scope, and biological aspects of physical education with special consideration of the place of physical activity in education. (3 cred.; jr., sr., grad.; prereq. 32, 55, and 9 cred. in activity courses; I MTWThF; CH) Keller
- 135. Tests and Measurements in Physical Education.** Critical analysis of existing tests and testing methods in physical education including all curricular levels. Use of tests in physical activity programs. Application of principles of test construction to specific problems. (3 cred.; sr., grad.; III MTWThF; CH) Keller
- 224.* Research Problems in School Health Education, Physical Education, and Recreation.** Independent study on problems selected by students and approved by instructor. Conferences of individual students with instructor. (Cred. ar.; prereq. ‡; CH) Keller, Donnelly, Fitzgerald
- 233. The Administration of Physical Education in Schools.** Staff, organization, and supervision required in programs of physical education; intramural and interscholastic athletic problems; legal aspects; professional and public relations. (3 cred.; prereq. 63, 101 or equiv.; II MTWThF; CH) Donnelly
- 236. Recent Literature and Research in Physical Education and Recreation.** Research methods applied to physical education and recreation; preparation of designs for research problems. (3 cred.; grad.; IV MTWThF; CH) Donnelly
- 241. The Administration and Supervision of Public Recreation.** The organization for recreation; policies and procedures relating to finance, program, facilities, office management, legislation, and public relations. (3 cred.; grad.; I MTWThF; CH) Fitzgerald

Second Term

- 2A. Intermediate Golf.** (1 cred.; prereq. playing experience; III-IV MWF; Golf Course) Bolstad
- 2B. Beginning and Intermediate Swimming.** (1 cred.; no prereq.; V MTWThF; CH) Mueller
- 8. Tennis and Golf.** (1 cred.; no prereq.; VI-VII TWTh; CH) Bolstad, Mueller
- 65. Adapted Physical Education.** Philosophy, principles, and techniques of adapting the physical education program to meet the needs of handicapped pupils. (3 cred.; prereq. Anat. 51; III MTWThF; CH) Osell
- 67. Football Coaching.** Theory, strategy, generalship, styles of offense and defense, methods of organizing practices, and handling of men. (2 cred.; prereq. 4A or 1 year's experience on squad; IV MTWThF; CH) Warmath, staff
- 73††-74-75. Directed Teaching.** (See first term) Mueller
- 110. Recreation Surveys.** Methods and techniques of conducting recreation surveys. (3 cred.; sr., grad.; II MTWThF; CH) Fitzgerald
- 155. Instructional Aids in Health, Physical Education, and Recreation.** Evaluation, construction, and use of instructional materials stressing audio-visual aids. (3 cred.; no prereq.; III-IV MTWThF first 4 weeks; CH) Mueller
- 224.* Research Problems in School Health Education, Physical Education, and Recreation.** (See first term) Piper, Donnelly, Fitzgerald

†† Students registering for this course must make out the application required for methods courses and student teaching. Forms are available in the office of the director of student teaching, 210C Burton Hall.

- 234. The Curriculum in Physical Education.** Theory and principles of curriculum construction applied to physical education; practical application in construction of a curriculum. (3 cred.; grad.; II MTWThF; CH) Donnelly
- 261A. Seminar in Contemporary Problems in Physical Education.** Presentation of problems by class members; readings, discussions, problems selected for individual study. (3 cred.; grad.; I MTWThF; CH) Donnelly

PHYSICAL EDUCATION FOR WOMEN (P.E.W.)

Physical Examination

It is recommended that every woman student avail herself of the opportunity offered by the Students' Health Service for a physical examination. Everyone, but especially a teacher, should know her health status. The Department of Physical Education for Women strongly urges every person to make an appointment for a physical examination at the Health Service. Health Service approval must be secured for participation in activity courses designated by ††.

Facilities for Recreation

The swimming pool is open for recreational use from 2 to 3:30 p.m. during the first term and from 1 to 2:30 p.m. during the second term. At these times also the facilities of Norris Gymnasium for Women are open to women for individual practice; inquire in the main office concerning the procedure. The rental fee for suits and towels for open swimming is 20 cents. Towels for shower baths may be procured from the matron for 10 cents apiece. Health Service approval must be secured for participation in recreational swimming.

The University tennis courts and golf course are open to students at a nominal fee.

Institute on Dynamics of Posture and Poise

See section on Special Programs

Teaching Qualifications

Those interested in teaching physical education in the state of Minnesota must qualify in one of the following professional programs:

1. Courses applying this summer to the minor in physical education are: P.E.W. 18, 32, 37, 84, 117.
2. Courses applying this summer to the undergraduate major in physical education are: P.E.W. 18, 37, 81, 84, 117, 135.
3. Courses applying to advanced and graduate degrees with a major in physical education are: P.E.W. 117, 118, 124, 130, 224.

Required Physical Education

Those interested in meeting a college requirement in physical education may register for P.E.W. 7, 8, 12, 32.

First Term

- 7.†† Tennis for Beginners.** Open to those with little or no experience in tennis. Instruction will include the service, forehand drive, backhand drive, rules and etiquette of the game. Individual coaching will be stressed. Students are required to furnish own rackets and balls. (1 cred.)
- Sec. 1, IV MTWTh, NGW 151, Eibner Sec. 2, V MTWTh, NGW 151, Eibner
- 8. Golf for Beginners.** Open to those with little or no experience in golf. Fundamental strokes and individual analysis of the player's game are stressed along with the rules and etiquette of the game. (1 cred.)
- Sec. 1, 7 a.m. MTWThF, NGW 60, Reiter Sec. 2, 8 a.m. MTWTh, NGW 60, Reiter
- 10. Advanced Fundamentals of Movement.** Deals with the concept of the term fundamentals as applied to physical education at the elementary and secondary level. Special emphasis will be placed on the application of skill and knowledge fundamentals along with illustrative units in physical education. (1 cred.; III MTWTh; NGW 153) Jaeger
- 12. Social Recreation.** Ballroom and American country dance. Ballroom dance skills and country dances selected for use in high school teaching. Simple mixers for social groups will be included. (1 cred.; VII MTWTh; NGW 151) Lampe
- 18. Elementary Folk Dancing, Games, and Methods.** Graded folk dances and games usable at the elementary and secondary levels; teaching methods suited to the different age levels and the content will be discussed and experienced. (2 cred.; practical work V MWF, lect. V TTh; NGW 151) Lampe
- 32.†† Elementary Swimming.** For those who are unable to swim in deep water. Instruction includes orientation activities, water safety skills, crawl, side stroke, backstroke, and diving. (1 cred.; VI MTWTh; NGW 58) Eibner
- 37. Individual and Dual Games and Methods.** Deals with various methods and techniques for the teaching of individual sports at the junior and senior high school levels. Activities emphasized: badminton, golf, and tennis. (2 cred.; IV MTWThF; NGW 153) Jaeger
- 81. Methods in Posture Education and Functional Exercise.** Application of principles of body mechanics and energy conservation to everyday activities; values of the many kinds of exercise and practice in their correct use. Attention is called to a special 2-day Institute held in conjunction with this course. The Institute is free of charge to those registered in the course. In 1956, this course may be substituted for a requirement in P.E. 85, Remedial Activities. (2 cred.; practical work I MWF, lect. I TTh; NGW 153) Wilson
- 84. The Physical Education Program in the Elementary and Secondary School.** Deals with philosophy, objectives, trends, content, and evaluation in relation to the physical education curriculum at the elementary and secondary level. (3 cred.; prereq. ‡; VI MTWThF; NGW 201) Jaeger
- 118E.§§ Problems in Teacher Education in Health, Physical Education, and Recreation.** For M.Ed. students who are interested in participating in the conduct and development of professional teacher education programs in the field of school health education, physical education, and the recreational function of physical education. Individual projects and conferences. (3 cred.; prereq. consent of graduate advisers) Staff

†† Health Service approval must be secured for participation in this course.

§§ Courses marked "E" carry credit toward the degree of master of education.

- 124. Supervision of Physical Education.** Presents a consideration of the function, organization, and administration of supervision in physical education; adaptations of accepted procedures for observation, guidance, and training of teachers in the field; standards for qualifications of supervisors; problems peculiar to the supervision of physical education. (3 cred.; III MTWThF; NGW 3) Baker
- 130. Contributions of Basic Sciences to Physical Education.** Provides stimulation and assistance to the student in the understanding of recent research in basic sciences pertinent to physical education and in the interpretation, integration, and wider application of the scientific principles derived from these sciences. Intensive exploration of at least one topic and its relationship to physical education by each student. (3 cred.; II MTWThF; NGW 3) Wilson
- 224.* Research Problems in School Health Education, Physical Education, and Recreation.** Individual problems and conferences. (Cred. ar.; prereq. consent of graduate advisers)

Second Term

- 5.†† Methods of Coaching and Conducting Organized Games for Junior and Senior High Schools.** Special techniques for team games such as speed ball, soccer, volleyball, basketball, and softball. Organization of tournaments suited to various games, play days, methods of teaching. (2 cred.; I MTWThF; NGW 151) Hauptfuehrer
- 7.†† Tennis for Beginners.** (See first term) (1 cred.; II MTWTh; NGW 151) Hauptfuehrer
- 117. Advanced Course in School Health Instruction.** Instructional problems in school health education at all levels. Application of course to individual problems. (3 cred.; prereq. 83, or #; IV MTWThF; NGW 201) Slocum
- 118E.§§ Problems in Teacher Education in Health, Physical Education, and Recreation.** (See first term) Staff
- 224.* Research Problems in School Health Education, Physical Education, and Recreation.** (See first term)

†† Health Service approval must be secured for participation in this course.

§§ Courses marked "E" carry credit toward the degree of master of education.

GENERAL COLLEGE (G.C.)

Admission to the General College requires graduation from an accredited high school or satisfactory performance on University entrance tests, but no specific pattern of high school subjects. The College offers a program of broad general education rather than courses which are introductory to more advanced ones in a given field. A general education is planned to help a student make adjustment to living in modern society, to conditions of employment, and to home and civic responsibilities. The degree of associate in arts is conferred by the University upon students who successfully complete a 2-year program in the General College. Students who successfully demonstrate their ability to handle work of college caliber in the General College may make application to transfer to another college of the University without undue loss of time or credit.

The regular *Bulletin of the General College*, which may be received upon request from the Office of Admissions and Records of the University, indicates in detail the requirements for the associate in arts degree, general regulations, and additional general information. All students entering the General College for the first time are required to take an over-all comprehensive examination, the results of which will be useful to the student and his adviser in planning his program for subsequent quarters.

For more complete description of the courses during the summer terms, see the regular *Bulletin of the General College*.

First Term

- 8A. Applied Mathematics.** A study is made of measurement, calculation with measured data, use of the slide rule, formulas, and equations. The most commonly useful mathematical skills are built up in a steady progression against a background of practical application. The problems provide a broad acquaintance with the language and nature of many fields. (3 cred.; open to all; III MTWThF and 1 hr. lab. ar.; NH 207) M. Harris
- 10A. Human Biology: The Fundamental Similarities in the Living World.** A study of the variety and relationship of living organisms serves to illustrate the general principles in biology. Special emphasis is given to man's place in the world of living organisms. Man's embryonic development, heredity, racial characteristics, and evolution are considered. (3 cred.; open to all; II MTWThF and demonstration lab. hrs. ar.; NH 213) Dearden
- 23A. Art Laboratory.** Provides the student with a variety of art experiences. Problems may be selected according to individual needs and interests. Laboratory work is supplemented with readings, discussion, lectures, and field trips. (3 cred.; open to all; III-IV MTWThF; NH 102) Safer
- 30A. Invitation to Literature: Western World I.** Seeks to integrate life and literature and to relate the student's experiences to certain universal themes. Readings are to be found in the literature of the Western world, both ancient and modern, and are grouped according to the following thematic arrangement: Man and Woman, Man and God, Man and Nature, Man and Family. (3 cred.; open to all; III MTWThF; NH 216) Kivits
- 31A. Writing Laboratory: Personal Writing.** To see why and how he uses language, the student studies its history and development, levels of usage and style, and becomes familiar with the dictionary's resources. He will read and write descriptions, character sketches, incidents, autobiographies,

friendly letters, and business letters. (3 cred.; open to all; I-II MTWTh; NH 216) Draxten

- 37. Social Trends and Problems.** A study of the major trends and areas of conflict in our social order designed to increase the student's understanding of his society and to develop skills necessary to analyze social situations and evaluate proposed courses of action in the light of democratic values. (3 cred.; open to all; IV MTWThF; NH 213) Stovall
- 40B. The Logic of Straight Thinking.** Analysis of common errors and fallacies in thinking and the study of valid methods for drawing conclusions from evidence. (3 cred.; open to all; I MTWThF; NH 209) McCoy
- 43A. Background of the Modern World.** While offering students some idea of the historical development of the world in which they live, emphasis is upon the evolution of the political, economic, and social institutions of the major European nations during the last two centuries. (3 cred.; open to all; II MTWThF; NH 209) Stovall

Second Term

- 3. Home Life: Marriage and Family Living.** To emphasize the particular values of family life for the individual and for society, this course is concerned with a study of biological, psychological, and sociological foundations of the family; a study of adjustment and human relationships in the student's present and future home life, preparation for marriage, factors associated with success or failure in marriage, and problems of parenthood. (3 cred.; open to all; III MTWThF; NH 213) W. J. Anderson
- 10B. Human Biology: How the Living Machinery in Man Works.** Deals with the body functions of man. The activities of cells, organs, and systems are considered from the point of view of both normal and abnormal physiology. (3 cred.; open to all; prereq. 10A; II MTWThF; NH 213) Dearden
- 19A. Problems of Business Transactions.** Using only arithmetic skills, practical methods are developed for solving many basic money problems connected with taxation, commissions, pricing, loans, notes, and risk insurance. The student should acquire a basis for sound financial judgments as well as techniques of business calculations. (3 cred.; open to all; III MTWThF and 1 hr. ar.; NH 207) Rassweiler
- 31B. Writing Laboratory: Organizing Ideas.** Emphasis will be upon detecting central ideas, discovering supporting details, interpreting charts and graphs, and generally developing vocabulary and comprehension. Reading material is taken largely from textbooks and periodicals. Students study and write summaries, outlines, and expositions. (3 cred.; open to all; prereq. 31A; I-II MTWTh; NH 216) Stockdale
- 32A. Oral Communication: Basic Principles.** Work is planned to aid the student in developing confidence in speech situations. Through observation, study, personality analysis, and participation in various speech activities, the student is shown the close relationship between personality and speech behavior. (3 cred.; open to all; I MTWThF; NH 107) Olson
- 44B. Current History.** Subject matter and methods of instruction are constantly adapted to the changing headlines of the day, by a fusion of contemporary readings with background sources, so that the student's alertness to the news and ability to judge current events in proper perspective are intensified. (3 cred.; open to all; IV MTWThF; NH 213) F. J. Harris

LAW SCHOOL

First Term and Second Term

The following courses may be taken by a student who has completed at least 1 year of law school work in this School or in another accredited law school. Beginning students are admitted to the regular courses only in the fall quarter.

This summer the Law School initiates the Edward F. Waite Distinguished Visiting Professorship with Elliott Evans Cheatham of Columbia Law School and James William Moore of Yale Law School. All courses will require attendance through both terms except *Conflict of Laws* and *Federal Jurisdiction*, which will require attendance for five weeks on the dates indicated below. Arrangements may be made to attend only one or more of these courses.

Conflict of Laws. (3 cred.; II MTWThF and III M, June 12 to July 14; FraH 101) Cheatham

Creditor's Remedies (including Bankruptcy). (6 cred.; 11:00-12:15 MTWThF; FraH 101) Sovern

Estate, Gift, and Inheritance Taxation. (3 cred.; I ThF and III W; FraH 101) Paulsen

Family Law. (3 cred.; III TThF; FraH 101) Paulsen

Federal Jurisdiction. (3 cred.; II MTWThF and III M, July 16 to August 18; FraH 101) Moore

Insurance. (3 cred.; I MTW; FraH 101) Kinyon

Law School tuition during the summer quarter is: 3 credits, \$39; 6 credits, \$78; 9 credits \$100 (residents), \$112.50 (nonresidents); 12 or more credits, \$100 (residents), \$150 (nonresidents). In addition each student will pay the incidental fee of \$17.

MORTUARY SCIENCE

First Term

3. **Introduction to Restorative Art.** Aspects of general art as they apply to funeral service. (1 cred.; no prereq.; I MW; NH 100) Gates
11. **Introduction to Mortuary Management.** Funeral service as a business profession. Current statistics and studies. (2 cred.; prereq. Mort. 10; II MWF; NH 107) Slater
12. **Introduction to Embalming.** Techniques; history, licensure and legal requirements. (3 cred.; prereq. Mort. 10; III MTWThF; NH 107) Slater

COLLEGE OF MEDICAL SCIENCES

Medical School

Students in the freshman, sophomore, and junior years at the University of Minnesota Medical School are required to be in attendance during the first term of the Summer Session of 1956. Their courses are a continuation of those begun in the spring quarter and are not open to students from other institutions. For other courses offered in various departments of the Medical School attention is directed to the course listings by departments.

A student applying to register in preclinical subjects for the purpose of making up deficiencies incurred at other medical schools should present, at the time of application for such registration, a letter from the dean of his medical school approving the purpose of the registration. Medical students from other schools, whether their purpose is make-up work or to accelerate or broaden their medical education, are registered as adult special students and receive subject credit only. If such students desire legal time credit toward a medical degree, they should make arrangements with the institution from which they intend to receive the degree. No obligation to accept such students for registration in the regular medical course is attached to adult special registration. They should consult the deans or department heads in their own schools as to the equivalence of the courses in which they might be interested at the University of Minnesota. (See departmental listings.)

In the *clinical departments*, instruction of junior medical students is a continuation of spring quarter courses up to the end of the first term. During the second term both sophomore and junior medical students, at their election, may continue in their clinical work as externs. Similar externship training is offered to medical students from other institutions and to practicing physicians during both first and second terms of the Summer Session. (See departmental schedules.)

The externships for recently graduated physicians and for qualified medical students from other institutions who are recommended by their respective deans will offer an integrated program of bedside teaching and clinical responsibilities, ward rounds, conferences and seminars, occupying approximately three-fourths of the registrant's time, on the wards of the University Hospitals, the Minneapolis General Hospital, and the Veterans Administration Hospital. Registration may be for one or more terms of the Summer Session. Research opportunities may be afforded registrants who remain for both terms. At the discretion of individual clinical departments, selected registrants may remain during the month of September for additional clinical training. Since an externship will not occupy completely the registrant's time, about one-fourth of this time may, if he chooses, be devoted to electives in basic sciences or in another clinical department. Medical classes of the Summer Session 1956 will begin on June 12.

Opportunity for Practitioners

In addition to the externships which have been described above, attention is called to continuation courses offered from time to time throughout the year under the General Extension Division and the Center

for Continuation Study. These courses are primarily for practitioners and are largely practical in nature. Circulars may be obtained from the Center for Continuation Study.

Clinics and conferences in the University Hospitals, the Minneapolis General Hospital, the Veterans Administration Hospital, the Ancker Hospital, Glen Lake Sanatorium, and the Wilder Dispensary, St. Paul, will go on as usual during the Summer Session and will be open to visiting physicians.

Graduate and Special Continuation Courses

Opportunities are offered in the various departments of the Medical School for work during the Summer Session for advanced degrees, either in laboratory or clinical branches of medicine. Such work involves admission to, and registration in, the Graduate School. For detailed information see the statement under Graduate School in this bulletin or in the special bulletin on graduate work in medicine.

Fees

Medical Students Desiring Time Credit—The Medical School tuition fee for the full summer quarter is \$100 for residents of Minnesota, and \$210 for nonresidents. Less than a full program may be paid for at the summer rate or academic year rate, whichever is higher. In addition each student will pay the incidental fee of \$17. Students in certain courses are required to furnish microscopes.

The term fees are one half the quarter fees. Laboratory fees are not required under this plan. The schedule of total fees will be therefore:

	<i>Summer Quarter</i>	<i>Summer Term</i>
Tuition fee	\$100.00 (\$210.00)	\$50.00 (\$105.00)
Incidental fee	17.00	8.50

Medical Students or Physicians Registering for Externships—A tuition fee of \$50 *per term* is charged for the externships listed under the various clinical departments. This is the same for residents and non-residents of Minnesota. No additional tuition will be charged for such electives in the basic sciences or clinical work as the registrant may have time for, not to exceed one-fourth time. Each registrant for an externship will pay the incidental fee of \$8.50 per term. In elective courses where a microscope is required this may be rented from the University.

Nonmedical Summer Session Students—Students who do not desire to register for time credit toward a medical degree, and who are ineligible to register for an externship or for a program of clinical subjects, may pay the regular Summer Session fees per term.

ANATOMY (Anat.)

First Term

REQUIRED COURSES

Courses 104 and 111, which are required work for freshman medical students, are continued from the spring quarter through the first term of the Summer Session. Not open to students from other medical schools. Graduate students who have registered for either of these courses in the spring quarter may continue by registering in the first term of the Summer Session.

ELECTIVE COURSES

156. **Advanced Anatomy.** Individual problems in gross anatomy, histology, hematology, or neurology. (Cred. ar.; prereq. #; ar.) Campbell, Sundberg, Williams
204. **Research in Anatomy.** Gross anatomy, histology, hematology, or neurology. (Cred. ar.; prereq. #; ar.) Campbell, Sundberg, Williams

Second Term

ELECTIVE COURSES

156. **Advanced Anatomy.** (See first term) Sundberg
204. **Research in Anatomy.** (See first term) Sundberg

ANESTHESIOLOGY (Anes.)

First Term and Second Term

121. **Principles of Anesthesia.** (1 cred.; prereq. registration in Medical School; I WTh, June 11-July 14; Eustis Amph.) Van Bergen and staff
265. **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. (12 cred.; IX M; MMA 100) Van Bergen and staff
266. **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. (4 cred.; X M; MMA 100) Van Bergen and staff
267. **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. (2 cred.; X W; MMA 125) Van Bergen and staff
268. **Seminar in Anesthesia.** Regular conferences for review of literature of anesthesia and reports of specially interesting cases and problems as well as of research work being done by members of the Department of Anesthesiology. (2 cred.; IX W; MMA 125) Van Bergen and staff
269. **Research in Anesthesia.** In addition to the above special courses, specially qualified students may undertake investigation of anesthesia problems either in the laboratory of experimental surgery or in clinical anesthesia. (Cred. ar.) Van Bergen and staff

BACTERIOLOGY AND IMMUNOLOGY (Bact.)

First Term

- 53.§§ **General Bacteriology.** Lectures, demonstrations, and laboratory exercises are employed for instruction in the morphology, physiology, taxonomy, and ecology of bacteria. The practical applications of these fundamental principles in other phases of science and industry are emphasized. (5 cred.; soph. with a C average in the prerequisite courses, jr., sr.; prereq. 10 cred.

§§ Microscope required. Students may obtain use of microscope by purchasing \$3 microscope card from the bursar.

in chemistry and 4 cred. in biological sciences or ♯; lect. II MTWThF, MMA 100; lab. III-IV MTWThF, Mayo A205) Johansson

- 114. Medical Mycology.** The pathogenic fungi and the mycotic infections in man and animals; emphasis is placed on diagnostic procedures. (3 cred.; jr., sr., grad.; prereq. 102 or ♯; lect. II MTThF, Owre 113; lab. III-IV MTThF, Mayo A205) Roth
- 201. Research.** (Cred. and hrs. ar.) Syverton

Second Term

- 116. Immunology.** Mechanisms of the interactions between host and parasite. Techniques and theories of serologic procedures; laws of hemolysis, quantitative relationship between antigen and antibody; opsonins, serums, vaccines, toxin, antitoxin, complement fixation, neutralization; precipitative and agglutinative reactions, blood grouping, atopy, anaphylaxis. (4 cred.; jr., sr., grad.; prereq. 53; lect. II MTWThF, MMA 100; lab. III-IV MTWTh, Mayo A205) Watson
- 201. Research.** (Cred. and hrs. ar.) Watson

MEDICAL TECHNOLOGY (Med.T.)

Courses listed below are open only to students with consent of department. Consult advisers in the Medical Technology Office, C205 Mayo Building.

All classes are held in the clinical laboratories of the University Hospitals.

First Term and Second Term

- 70. Laboratory Methods in Clinical Chemistry.** Basic methods and techniques used in clinical chemistry. (6 cred.) Hammer
- 71. Advanced Techniques in Clinical Chemistry.** Laboratory methods and additional experience in special procedures used in clinical chemistry. (5 cred.) Freier
- 73. Electrocardiography.** Principles and practice in the use of electrocardiographs. (2 cred.) Page
- 74. Basal Metabolism Testing.** Principles and practice in the use of metabolors. (2 cred.) Halstad
- 75. Clinical Hematology.** Laboratory methods in hematology. Morphology of blood cells. (6 cred.) Gonyea
- 76. Applied Clinical Microscopy.** Application and use of laboratory methods in hematology and urinalysis in the out-patient laboratory. Practice in venipunctures. (2 cred.) Weisel
- 78. Urinalysis and Parasitology.** Routine and special examinations of body fluids and feces by chemical and microscopic methods. (4 cred.) Hanauer
- 80. Clinical Bacteriology.** Identification of bacteria by microbiologic techniques. Correlation with clinical cases. (5 cred.) Ness
- 82. Blood Bank Techniques and Serology.** Application of technical methods in procurement of blood and blood grouping and crossmatching for transfusions. Practice in serologic techniques. (5 cred.) Hansen
- 85. Histologic Techniques.** Preparation of tissue specimens for microscopic study. (4 cred.) Duerr

- 90. Applied Laboratory Methods.** General experience in all phases of clinical laboratory procedures with emphasis on independent work including night duty and special projects. (3 cred.) Ederer

MEDICINE (Med.)

DIVISION OF INTERNAL MEDICINE

First Term

REQUIRED COURSES

Courses 102, 104, and 111, which are required work for sophomore and junior medical students, are continued from the spring quarter through the first term of the Summer Session. Not open to students from other medical schools.

First Term and Second Term

ELECTIVE COURSES

- 132. Diagnosis and Treatment of Diseases of the Lungs.** Lectures and clinics in the dispensary and on the hospital wards. Lectures with or without hospital work. (Cred. and hrs. ar.; jr., sr.; not less than 10 students) Myers
- 136. The Respiratory Organs in Health and Disease.** (Cred. and hrs. ar.; jr., sr.; limited to 6 students) Myers
- 140. Externship in Medicine.** Not less than 10 students; limited to 54 students. Of the total number, 15 can be taken to serve as junior clerks on each of the medical services at University Hospitals and the Minneapolis General Hospital, and 24 to serve as senior clerks in the medical clinic at University Hospitals. Applicants must have passed satisfactorily the first 2 years of medicine in a Class A medical school. In selecting the senior clerks to serve in the medical clinic at the University Hospitals, preference will be given to students who have also satisfactorily completed the third (junior) year of medicine. Senior out-patient clerkship available in both terms; in-patient service *only* in the *second* term. Watson and staff

COURSES FOR GRADUATE STUDENTS

- 201. Clinical Medicine.** (Cred. ar.) Watson, Spink, Lowry, Flink, Stead, Hoffbauer, Nesbitt, Kennedy, Hagen, Hall
- 203. Research in Medicine.** Watson, Spink, Frantz, Flink, Hoffbauer, Nesbitt, Schwartz, Tobian, Hall, Hagen, Kennedy, Zieve, Stead
- 205. Tuberculosis.** Myers
- 206. Clinical Conference.** Presentation of problem cases. Discussion of diagnosis and treatment and consideration of pertinent literature. (1 cred.; 9 a.m. F) Watson, Spink, Hoffbauer, Lowry, Flink, and staff
- 207. Clinical Pathological Conference.** Presentation of clinical features, necropsy findings, and discussion. Medical and surgical cases. (1 cred.; 11 a.m. W) Dawson and staff
- 208. Clinical Radiological Conference.** Presentation and discussion of X-ray films, from the medical service, with clinical correlation. (1 cred.; 9 a.m. M) Rigler, Watson, and staff
- 213. Cardiovascular Seminar.** Weekly conference on clinical cardiovascular problems, held jointly by the Departments of Medicine and Pediatrics. (1 cred.; hrs. ar.) Frantz, Tobian, Winchell, and others

DIVISION OF DERMATOLOGY

First Term and Second Term

ELECTIVE COURSES

159. **Assistantship, Dermatology and Syphilis.** (Limited to 1 student; prereq. jr. med. clerkship, #; Minneapolis General Hospital) Laymon and staff
160. **Assistantship and Conference in Dermatology.** (Limited to 1 student; prereq. jr. med. clerkship, #; University Hospitals) Michelson and staff
162. **Assistantship in Dermatology.** (Limited to 2 students; prereq. 124, #; Minneapolis General Hospital) Laymon and staff
164. **Seminar in Pathology.** Histopathology of the skin. Clinical and pathological phases will be exemplified. (Prereq. Path. 102, #) Michelson
165. **Seminar in Dermatology.** (Prereq. #) Michelson and staff
166. **Allergy and Dermatology.** (Limited to 1 student; prereq. #) Michelson

COURSES FOR GRADUATE STUDENTS

225. **Clinical Dermatology and Syphilology.** (University Hospitals) Michelson and staff
226. **Clinical Dermatology and Syphilology.** (Minneapolis General Hospital) Laymon and staff
227. **Histopathology of the Skin.** Michelson and staff
228. **Research in Dermatology and Syphilology.** Michelson and staff

Second Term

ELECTIVE COURSES

167. **Externship in Dermatology.** (Limited to 10 students) Michelson and staff

DIVISION OF CLINICAL LABORATORY MEDICINE

First Term and Second Term

102. **Clinical Laboratory Medicine.** Continuation of regular course for junior medical students, from spring quarter (see *Bulletin of the Medical School*)

COURSES FOR GRADUATE STUDENTS

235. **Advanced Clinical Laboratory Medicine.** Evans and staff
236. **Research on Clinical Laboratory Problems.** Evans and staff

OBSTETRICS AND GYNECOLOGY (Obst.)

First Term

REQUIRED COURSES

Course 124, which is required work for junior medical students, is continued from the spring quarter through the first term of the Summer Session. Not open to students from other medical schools.

ELECTIVE COURSES

- 160a. Externship in Obstetrics and Gynecology.** Elective for junior and senior medical students and recent graduates. Course will consist of clinical work in obstetrics and gynecology. Under exceptional circumstances investigative work can be done. Registration may be for one or both terms. (6 cred.; limited to 10 students) McKelvey and staff

Second Term

- 160b. Externship in Obstetrics and Gynecology.** (See 160a, first term) McKelvey and staff

First Term and Second Term

COURSES FOR GRADUATE STUDENTS

- 201. Advanced Obstetrics and Gynecology, Part I.** Required of first-year fellows. McKelvey, Mitchell, and staff
- 205. Advanced Obstetrics and Gynecology, Part II.** Required of second-year fellows. McKelvey, Mitchell, and staff
- 209. Advanced Obstetrics and Gynecology, Part III.** Required of third-year fellows. McKelvey, Mitchell, and staff
- 216. Research.** Staff
- 303. Obstetric and Gynecologic Histology.** (6 cred.; hr. ar.) McKelvey and staff

OTOLARYNGOLOGY (Otol.)

COURSES FOR GRADUATE STUDENTS

First Term and Second Term

- 230. Clinical Otology.** (3 cred.; 9:00-12:00 MTWThF; Out-Patient Clinic and Operating Room) Boies and staff
- 231. Clinical Rhinology and Laryngology.** (3 cred.; 9:00-12:00 MTWThF; Out-Patient Clinic and Operating Room) Boies and staff
- 232. Surgery of the Ear, Nose, and Throat.** (3 cred.; 9:00-12:00 MTWThF; Out-Patient Clinic and Operating Room) Boies and staff

PATHOLOGY (Path.)

First Term

- 104. Autopsies.** (Cred. and hrs. ar.; prereq. 102) Dawson, McCartney
- 106. Diseases of the Heart.** (2½ cred; prereq. 102; 2:00-4:00 TTh) McCartney
- 111. Conference on Autopsies.** (1 cred.; prereq. 102; 12:30-1:30 T; JacH 104) Dawson
- 112.†† Diagnosis of Tumors.** (2½ cred.; prereq. 102; hrs. ar.) McCartney
- 113.†† Surgical Pathology.** (Cred. ar.; prereq. 102; hrs. ar.) McCartney

†† Second term 112 and 113 are not repetitions of the first term but rather continuations.

201. **Research.** Students with the necessary preliminary training may elect research either as a major or minor in pathology. (Cred. and hrs. ar.; prereq. #) Dawson, McCartney

Second Term

104. **Autopsies.** (Cred. and hrs. ar.; prereq. 102) Dawson, Hebbel
111. **Conference on Autopsies.** (1 cred.; prereq. 102; 12:30-1:30 T; JacH 104) Dawson
- 112.†† **Diagnosis of Tumors.** (2½ cred.; prereq. 102; hrs. ar.) Hebbel
- 113.†† **Surgical Pathology.** (Cred. ar.; prereq. 102; hrs. ar.) Hebbel
120. **Diseases of the Lungs.** (1 cred.; prereq. 102; hrs. ar.) Dawson
121. **Diseases of the Alimentary Tract.** (1 cred.; prereq. 102; hrs. ar.) Hebbel
201. **Research.** Students with the necessary preliminary training may elect research either as a major or minor in pathology. (Cred. and hrs. ar.; prereq. #) Dawson, Hebbel

PEDIATRICS (Ped.)

First Term

REQUIRED COURSES

Courses 122 (2 cred.) and 124 (6 cred.), which are required work for junior medical students, are continued from the spring quarter through the Summer Session. Not open to students from other medical schools.

First Term and Second Term

ELECTIVE COURSES

- 152.## **Fundamental Principles of Nutrition and Metabolism as Applied to Children.** Seminar course. (1 cred.; hrs. ar.; Mayo 1460) J. Anderson, Ziegler, Raile
- 154.## **Endocrinology as Applied to Pediatrics.** Seminar course. (1 cred.; hrs. ar.; Mayo 1460) J. Anderson, Raile
- 162.## **Common Behavior Disturbances in Childhood.** Their recognition and management. (1 cred.; hrs. ar.; Hosp W600) Jensen and staff
170. **Rheumatic Infection and Heart Diseases in Childhood.** (1 cred.; hrs. ar.; VCHH 3rd floor) Dwan, Good, R. Anderson, P. Adams
- 174A. **Dispensary Externship in Pediatrics.** Patients in pediatric dispensary are assigned to individual students for examination, treatment, and "follow-up" observation under supervision. Special clinics in well-baby care, allergy, heart, metabolism, endocrinology, convulsive disorders, cerebral palsy, and child psychiatry are attended weekly. (4 cred. per term; limited to 10 students; 9:00-12:00 and 1:00-3:00 MTWThF; University Hospitals and Minneapolis General Hospital) J. Anderson, Jensen, Good, Platou, Stoesser, Raile, and other senior staff
- 174B. **In-Patient Externship in Pediatrics.** Patients in the pediatric wards at the University Hospitals and Minneapolis General Hospital are assigned

†† Second term 112 and 113 are not repetitions of the first term but rather continuations.

Not offered to fewer than 10 students.

to individual students for clinical history, physical and laboratory diagnosis, treatment and "follow-up" observation under supervision of the pediatric and consulting staff members. (4½ cred. per term; 9:00-12:00 and 1:00-5:00 MTWThF, 8:00-12:00 S) J. Anderson, Jensen, Good, Raile, and junior staff

COURSES FOR GRADUATE STUDENTS

200. **Graduate Seminar in Pediatrics.** (1½ cred.; 3:30-5:30 T; Ped. Conf. Rm.) J. Anderson, Ziegler, and senior staff
202. **Pediatric Clinic.** (5 cred.; 9:00-12:00 MTWThF; Out-Patient Departments of Minneapolis General Hospital and University Hospitals) J. Anderson, Jensen, and junior staff
204. **Three-Month Residence in Pediatrics at the University Hospitals or Minneapolis General Hospital.** (7 cred.; 9:00-12:00 and 1:00-5:00 MTWThF) J. Anderson, Jensen, Good, at University Hospitals; Dwan, Platou, Seham, Stoesser, Richdorf, at Minneapolis General Hospital
208. **Pediatric Research.** Special problems. Students may collaborate with members of the staff or with other students. (Cred. ar.; hrs. ar.; Ped. Labs.) J. Anderson, Good, Jensen, Raile, Ziegler
210. **Special Clinics in Pediatrics.** (1 cred.; Out-Patient Departments of Minneapolis General Hospital or University Hospitals) Jensen, Dwan, Stoesser

PHARMACOLOGY (Phcl.)

First Term

REQUIRED COURSE

Course 102, which is required work for sophomore medical students, is continued from the spring quarter through the first term of the Summer Session. Not open to students from other medical schools.

ELECTIVE COURSES

109. **Pharmacological Problems.** (Cred. and hrs. ar.) Bieter, Wright, Cranston
110. **Toxicology.** Systemic qualitative toxicological analysis. Lecture and laboratory. Lecture only may be taken if desired. (2 or 5 cred.; hrs. ar.) Wright

First Term and Second Term

9. **Pharmacology for Nursing Students.** (2 cred.; lect. 22 hrs., VI TTh; Owre 111) Cranston
203. **Research in Pharmacology.** (Cred. and hrs. ar.) Wright, Bieter

PHYSICAL MEDICINE AND REHABILITATION (P.Med.)

First Term and Second Term

ELECTIVE COURSES FOR MEDICAL STUDENTS

103. **Physical Medicine and Rehabilitation Clinic.** Externship in diagnosis and treatment in physical medicine and rehabilitation. Applicants must have passed satisfactorily the first 2 years of medicine in a class A medical school. (Cred. and hrs. ar.) Kottke, Kubicek

COURSES FOR GRADUATE MEDICAL STUDENTS

- 200. Physical Medicine and Rehabilitation Service.** (Cred. and hrs. ar.) Kottke, Kubicek, Gullickson
- 203. Poliomyelitis Clinic.** Evaluation of problems and treatment of acute and residual anterior poliomyelitis. (1 cred.; II-IV Th) Kottke, Knapp, Gullickson
- 210. Research in Physical Medicine.** (Cred. and hrs. ar.) Kottke, Kubicek

OCCUPATIONAL THERAPY

Consult Occupational Therapy Office, 860 Mayo Memorial, University of Minnesota, Minneapolis 14.

PHYSIOLOGICAL CHEMISTRY (Ph.Ch.)

First Term

REQUIRED COURSE

- 100. Physiological Chemistry.** (7 cred.; jr., sr.; prereq. organic and physical chemistry and physics; lect. IV, VI MTWThF, MH 214; lab. I-III MTThF, MH 310) Armstrong, Glick, Carr

ELECTIVE COURSES

- 153. Problems in Physiological Chemistry.** Special work arranged with qualified students. May be taken one or both terms. (Cred. and hrs. ar.; prereq. 100, 101) Armstrong, Glick, Carr
- 205. Research in Physiological Chemistry.** (Cred. and hrs. ar.) Armstrong, Glick, Carr

Second Term

REQUIRED COURSE

- 101. Physiological Chemistry.** (6 cred.; jr., sr.; prereq. 100; lect. IV, VI MTWTh, MH 214; lab. I-III MTWTh, MH 310) Barnum, Van Pilsum, Bollum

ELECTIVE COURSES

- 153. Problems in Physiological Chemistry.** (See first term) Barnum, Van Pilsum
- 205. Research in Physiological Chemistry.** (See first term) Barnum, Van Pilsum

PHYSIOLOGY (Phsl.)

First Term

REQUIRED COURSES

Course 107, which is required work for freshman medical students, is continued from the spring quarter through the first term of the Summer Session. Not open to students from other medical schools. Formerly part of course 103-104.

- 4. Human Physiology.** An elementary course consisting of lectures and demonstrations for students desiring an introduction to the subject. (4 cred.; open to all; prereq. 1 qtr. zoology and 1 qtr. chemistry; lect. or dem. II-III TWThF; Owre 12) McClintock, Love

ELECTIVE COURSES

113. **Problems in Physiology.** Each student will be assigned a topic for special laboratory study. Conferences and reading. (Cred. and hrs. ar.) Ar.
203. **Research in Physiology.** (Cred. and hrs. ar.) Visscher and others

Second Term

REQUIRED COURSES

51. **Human Physiology.** (6 cred.; primarily for 5-year nursing and physical therapy students; prereq. 1 year college chemistry and zoology; lect. VI MWF, VII TThF, VIII TTh, Owre 111; conf. IV TTh, Owre 111; lab. VII-IX MW, 301 MH) Ar.

ELECTIVE COURSES

113. **Problems in Physiology.** (See first term) Ar.
203. **Research in Physiology.** (Cred. and hrs. ar.) Ar.

PSYCHIATRY AND NEUROLOGY (N.Psy.)

First Term

REQUIRED COURSES

Courses 103 and 120, which are required work for freshman and junior medical students, are continued from the spring quarter through the first term of the Summer Session. Not open to students from other medical schools.

First Term and Second Term

ELECTIVE COURSES FOR MEDICAL STUDENTS

145. **Reading in Psychiatry.** Supervised reading. (Cred. and hrs. ar.) Staff
- 145x. **Reading in Neurology.** Supervised reading. (Cred. and hrs. ar.) Staff
152. **Externship in Psychiatry.** Enables medical students and physicians in practice to obtain clinical psychiatric training during the Summer Session. The training consists largely of work with patients under supervision and seminar-type discussion of cases. (6 cred.; limited to 10 students; hrs. ar.) Staff
153. **Externship in Neurology.** Enables medical students and physicians in practice to obtain clinical neurological training during the Summer Session. The training consists largely of work with patients under supervision and seminar-type discussion of cases. (6 cred.; limited to 10 students; hrs. ar.) Staff
155. **Therapeutics in Neurology.** Medical students and physicians are given supervised training in the out-patient care of the chronic neurologic patient. (2 cred.; hrs. ar.) Staff

COURSES FOR GRADUATE MEDICAL STUDENTS

208. **Clinical Neurology.** Supervised practice, in-patient and out-patient services. (Cred. and hrs. ar.) Baker and staff
- 208x. **Clinical Psychiatry.** Supervised practice, in-patient and out-patient services. (Cred. and hrs. ar.) Hastings and staff
- 208y. **Clinical Child Psychiatry.** Supervised practice, in-patient and out-patient services. (Cred. and hrs. ar.) Jensen and staff

209. **Research in Neurology and Psychiatry.** (Cred. and hrs. ar.) Staff
212. **Survey of Neuropathology.** (Cred. ar.; prereq. 210; hrs. ar.) Staff
221. **Psychometric Clerkship.** (Cred. ar.; clinical psychology majors only; hrs. ar.) Hathaway, Schofield
226. **Neurological-Neurosurgical Conference.** (Same as Surgery 318) Review of X-rays, case histories, and neuropathological material on neurological and neurosurgical cases. (1 cred.; hrs. ar.) Baker
228. **Research in Neuropathology.** (Cred. and hrs. ar.) Staff
231. **Applied Electroencephalography and Myography.** (Cred. and hrs. ar.) Baker and staff
233. **Applied Neuropathology.** (Cred. and hrs. ar.) Staff
243. **Prolonged Psychotherapy.** (1 cred.; hrs. ar.) Staff
245. **Case Conference for Clinical Psychologists.** (Cred. and hrs. ar.; clinical psychology majors only) Staff

PUBLIC HEALTH

See School of Public Health

RADIOLOGY (Rad.)

First Term

REQUIRED COURSE (UNDERGRADUATES)

Course 121, which is required work for junior medical students, is continued from the spring quarter through the first term of the Summer Session. Not open to students from other medical schools.

ELECTIVE COURSES (UNDERGRADUATES)

185. **Interpretation of Roentgenograms.** (1 cred.; jr.; limited to 6 students; VII-VIII TTh; Mayo B236) Nice
187. **Roentgen Anatomy of Bones, Joints, and Viscera.** Continued from spring quarter through first term of Summer Session. (VII Th) Fink

Second Term

ELECTIVE COURSE (UNDERGRADUATES)

109. **Externship in Roentgen Diagnosis and Radiation Therapy.** Participation in the work of the X-ray Department both in technique and in interpretation. The student will be given opportunity to observe and do some fluoroscopy, to assist in X-ray technique, and to observe X-ray interpretation. (4 cred.; sr. medical students; limited to 8 students) Nice and X-ray therapy staff

First Term and Second Term

REQUIRED COURSES FOR GRADUATE STUDENTS

111. **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. (1 cred.; II M; Todd) Nice and staff

- 124. 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 point of view. (1 cred.; II T; Eustis) Nice and staff
- 135c. 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. (1 cred.; II S; Todd) Nice and staff
- 163a. Neurosurgical Roentgenologic Conference.** Weekly meetings with the neurosurgical staff at which all the important neurosurgical cases which have had X-ray diagnostic procedures are reviewed from both the clinical and roentgenological points of view. (1 cred.; VI F; Todd) Peterson
- 200. Research in Roentgenology.** Problems in roentgen diagnosis. (Cred. and hrs. ar.) Nice and staff
- 204. Research Related to Radiation Therapy.** (Cred. and hrs. ar.) Stenstrom and staff
- 206. Roentgenoscopy.** The theory and practical application of roentgenoscopy, particularly to diseases of the gastrointestinal tract, lungs, and heart. (3 cred.; hrs. ar.) Nice and staff
- 207. 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 thoroughly discussed. (Cred. and hrs. ar.) Stenstrom and staff
- 209. Roentgen Diagnosis.** The theory and practical application of roentgen diagnostic methods to medical cases in general. (3 cred.; hrs. ar.) Nice and staff
- 210. 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. (2 cred.; hrs. ar.) Nice and staff
- 238. Roentgen-Surgical Pathology Conference.** Weekly meetings with the surgical pathology staff at which surgical specimens and roentgenograms are reviewed from the pathologic and roentgenologic point of view. (1 cred.; VI M; Todd) Nice, Lober
- 240. Conference in Radiation Therapy.** Discussion of methods and dosage used for treatment of patients referred for X-ray and radium therapy and review of the results from previous treatments on patients with similar conditions. (1 cred.; IX W; University Hospitals Cobalt Room) Stenstrom and staff

SURGERY (Surg.)

First Term

REQUIRED COURSES (UNDERGRADUATE STUDENTS)

Courses 121, 127, 129, and 135, which are required work for sophomore or junior medical students, are continued from the spring quarter through the first term of the Summer Session. Not open to students from other medical schools.

- 139. Operative Surgery.** Student is permitted to participate in surgical procedures on hospital patients in the operating room. (Cred. and hrs. ar.) Wangenstein and staff
- 152. Problems in Clinical Investigations.** Special case records correlated with literature study. (Cred. and hrs. ar.) Wangenstein and staff

- 167. Problems in Experimental Surgery.** Students under supervision will investigate problems assigned to them. As their experience increases, they are permitted to do the operations incident to their problems. (Cred. and hrs. ar.) Wangensteen and staff

Second Term

- 135abcdek. Junior Clinical Clerkship.** (Externs) Wangensteen and staff
- 139. Operative Surgery.** (Externship) Wangensteen and staff
- 152. Problems in Clinical Investigation.** (Externs) Wangensteen and staff
- 167. Problems in Experimental Surgery.** (Externs) Wangensteen and staff
- 200. Out-Patient Clinic in Surgery.** Wangensteen and staff
- 204. Tumor Clinic.** (Externs) Wangensteen and staff
- 214. Surgical Ward Conference.** (Externs) Wangensteen and staff
- 215. Roentgenological Conference.** (Externs) Wangensteen and staff
- 218. Medical and Surgical Pathology Conference.** (Externs) Wangensteen and staff

DIVISION OF GENERAL SURGERY

First Term and Second Term

REQUIRED COURSES FOR GRADUATE STUDENTS

- 200. Out-Patient Clinic in Surgery.** Student is required to assist in the Out-Patient surgical clinic and to participate in diagnosis and treatment. University Hospitals surgical staff
- 202. Applied Surgical Anatomy on the Cadaver.** Surgical fellows prepare dissections with staff supervision. Wangensteen and staff
- 203. Proctoscopy and Sigmoidoscopy.** Diagnosis and treatment of lesions of the lower bowel. University Hospitals surgical staff
- 204. Tumor Clinic.** A combined clinical and pathological consideration of tumors as seen by the general surgeon. Staffs of Departments of Surgery and Biophysics. Wangensteen and staff
- 205. Surgical Diagnosis.** Surgical fellow assists in the instruction of the clinical clerks and interns, and studies problems in diagnosis in Out-Patient Department and in University Hospitals. Wangensteen and staff
- 208. Surgical Service.** Surgical fellow acts as house surgeon at University Hospitals. Wangensteen and staff
- 211. Operative Surgery.** Surgical fellow acts as first assistant at operations in University Hospitals, and later may be permitted to operate. Wangensteen and staff
- 214. Surgical Ward Conference.** Presentation of interesting cases by the students. University Hospitals surgical staff
- 215. Roentgenological-Surgical Conference.** Weekly review of the films of all surgical patients. Staffs of the Departments of Radiology and Surgery
- 216. Surgical Research.** Problems in experimental or clinical surgery. University Hospitals surgical staff
- 217. Surgical Seminar.** Conferences for review of surgical literature, for presentation of cases, and as research. University Hospitals surgical staff

218. **Medical and Surgical Pathological Conference.** Review of interesting cases by the medical, surgical, and pathological staffs

DIVISION OF NEUROSURGERY

REQUIRED COURSES (UNDERGRADUATE STUDENTS)

127. **Surgical Diseases of the Nervous System.** Lectures on the surgical diseases of the brain, spinal cord, meninges, peripheral nerves, and sympathetic nervous system. These lectures are continued from the spring quarter through the first term of the Summer Session as required work for junior medical students. (1 cred.; 11 hrs.) Peyton and associates
162. **Out-Patient Clinic in Neurosurgery.** Examination and observation of patients with surgical diseases of the nervous system before and after operation.
163. **Clinical Clerkship in Neurosurgery.** Case studies and ward rounds, surgical assistant in operating room, also neurosurgical conference (see course 318).

REQUIRED COURSES FOR GRADUATE STUDENTS

305. **Neurosurgical Surgery.** Neurosurgical fellow assists in the instruction of clinical clerks and interns, and studies problems in diagnosis in Out-Patient Department and in University Hospitals. Peyton, French
308. **Neurosurgical Service.** Neurosurgical fellow acts as house surgeon at University Hospitals. Peyton, French
311. **Operative Neurosurgical Surgery.** Neurosurgical fellow acts as first assistant at operations in University Hospitals, and later may be permitted to operate. Peyton, French
316. **Neurosurgical Research.** Problems in experimental or clinical surgery. University Hospitals surgical staff. Peyton, French
318. **Neurosurgical Conference.** Review of X-rays and case histories on Neurosurgical Service. Peyton

DIVISION OF UROLOGY

REQUIRED COURSES

250. **Urological Surgery.** Creevy, Smith, Reiser
251. **Cystoscopy and Urological Diagnosis.** Creevy, Smith, Reiser
252. **Urological Conference.** Creevy, Smith, Reiser
253. **Research in Urology.** Creevy, Smith, Reiser

School of Nursing††

Courses and Fees

The program of courses in the 1956 Summer Session has been planned primarily to meet the needs of graduate nurses. The student may complete courses totaling up to 9 credits or two 5-credit courses in each term. Students who have been admitted as candidates for the bachelor of sci-

†† For courses in Public Health Nursing, see index.

ence degree in nursing education or nursing service administration register in the College of Education and the School of Nursing respectively, and pay Summer Session fees. Graduate nurses planning to register only for Summer Session courses register in the School of Nursing and pay Summer Session fees. The Summer Session may be used to supplement deficient basic nursing experience.

Curriculum of Graduate Nurses Leading to the Degree of Master of Education in Nursing Education

Elective courses in this program are available during the Summer Session. Students registering for this program for the first time should complete their application prior to the beginning of the session. Qualified college graduates who have completed a basic professional program in nursing may begin this program in the Summer Session. Students planning to register for the academic year 1956-57 should consult the major adviser early, preferably during the first term. Students register in the College of Education and pay Summer Session fees.

Curriculum for Graduate Nurses Leading to the Degree of Bachelor of Science

Nursing education and nursing service administration majors may register for courses during Summer Session.

College graduates who have completed a basic professional program in nursing may begin the nursing education or the nursing service administration major in Summer Session.

Prerequisites for clinical nursing minors—medical, obstetric, operating room, nursing of children, psychiatric, rural, surgical, tuberculosis—may be taken in the Summer Session.

Students in nursing education register in the College of Education and pay Summer Session fees. Students in nursing service administration register in the School of Nursing and pay Summer Session fees.

Basic Curriculum in Professional Nursing Leading to a Degree of Bachelor of Science

High school graduates and transfer students from colleges or universities may register for prenursing courses in the Summer Session. (See *Bulletin of the School of Nursing*, 1955-57, pages 18-20.) Students register in the College of Science, Literature, and the Arts and pay Summer Session fees.

Students in the professional portion of the curriculum register in the School of Nursing and pay regular School of Nursing fees: residents \$46, nonresidents \$70. Students admitted spring quarter, 1956, pay in addition an incidental fee of \$17.

Curriculum in Practical Nursing Leading to a Certificate

The fourth quarter of the 4-quarter program leading to a certificate in practical nursing is offered during the Summer Session. New applicants are admitted at the beginning of the fall quarter only. For additional information see *Bulletin of the School of Nursing*, 1955-57, pages 31-32. Students register in the School of Nursing and pay regular practical

nursing fees: residents \$46, nonresidents \$70, plus \$17 incidental fee for the summer quarter.

For program in Practical Nursing and Home Management see *Bulletin of the School of Agriculture*, 1954-56, pages 19-21.

See section on Special Features for information on course Planning for Emergency Nursing.

First Term

Nu.Ad.160. Ward Administration. Hospital organization; principles of administration and application to ward management; analysis and maintenance of nursing service; selection, orientation, assignments, and motivation of personnel; planning and conducting clinical teaching programs. (5 cred.; sr., grad. nurse; III-IV MTWThF; Owre 113) Grainger

Nu.Ad.174. Planning for Emergency Nursing. Nursing responsibilities in in-service education for development of essential skills; organization of nursing service to facilitate meeting emergencies; in establishing effective community relationships. (3 cred.; sr., grad., grad. nurse; no prereq.; VII-VIII TTh; VII F; MH 116) Magnussen

Nu.Ad.175. Elements of Administration in Nursing. Organization and role of nursing service in hospitals; planning and directing patient care; procurement and assignment of nursing personnel; in-service education. (5 cred.; open only to majors in nursing administration; prereq. Nu.Ad. 170; I-II MTWThF; MH 116) Harris

Nu.Ad.176. Elements of Administration in Nursing. Communication within hospital organization; hospital economics; legal aspects of nursing practice; human relations. (5 cred.; prereq. Nu.Ad. 177; I-II MTWThF; ForH 345) Miller

Nu.Ad.193. Principles of Administration Applied to Nursing Service Administration. Principles of budget making; cost accounting; utilization of manpower and materials; community health programs; legal problems. (3 cred.; open only to fourth qtr. students in the master of nursing administration program; prereq. Nu.Ad. 192; III-IV MW and IV F; MH 116) Harris

Nu.Ed.162. Personnel Work in Nursing. Principles and techniques of personnel work applied to problems in nursing. Individual differences, human behavior, psychological tests, personnel records, orientation periods, remedial programs, counseling interviews. (3 cred.; sr., grad., grad. nurse; I MTWThF; ForH 160) Johnston

Note—See also Ed.T. 51A, The Teaching of Nursing, College of Education, Methods and Student Teaching.

Second Term

Nu.Ad.170. Foundations of Nursing Service Administration. Principles of administration with application to nursing; current practice in nursing administration. (3 cred., cannot be taken for credit by students in master of nursing administration program; jr., sr., grad., grad. nurse; I MTWThF; MH 116) Miller

Nu.Ad.193. Principles of Administration Applied to Nursing Service Administration. (Continuation of Nu.Ad. 193, first term) (3 cred.; III-IV MW and IV F; MH 116) Harris

Nu.Ed.190. The Survey in Nursing Education. Survey techniques in making an educational field study. (3 cred.; sr., grad.; prereq. #; IV MTWThF and ar.; ForH 170) Harrington

Note—See also Ed.T. 51A, The Teaching of Nursing, College of Education, Methods and Student Teaching.

School of Public Health (Pub.H.)

First Term

- 50.§§ Personal and Community Health.** Fundamental principles of health conservation and disease prevention. (3 cred., §old 3, 3a, 4, 51, 52, 100, or G.C. 10C; III MTWThF; MH 129) Bates
- 62. Public Health Nursing I.** Significance of nurse-family relationships; implication of interviewing techniques; analysis of family health needs with emphasis on public health problems from birth until school age; consideration of home, clinic, and community as areas of operation. (5 cred.; public health nurses, others ‡; prereq. 133 or ¶133; II-III MTWThF; Owre 111) Sanburn
- 65. Field Work in Public Health Nursing.** Practical experience under direction of staff of a public health agency. (15 cred.; prereq. 62, 63, 100, 133, C average) Murphy
- 69. Nursing in Health Programs for School-Age Children.** Health needs; organization and administration of school health programs; nursing functions. (3 cred.; prereq. public health nurse, 62 or ¶62, 63, 100, 133 or ¶133; VI MTWThF; MMA 125) Murphy
- 95. Human Nutrition.** Particular reference to public health. Nutritional values of foods, food utilization and requirements, food management, nutrition education. (3 cred.; prereq. courses in chemistry and biology or ‡; III MTWThF; MMA 100) Stief
- 100. Elements of Preventive Medicine and Public Health.** Occurrence and prevention of communicable, degenerative, and industrial diseases; protection of food, water, and milk; maternal and child health. (6 cred.; medical students only; ar.) Thomson
- 133. Mental Hygiene.** Emotional factors underlying wholesome family relations; problems interfering with successful adjustment in family and community. (3 cred.; I MTWThF; ForH 170) Cline
- 148. Workshop on Rehabilitation and Public Health Nursing.** (June 25-July 6) Rehabilitation as a part of total nursing care and its application to general public health nursing practice. (3 cred.; limited to 25 students; Mayo 1250) Guest instructor, Murphy, Cline

BIOSTATISTICS

- 110. Biometric Principles.** Univariate distributions, normal correlation, simple tests of significance. (3 cred.; sr., grad.; prereq. ¶111; I, IV MWF; Mayo 1220) Johnson
- 111. Biostatistics Laboratory.** Practical training in techniques discussed in 110. (2 cred.; prereq. ¶110; lab. 12 hrs. ar.; Mayo 1220) Ar.

Second Term

- 59.§§ Health of the School Child.** Disease control; health appraisal; emotional problems; school environment; accident prevention and emergency care. (3 cred.; prereq. old 3, 3a and 4, or old 3, 3a and 51, or G.C. 10C and 4, or G.C. 10C and 51, or 50, or 52, or 100; exemption from 3 on basis of military service not acceptable as substitute for personal health course; III MTWThF; MH 214) Eichenlaub

§§ No credit is granted for this course in the major sequence in public health nursing.

- 60. Tuberculosis and Its Control.** Current concepts of tuberculosis and its problems; development and operation of control programs. (2 cred.; nurses, others #; prereq. 4, 50, or 51, or 52 or 62 and 100; IV MTWF; MMA 100) Myers
- 63. Public Health Nursing II.** (Continuation of 62) Analysis of family health needs and public health problems of significance from the school period through old age; consideration of home, clinic, school, industry, and community as areas of operation; organization and administration of public health nursing services in a changing society. (4 cred.; prereq. public health nurse or #, 62, 133 and 100; VI MTWThF, VII MTW; MMA 100) Murphy
- 65. Field Work in Public Health Nursing.** Practical experience under direction of staff of a public health agency. (15 cred.; prereq. 62, 63, 100, 133, C average) Murphy
- 75. Introduction to Environmental Sanitation.** Principles of urban and rural sanitation relating to water, food, wastes, housing, air, insects, rodents. (3 cred.; prereq. 3 cred. in public health; III MTWThF; MMA 100) Bond
- 100. Elements of Preventive Medicine and Public Health.** Occurrence and prevention of communicable, degenerative, and industrial diseases; protection of food, water, and milk; maternal and child health. (5 cred.; prereq. old 3, 3a or 50, and course in bacteriology; I MTWThF and II MTWF; MMA 125) Anderson
- 119. Field Practice in Environmental Sanitation.** (Cred. ar.; prereq. #) Bond
- 175. Workshop on Principles of Human Relations in Public Health Nursing Supervision.** (July 16-27) Application of mental hygiene attitudes, relationships, communication skills; use of these by supervisor, administrator, consultant. (3 cred.; limited to 25 students; prereq. public health nurse; Mayo 1250) Cline, von Bergen

BIostatISTICS

- 130. Biostatistics II.** The nature of estimation and hypothesis testing as techniques in experimental science; small sample tests and their power; (t , x^2 , F and analysis of variance). (3 cred.; prereq. 110 with grade not lower than C, #131; I, IV MWF; Mayo 1220) Bearman
- 131. Biostatistics Laboratory II.** Practical exercises in theory discussed in 130. (2 cred.; prereq. #130; lab. 12 hrs. ar.; Mayo 1220) Ar.

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

For general information, for the requirements for admission as regular or as unclassified students, for general rules and regulations, and for the requirements for degrees in the different curriculums offered by the college, students should consult one of the administrative officers or the *Bulletin of General Information* and the complete *Bulletin of the College of Science, Literature, and the Arts*. (For Summer Session see Admission and Registration in this bulletin.)

Courses announced in the bulletin as open to "juniors and seniors" or to "juniors, seniors, and graduates" are called "Senior College courses." They are open to sophomores under certain conditions. See the complete bulletin of the college or consult one of the administrative officers.

Some of the numbers given in the statement of prerequisites for courses in this bulletin refer to courses listed in the bulletin of the college.

Some of the courses scheduled in this *Bulletin of the Summer Session* by the School of Business Administration, the Medical School, the Institute of Technology, and the College of Agriculture, Forestry, and Home Economics are open to students of the College of Science, Literature, and the Arts under the same conditions that prevail during the regular college year. For information, consult one of the administrative officers of the College of Science, Literature, and the Arts.

Students are invited to bring any questions or problems to the college offices, 214 and 223 Johnston Hall.

AMERICAN STUDIES (Am.St.)

First Term

- Hum.21. American Life I.** The growth of individualism and democracy (with particular attention to minorities) as recorded in American history, social thought, literature, and the arts. (3 cred.; open to all; I MTWThF; FolH 9) Kwiat
- 201.* Introduction to American Studies.** Interdisciplinary study of aspects of American civilization. (3 cred.; graduate candidates for advanced degrees in American Studies or consent of chairman; VI-VII TTh; FolH 103) Cottrell
- 250. Readings in American Civilization.** Independent study of interdisciplinary aspects of American civilization under guidance of members of various departments. (Cred. ar.; grad.; prereq. consent of department chairman; ar.) Ar.

Second Term

- Hum.22. American Life II.** The place in American civilization of the land, the city, and the good life; their implications and interrelations. (3 cred.; open to all; I MTWThF; JohH 115) Ar.
- 112. Cultural Regions of the United States.** The regions will be examined with respect to history, folklore, social institutions and creative expression. Special emphasis on the South. (3 cred.; prereq. 9 cred. history, literature, or social sciences, or #; II MTWThF; TSF 109) Fishwick

251. Readings in American Civilization. Independent study of interdisciplinary aspects of American civilization under guidance of members of various departments. (Cred. ar.; prereq. consent of department chairman; ar.) Ar.

Note—See also approved courses in participating departments as listed in the *Program in American Studies*.

ANTHROPOLOGY (Anth.)

First Term

- 1A. Introduction to Anthropology: Prehistoric Man and Culture.** The origins of man and the development of modern races. The growth and differentiation of the cultures of man from the Dawn Stone Age of early glacial times through the Old and New Stone Ages to the dawn of civilization in the Bronze and Iron Ages. (3 cred.; §old 2 [such students should register for 2A]; open to all; I MTWThF; ForH 115) Spencer
- 117. Indians of South America.** (Formerly Anth. 172) An ethnographic survey of South American Indians. The prehistory of the various areas. Spanish and Portuguese contact and the adjustment of the various tribes to modern conditions. (3 cred.; prereq. 2A; II MTWThF; ForH 160) Leslie
- 140. Field Trip in Archaeology.** Excavations of prehistoric village and mound sites in the state of Minnesota. Training in archaeological methods. (1-6 cred.; prereq. male students only, #; ar.) Wilford
- 165. Personality and Culture.** The role of cultures in the formation of personality. Problems of individual adjustment to the demands of various cultures. Integration of anthropology and psychology. (3 cred.; sr., grad.; III MTWThF; ForH 185) Spencer

Second Term

- 2A. Introduction to Anthropology: Cultural Anthropology.** The varieties and range of human behavior as revealed through the study of primitive societies in all parts of the world. A scientific analysis of the ways in which primitive men organize their lives, directed toward a deeper and broader understanding of human capacities and purposes. (3 cred.; §old 1 [such students should register for 1A]; I MTWThF; ForH 115) Leslie
- 80. The American Indian.** A survey of the native peoples and cultures of North and South America. (3 cred.; II MTWThF; ForH 120) Lang
- 118. Pre-Columbian Civilizations of Mexico and Central America.** The high cultures of the ancient Mayas, Aztecs, Incas, and their neighbors from their primitive beginnings to the time of the Spanish conquest. (3 cred.; III MTWThF; ForH 120) Leslie
- 140. Field Trip in Archaeology.** (See first term) (1-6 cred.; prereq. male students only, #; ar.) Wilford
- 150. The Contact of Cultures.** (Formerly Anth. 119) A study of the processes of acculturation. The impact of civilizations on native cultures. (3 cred.; prereq. 1A and 2A; IV MTWThF; ForH 120) Lang

ART (Art)

See also Art Education

First Term

HISTORY OF ART

- 1. Principles of Art.** A lecture and laboratory course introducing the student to basic problems of art. Examples from the painting, sculpture, and

architecture of various periods will be used to illustrate general cultural factors that influence the production of art as well as basic problems of design and of technique. Laboratory-discussion sessions will introduce students to practical problems arising from the nature of the materials of the visual arts. This course, together with Mus. 10, Spch. 8, and Phil. 4, forms a sequence in the Arts. (3 cred.; II MTWThF; J 207b) Torbert

- 59. Traveling Summer Course in European Art.** (See section on Special Programs) Covers the main epochs in Western art history, from antiquity to the present, in a series of lectures at the chief museums of Europe and in guided visits to important centers, archaeological excavations, monuments and churches in France, Italy, Austria, Germany, and Holland. The course will include surveys of ancient, medieval, Renaissance, and Baroque art and will conclude in an intensive examination of contemporary post-war painting, architecture, and city planning. It will guide the student through a succession of important repositories of art in various European countries and will focus the discussion of the main phases of Western art on selected crucial works of painting, sculpture, and architecture. (5 cred.; jr., sr., grad.; leave Montreal June 28, return Montreal August 30) Eitner
- 148. Modern Architecture.** Background and rise of modern architecture in Europe and America; the development of the new international style in its various phases—Sullivan, Wright, Gropius, Mies, LeCorbusier; its relation to modern sculpture and painting. Stylistic developments of the 19th century, illustrated largely through examples from the Minneapolis-St. Paul area. (3 cred.; prereq. #; V MTWThF; J 207b) Torbert

STUDIO COURSES

- 20. Elements of Drawing.** Elementary course introducing basic problems in drawing. No previous experience required. Work in various drawing media. Subject matter: still life, figure, landscape, and nature study. (3 cred.; III-IV MTWThF; J 200a) Quirt
- 23-24-25. Drawing and Design I.** Foundation sequence for future work in the Art Department. Investigation through discussion and studio work of the characteristics and principles common to all visual arts.
- 23.** Experience in handling the tools and materials of drawing. A study of source material in nature, and problems in descriptive and imaginative drawing. Investigation of design principles through drawing and elementary perspective. (3 cred.; prereq. 1 or #1; V-VI MTWThF; J 104) Downs
- 24.** An introduction to the basic tools of the artist and the elements and principles of design. Line, shape, texture, value, and color are considered separately and as they relate to one another. (3 cred.; prereq. 23; V-VI MTWThF; J 104) Downs
- 25.** A development of the work in Art 24 with primary emphasis on the means of organization, through projects in such areas as: illustration, graphic design, photography, and certain printing processes. (3 cred.; prereq. 24; V-VI MTWThF; J 104) Downs
- 32. Elements of Printmaking.** Foundation course. Familiarizes the student with the media of printmaking in general. Problems in engraving, etching, and other techniques employed in working on metal plate, as well as lithography, wood cuts, and combined processes. (3 cred.; I-II MTWThF; J 203) Myers
- 40. Sculpture I.** Beginning course. Intensive study of structure in nature with emphasis on accurate observation. Life drawing prepares the student for each sculpture problem. The sculpture medium is clay. Some instruction in plaster casting. (3 cred.; prereq. 1, or #1; I-II MTWThF; 2035 University Avenue S.E.) Morton

- 49. General Crafts.** Various craft problems in wood, metal, leather, and plaster. Typical problems include wood carving, metal raising, and leather tooling. Emphasis will be placed on original design and on exploring the possibilities of each material. The course is oriented toward students in art education, recreation, and occupational therapy. (3 cred.; III-IV MTWThF; 2035 University Avenue S.E.) Morton
- 70-71-72. Oil Painting.** Introduction to medium of oil; individual projects and instruction. (3 cred. each; prereq. 54; V-VI MTWThF; J 200a) Quirt
- 70B-71B-72B. Oil Painting.** For general students. (2 cred. each, \$70-71-72; no cred. for art majors; prereq. 20 or 23 or equiv., with #; III-IV MTWThF; J 200a) Quirt
- 73-74-75. Presentation Techniques.** Visual means of communicating ideas in the fields of exhibition techniques, illustration, and advertising. Investigation of the characteristics and the creative use of various media.
73. Experiments and instruction in the use of wash techniques, water-color, gouache, inks, and the use of mechanical instruments. Presentation problems using the media limitations as a starting point. (3 cred.; prereq. 25 [no prereq. for architects]; VII-VIII MTWThF; J 104) Downs
74. Experiments and instruction in the use of photo-mechanical and related print processes, mechanical patterns, air-brush, scratch board, and photostat. Elementary problems in relationship between organizational means and content. (3 cred.; prereq. 25 [no prereq. for architects]; VII-VIII MTWThF; J 104) Downs
75. Practice in the use of associative relationships and symbols in complete communication problems in the fields of display illustration and advertising. (3 cred.; prereq. 73 or 74, both recommended; VII-VIII MTWThF; J 104) Downs
- 90-91-92. Printmaking.** Problems in engraving, etching, and other techniques employed in working on metal plate, as well as lithography, woodcuts, and combined processes. (3 cred. each; prereq. 32 or Δ ; III-IV MTWThF; J 203) Myers
- 150-151-152. Problems in Painting.** (Cred. ar.; prereq. 72 and Δ ; V-VI MTWThF; J 200a) Quirt
- 190-191-192. Problems in Printmaking.** For advanced students. Work in black and white and color in metal, lithographs, and wood blocks. (Cred. ar.; prereq. 92 or Δ ; III-IV MTWThF; J 203) Myers
- 200-201-202. Advanced Problems in Studio Work.** (Cred. ar.; prereq. Δ ; ar.) Morton, Quirt

FILM AND PHOTOGRAPHY

- 10. Photography.** (Same as Jour. 10) Fundamental principles of photography. Use of cameras, developing, printing, and other elementary techniques. (3 cred.; III-IV MTWThF; MurH 20) Liebling
- 11. Photography.** For students who have had previous instruction in photography or have worked in photography and know the principles of developing and printing. Attempts to develop a personal photographic perception in the student through lectures on photographic history and contemporary trends in photography. Intensive field work. (3 cred.; enrollment limited; prereq. 10 or practical experience and Δ ; V-VI MTWThF; J 4) Liebling
- 12. Photography.** History and criticism of photography; introduction to motion picture techniques; field project in creative photography. (3 cred.; prereq. 11 or #; V-VI MTWThF; J 4) Liebling
- 83-84-85. Photography II.** Preliminary survey of photographic equipment and materials; camera procedure; film processing and printing. Field and

studio problems in the use of design elements. Experiments in photographic controls to illustrate the limitations and capacities of photography. Problems in application of design relationships with emphasis on visual environment. (3 cred. each; jr., sr.; prereq. 12 or Δ ; V-VI MTWThF; J 4) Liebling

Second Term

HISTORY OF ART

1. **Principles of Art.** (See first term) (V MTWThF; J 207b) Torbert
68. **Modern Art: Contemporary Art in Europe and America.** Development of painting, sculpture, and architecture in Europe and the United States during the 20th century. (3 cred., elective cred. only for majors in art history; prereq. 1 or 50 or 64 or Δ ; III MTWThF; J 207b) Torbert
- 158A. **20th-Century European and American Painting.** Growth of modern painting and of the Post-Impressionist inheritance; French Fauves and German expressionists; impact of primitive art and its assimilation in cubism; puristic defections and rise of Dada and surrealism; new objectivity, new romanticism, and new eclecticism; special attention will be given to peculiarly American assimilation of European phases of painting. (3 cred.; sr., grad.; prereq. 1 or 50, and 9 credits in history or art, or 9 credits in history or literature with $\#$; III MTWThF; J 207b) Torbert
197. **Readings in American Culture and the Visual Arts.** Art, architecture, and taste in relation to social, intellectual, and literary trends. Topics include craft tradition, classical revival, romanticism, genre painting, urbanism and technology, organic architecture. (3 cred.; prereq. 9 cred. in history, literature, or art history, or $\#$; I MTWThF; J 207b) Fishwick

STUDIO COURSES

20. **Elements of Drawing.** (See first term) (VI-VII MTWThF; J 104) Sussman
- 23-24-25. **Drawing and Design I.** (See first term) (I-II MTWThF; J 104) Arnest
- 40-41-42. **Beginning Sculpture.** Work with clay, plaster, wood, metal. Fundamentals of design and form. Exercises with natural and abstract forms. (3 cred. each; prereq. 1 for 40 or 42, 40 for 41; III-IV MTWThF; 2035 University Avenue S.E.) Morton
- 60B-61B-62B. **Water Color.** Introduction to transparent water color, gouache, casein, and tempera. A general course introducing the student to a variety of drawing and painting media. Figure, still life, landscape, and abstract design. (3 cred. each; elective cred. for students majoring in art; prereq. 20 or 23 or equiv., with Δ ; VI-VII MTWThF; J 104) Sussman
- 70-71-72. **Oil Painting.** (See first term) (III-IV MTWThF; J 200a) Arnest
- 150-151-152. **Problems in Painting.** (See first term) (III-IV MTWThF; J 200a) Arnest
- 200-201-202. **Advanced Problems in Studio Work.** (See first term) (Ar.) Arnest

ASTRONOMY (Ast.)

First Term

12. **Descriptive Astronomy.** Brief survey of what is known about the Earth, the Moon, the Sun, and the Planets and their motions, followed by a description of the nature of the physical universe. Course is completely non-mathematical. (3 cred.; open to all; III MTWThF and one evening a week for observations with the telescope; Ph 133) Luyten

13. **Stellar and Practical Astronomy.** Given over largely to a description of the constellations and of the properties and motions of the stars. Four lectures during the week; in addition, two evenings per week are scheduled to provide as much observing as weather conditions will permit. (3 cred.; open to all; IV MTWF and two clear evenings per week for observation; Ph 133) Luyten

BOTANY (Bot.)§§

First Term

4. **General Botany.** Survey lecture and laboratory course on the form, structure, and functions of plants; reproduction in plants and the principles of inheritance and variation; relations of plants to environment; principal groups of plants; and organic evolution. (5 cred.; open to all; lect. I MTWThF, Bo B6; lab. II-III MTWThF, Bo 4, 5) Hall
- 194.* **Problems.** Advanced work in some specialized field of botany. (1-5 cred.; prereq. #; ar.) Ar.

Second Term

5. **General Botany.** (See 4, first term) (5 cred.; open to all; prereq. 4 or equiv.; lect. I MTWThF, Bo B6; lab. II-III MTWThF, Bo 4, 5) Ar.
- 195.* **Problems.** (See 194, first term) (1-5 cred.; ar.) Ar.

CLASSICS (Clas.)

First Term

- 24.†† **Technical Terms of Science, Medicine, and the Humanities.** Vocabulary building through an intensive study of the derivation of modern technical vocabularies, with presentation in English of Greek and Latin word elements: suffixes, prefixes, and root words, with attention to the development of meaning and usage. (3 cred.; soph., jr., sr.; I MTWThF; FolH 110) McDonald
- 45.†† **Greek and Roman Mythology.** The principal classical myths, their interrelationships, symbolic values, their expression in classical art and literature, and their survival in our cultural tradition. (3 cred.; soph., jr., sr., §42, 43; I MTWThF; FolH 6) Bock
124. **Technical Terminology.** Involving the same class work as Class. 24 but with special independent work, preferably in the vocabulary of a technical field related to the student's major interest. (3 cred.; soph., jr., sr., grad., §24; I MTWThF; FolH 110) McDonald

COMMUNICATION

See Index

ECONOMICS

See School of Business Administration and Agricultural Economics

§§ For additional courses in the first term, see Lake Itasca Forestry and Biological Station.

†† Credit will be allowed in either English or Classics.

†† For the teaching of Latin see 187C under Curriculum and Instruction (Secondary Education), College of Education.

EFFICIENT READING

See Index

ENGLISH¶¶

First Term

LITERATURE (Engl.)

22. **Introduction to Literature.** The Restoration and the 18th century. Pope, Swift, Addison and Steele, Johnson, Boswell, Fielding, and Sheridan. (6 cred.; soph., jr., sr.; prereq. ††; I-II MTWThF; FolH 204) Buckley
53. **The English Novel.** The reading of novels by Thackeray, Dickens, Trollope, George Eliot, Meredith, and Hardy. (3 cred.; prereq. §§; IV MTWThF; FolH 303) Krieger
55. **Shakespeare.** The reading of plays from Shakespeare's early and middle periods—*Richard II*, *A Midsummer Night's Dream*, *The Merchant of Venice*, *Much Ado About Nothing*, and 2 or 3 other plays selected by the instructor. (3 cred.; prereq. §§; I MTWThF; FolH 107) del Plaine
- 56.‡ **Shakespeare.** The reading of plays from Shakespeare's middle and later periods—*Twelfth Night*, *Hamlet*, *Macbeth*, *The Tempest*, and two other plays selected by the instructor. (3 cred.; prereq. §§; II MTWThF; FolH 205) Montgomery
- 74.‡ **American Literature.** Notable authors from Whitman to Hemingway. (3 cred.; prereq. §§; I MTWThF; FolH 206) Hornberger
100. **Old English (Anglo-Saxon).** Introduction to the sounds and grammar with some prose reading. Relation to modern English is stressed. (6 cred.; prereq. ††; I-II MTWThF; FolH 306) Clark
- 104.* **Emerson and Thoreau.** (3 cred.; prereq. ††; II MTWThF; FolH 206) Bethurum
- 136.* **Advanced Shakespeare.** Work of the poet's maturity. Special attention to *Othello*, *King Lear*, *Antony and Cleopatra*, *Cymbeline*, *The Winter's Tale*. (3 cred.; prereq. 55-56; IV MTWThF; FolH 206) Bethurum
- 138.* **19th-Century Literature.** Poetry and prose of the Mid-Victorian period. (3 cred.; prereq. ††; IV MTWThF; FolH 205) Montgomery
- 154.* **American Novel.** History of the American novel from the beginning to Howells. (3 cred.; prereq. ††; IV MTWThF; FolH 207) Levenson
- 162.* **Milton.** The minor poems, *Areopagitica*, *Paradise Lost*, and *Samson Agonistes*. (3 cred.; prereq. ††; III MTWThF; FolH 205) Unger
- 179.* **The Calvinistic Element in American Literature.** Mrs. Stowe, the Transcendentalists, Hawthorne, Frost. (3 cred.; prereq. ††; III MTWThF; FolH 207) Foster
- 188.* **18th-Century Literature.** Poetry and prose of the mid-18th century. (3 cred.; prereq. ††; III MTWThF; FolH 303) Krieger

†† Six credits in English literature, exclusive of Engl. A-B-C.

‡ Engl. A-B-C, or Comp. 4-5-6, or Comm. 1-2-3, or exemption from requirement.

§§ Comp. 4-5-6, or Comm. 1-2-3, and 6 additional credits; or Engl. A-B-C; or 10 credits in Engl. 21-22-23.

¶¶ Credit will be allowed in English for Clas. 24.

- 198.* **17th-Century Literature.** Poetry and prose of the mid-17th century. (3 cred.; prereq. ††; II MTWThF; FolH 207) Unger
299. **Independent Reading.** (3 cred.; prereq. M.A. degree or equiv.) Ar.

COMPOSITION (Comp.)

4. **Freshman Composition.** Practical training in reading and writing. (3 cred.; open to all; prereq. placement test; I MTWThF; FolH 303) Ar.
5. **Freshman Composition.** Continuation of Comp. 4. (3 cred.; open to all; prereq. 4 or Comm. 1; III MTWThF; FolH 204) Ar.
6. **Freshman Composition.** Continuation of Comp. 5. (3 cred.; open to all; prereq. 5 or Comm. 2; IV MTWThF; FolH 204) Ar.
27. **Advanced Writing.** Formal exposition, stressing adequate content, logical development, and organization of material. (Not to be confused with Comp. 7) (3 cred.; soph., jr., sr.; prereq. ††; II MTWThF; FolH 107) del Plaine

Second Term

LITERATURE (Engl.)

23. **Introduction to Literature.** The Romantic Movement and the Victorians. Wordsworth, Byron, Shelley, Keats, Lamb, Carlyle, Browning, and Arnold. (6 cred.; soph., jr., sr.; prereq. ††; I-II MTWThF; P 218) Steinmann
55. **Shakespeare.** (See first term) (I MTWThF; JohH 306) Christie
- 56.† **Shakespeare.** (See first term) (III MTWThF; JohH 314) Christie
73. **American Literature.** Notable authors from Edwards to Holmes. (3 cred.; prereq. §§; IV MTWThF; TSF 109) McDowell
75. **Chaucer.** Reading of selections from the *Canterbury Tales* with introduction dealing with the grammar and literary forms of 14th-century English. (3 cred.; prereq. §§; I MTWThF; Ph 145) Allen
- 109.* **Romantic Poets of the Early 19th Century.** Wordsworth, Coleridge, Scott, etc. (3 cred.; prereq. ††; III MTWThF; JohH 310) Jackson
- 112.* **Crane and Howells.** (3 cred.; prereq. ††; I MTWThF; JohH 313) Berryman
- 113.* **American Short Story.** Historical examination of the American short story from the 18th century to the present. (3 cred.; prereq. ††; III MTWThF; JohH 313) Howe
- 127.* **18th-Century Drama.** Rise of sentimentalism, Goldsmith, Sheridan. (3 cred.; prereq. ††; IV MTWThF; JohH 313) Jackson
- 129.* **Modern Drama, 1880 to the Present.** Survey of the chief dramatists, English, American, and Continental, from the time of Ibsen. (3 cred.; prereq. ††; III MTWThF; P 218) Hillhouse
- 139.* **19th-Century Literature.** Poetry and prose of the late 19th century. (3 cred.; prereq. ††; IV MTWThF; JohH 314) Stange
- 143b.* **Edith Wharton and William Faulkner.** (3 cred.; prereq. ††; IV MTWThF; Lib 4A) Howe

†† Six credits in English literature, exclusive of Engl. A-B-C.

‡‡ Engl. A-B-C, or Comp. 4-5-6, or Comm. 1-2-3, or exemption from requirement

§§ Comp. 4-5-6, or Comm. 1-2-3, and 6 additional credits; or Engl. A-B-C; or 10 credits in Engl. 21-22-23.

- 165. Introduction to Modern English.** Scientific approach to the sounds and grammar of present-day English, with some attention to syntax; implications for a reasonable attitude toward English usage in America. Required of education majors in English. (3 cred.; prereq. ††; II MTWThF; Ph 145) Allen
- 213. Bibliography and Methods of Literary Research.** Examination of basic library reference works, scholarly and critical journals, bibliographies of periods and prominent literary figures; exercises and problems in methods and exposition of research. (3 cred.; 1:30-3:30 TTh; JohH 306) Stange
- 297. Independent Reading.** (3 cred.; prereq. M.A. degree or equiv.) Ar.

COMPOSITION (Comp.)

- 6. Freshman Composition.** (See first term) (II MTWThF; NH 207) Ar.

FAMILY LIFE

See Index

FOREIGN STUDY SEMINAR

See General Studies

GENERAL STUDIES

First Term

COMMUNICATION (Comm.)

- 3. Communication.** Continuation of 1-2. (3 cred.; open to all; prereq. 1-2; I MTWThF; TNM 107) O'Hara

FAMILY LIFE (F.L.)

- 1. Preparation for Marriage.** Discussion of such topics as the function of the family today, problems of dating and courtship, the engagement, relations of husband and wife, family crises, and bases of marital stability. (3 cred.; open to all; II MTWThF; TNM 115) Dyer
- 1A. Preparation for Marriage.** Designed for Senior College, older, or married students. (See F.L. 1) (IV MTWThF; TNM 115) Dyer
- 15. The Home and Its Furnishing.** Present-day housing problems; choice of location; house plans as they affect family living; exterior and interior design; choice of appropriate furnishings and accessories; building furnishing costs. (3 cred.; open to all; II MTWThF; WeH 206) Myren

FOREIGN STUDY (F.S.)

- 161. Seminar for Foreign Study I.** Directed field study in selected foreign countries, investigating the current economic, political, educational, cultural, and religious patterns of life. Each student in the seminar will study the country carefully before embarking and write a comprehensive report of his findings upon returning. (6 cred.; prereq. approval before December by a faculty selection committee, grad. students must also have approval of their faculty adviser) Chrislock, Fredricksen, Negay

†† Six credits in English literature, exclusive of Engl. A-B-C.

HUMANITIES (Hum.)

1. **Humanities in the Modern World I.** The old regime, the revolution, neo-classicism, and romanticism. Period from about 1740 to about 1820. Authors: Pope, Voltaire, Goethe, Blake, and Shelley. One historical novel, Tolstoy's *War and Peace*. (3 cred.; open to all; IV MTWThF; JohH 114) Blum
3. **Humanities in the Modern World III.** Period from about 1840 to about 1914. Authors: Chekhov, Darwin (*Evolution and Its Influence*), Nietzsche, Kierkegaard, and Mann. (3 cred.; open to all; III MTWThF; JohH 114) Amberg
4. **Humanities in the Modern World IV.** The humanities since World War I. Authors studied include Freud, Lenin, Koestler, T. S. Eliot, Kafka, and others. Background topics include civilization between two wars, impact of psychoanalysis, communism versus fascism, etc. (3 cred.; open to all; II MTWThF; JohH 122) Siegelman
21. **American Life I.** Growth of individualism and democracy (with particular attention to minorities) as recorded in American history, social thought, literature, and the arts. (See American Studies) (3 cred.; open to all; I MTWThF; FoH 9) Kwiat
51. **Humanities in the Modern World.** (See description of 3) (3 cred., §3; II MTWThF; JohH 114) Blum
61. **The Greek Heritage.** The golden age of Athens—tragedy, concepts of goodness and beauty, struggle for the state. The age of reason—concepts of reason, justice, order. Selected readings in the historians and Aristotle; longer readings in Homer, Plato, the dramatists. Greek architecture and sculpture. (3 cred., §11; III MTWThF; JohH 113) Vogelbaum
131. **Humanities Proseminar.** Topic for course: The Making of the 20th-Century Mind. (3 cred.; sr., grad; IV MTWThF; JohH 126) Ross

NATURAL SCIENCE (N.Sci.)

165. **Science in World Affairs.** Consideration of the social and intellectual problems raised by the advances of contemporary science with attention to proposed solutions. Discussions will deal with such matters as atomic energy, eugenics, nutrition, behaviorism, and treatment of science in totalitarian countries. (3 cred.; prereq. 1 year of biological and of physical science in high school or college, or #; IV MTWThF; Ph 145) Graubard

PERSONAL ORIENTATION (P.O.)

1. **How to Study.** Practical assistance to the student in developing efficient study habits, organizing materials, preparing for examinations, and improving the speed and comprehension of reading. (2 cred.; open to all but limited to 30 students; IV MTWThF; JohH 306) Walz

SOCIAL SCIENCE (S.Sci.)

1. **Introduction to Social Science.** Integrated study of the factors—historical, political, economic, social, psychological, and cultural—that influence man's behavior. Deals with the basic theme of the development of personality. The entire course, 1-2-3, but not any part of it, will satisfy the social science requirement under Plan I for admission to the Senior College of the College of Science, Literature, and the Arts, to the School of Business, and to the College of Education. (3 cred.; open to all; II MTWThF; JohH 115) Blum

3. **Introduction to Social Science.** (Continuation of 1-2) The integrating theme is the quest for community in modern society. (3 cred.; open to all; III MTWThF; JohH 115) Blum
11. **International Relations.** Survey of the world's critical areas and an examination of international forces in war and peace. Offers a basis for informed evaluation of future as well as present international situations. (3 cred.; open to all; II MTWThF; JohH 113) Turner

Second Term

FAMILY LIFE (F.L.)

1. **Preparation for Marriage.** (See first term) (IV MTWThF; JohH 306) Luckey

FOREIGN STUDY (F.S.)

162. **Seminar for Foreign Study II.** (Continuation of 161, see first term) (6 cred.) Chrislock, Fredricksen, Negay

HUMANITIES (Hum.)

2. **Humanities in the Modern World II.** Industrial revolution; liberalism and socialism; the psychology of the individual. Period from about 1776 to 1890. Authors: Carlyle, Mill, Marx, Smith, Malthus, Ibsen, Zola, and Dostoyevsky. (3 cred.; open to all; II MTWThF; JohH 114) Bryan
4. **Humanities in the Modern World IV.** (See first term) (IV MTWThF; JohH 114) Bryan
22. **American Life II.** Place in American civilization of the land, the city, and the good life; their implications and interrelations. (See American Studies) (3 cred.; open to all; I MTWThF; JohH 115) Mondale
52. **Humanities in the Modern World.** (See description of 2) (3 cred., §2; III MTWThF; JohH 114) Ames
63. **The Renaissance and Reformation.** Florentine Renaissance. Intensive study of the discovery and development of modern political, social, and aesthetic values in 15th-century Florence, the birthplace of the Italian Renaissance. The art, literature, politics, social life, and religious controversies of the epoch traced from their beginnings in the 14th century, their prestige in 16th-century Rome, and their influence on present-day culture in Europe and America. Readings from Machiavelli, Cellini, and others; studies in painting, sculpture, architecture by means of slides and reproductions. (3 cred., §13; I MTWThF; JohH 114) Ames

NATURAL SCIENCE (N.Sci.)

175. **Survey of Science History.** Examination of the monumental achievements of science during recent centuries with particular emphasis upon the culture, equipment, and beliefs which surrounded each development. A 1-term summary of the longer course 171-172-173 and therefore not open to those who have taken any portion of the longer course. (3 cred.; prereq. 1 year of biological and of physical science in high school or college, or #; IV MTWThF; Ph 145) Graubard

PERSONAL ORIENTATION (P.O.)

1. **How to Study.** (See first term) (Limited to 30 students; III MTWThF; JohH 306) Luckey

SOCIAL SCIENCE (S.Sci.)

2. **Introduction to Social Science.** (Continuation of 1) Integrating theme is work as a central aspect of modern life. (3 cred.; open to all; II MTWThF; JohH 115) Cooperman

GEOGRAPHY (Geog.)

First Term

4. **Human Geography.** Geography of population and principal ways of life; capacity of the earth for future population. (5 cred., \$45; III-IV MTWThF; ForH 285) Lukermann
70. **Introduction to Cartography.** Preparation of specialty maps, charts, and diagrams for classroom use and publication. (3 cred., \$111; soph. with C average, jr., sr.; prereq. 10 cred. in geography; I-II MTWThF; ForH 275) Eidt
90. **Readings.** (Cred. ar.; prereq. 12 cred. in geography and #; ar.) Lukermann
109. **Middle America.** Analysis of the physical environment, exploration, and settlement of Mexico, Central America, and the West Indies. Regional interpretation of middle American agriculture, mining, and manufacturing. (3 cred.; prereq. 5 cred. in geography, or #; VI MTWThF; ForH 285) Eidt
301. **Research Problems.** (Cred. ar.) Eidt

Second Term

101. **Western and Central Europe.** Introduction to the major physical and cultural regions of Europe as a whole, followed by a more intensive discussion of the population patterns, resources, and industries in the individual countries of western and central Europe. (3 cred.; prereq. 5 cred. in geography, or #; II MTWThF; ForH 285) Webb
105. **Mediterranean Region.** Regional survey of the lands adjacent to the Mediterranean Sea in southern Europe, western Asia, and northern Africa. (3 cred.; prereq. 5 cred. in geography, or #; IV MTWThF; ForH 285) Webb
118. **Africa.** Physical resources and their use, in the light of the competing cultures and economic forces which have helped shape the human geography of the continent. (3 cred., \$103; prereq. 5 cred. in geography, or #; I MTWThF; ForH 285) Petterson
152. **Industrial Geography.** Geographic analysis of the various factors influencing the location of manufacturing, as illustrated by major industrial regions. Consideration will be given to changes in geographic patterns of industry and their social-economic implications. (3 cred.; prereq. 5 cred. in geography, or #; III MTWThF; ForH 285) Petterson
301. **Research Problems.** (Cred. ar.) Petterson

GEOLOGY AND MINERALOGY (Geol.)

First Term

1. **General Geology (Geologic Processes and Their Results).** Varied aspects of our natural environment with special reference to the influence of geologic processes and structures on landscape development. Interpretation of natural scenery produced by glaciers, streams, ground water, geysers, oceans, volcanoes, etc. Lectures supplemented by laboratory work with minerals and rocks. Also several field excursions. (5 cred.; open to all; I-II MTWThF; P 210) Thiel

- 100. Field Work in Northern Minnesota.** (July 10 to 21, approximately) Selected areas in the iron districts of Minnesota. (3 cred.; jr., sr.; prereq. 25) Goldich
- 150. Field Geology (Black Hills).** (June 10 to July 7, approximately) (Maximum 6 cred.; prereq. 125) Ar.
- 170. Geologic Problems.** (3 cred.; prereq. consent of major adviser; ar.) Thiel

Second Term

- 2. Historical Geology.** Probable conditions of earth origin, antiquity of the earth, and evolution of the continents and of the life that inhabited the seas and land areas of past ages. (5 cred.; open to all; prereq. 1 or 8; I-II MTWThF; P 110) Sloan
- 170. Geologic Problems.** (See first term) Sloan

In addition to the courses definitely offered, graduate students may register for Geol. 211, 241, 243, or 245 and do their work under the supervision of the instructors in residence.

Note—For further information, consult with instructors.

GERMAN (Ger.)††

First Term

- 1. Beginning German.** (5 cred.; open to all; I-II MTWThF; FolH 209½) Wood
- 3. Beginning German.** (5 cred.; open to all; prereq. 2 or 2 years of high school German; I-II MTWThF; FolH 209) Pröttengeier
- 4. Intermediate German.** (5 cred.; open to all; prereq. 3 or 3a or 3b or 3 years of high school German; I-II MTWThF; FolH 209) Pröttengeier
- 165. Goethe's Faust.** (3 cred.; sr., grad.; prereq. 14 cred. above 69 or equiv.; VI-VII MTh; FolH 208) Ramras
- 176. 19th-Century Drama.** Kleist, Büchner—their works in relation to the evolution of 19th-century drama and philosophy. (3 cred.; sr., grad.; prereq. 14 cred. above 69 or equiv.; VI-VII TF; FolH 208) Wood
- 193. Survey of German Culture and Civilization.** Brief survey of Germany's contribution to Western culture. (3 cred.; prereq. ‡; IV MTWThF; FolH 208) Pröttengeier

Note—For a course of special interest to teachers of German see 187B under Curriculum and Instruction (Secondary Education), College of Education.

Offered only in Deutsches Haus¶¶

- 22. Intermediate Conversation and Oral Practice.** For students who understand German fairly well but who need assurance in self-expression and a basic active vocabulary. A thorough study will be made of the material to be used in the conversation sections for the day. Then students will subdivide into smaller groups and their entire time be devoted to actual conversation under supervision of native teachers. (5 cred.; prereq. 1 and 2 or equiv.) Staff

†† Knowledge of German required for all courses numbered above 100.

¶¶ See Modern Language Institute under Special Programs.

- 86. Advanced Oral Practice and Self-Expression.** Intended primarily to develop self-confidence in expressing ideas in German. It will consist of daily training in current German through discussions on assigned topics with definite vocabulary preparation, short debates, oral reports, and oral criticisms of books and articles. (5 cred.; prereq. 3 and 4 or equiv.) Staff
- 107. German Stylistics.** To enable advanced students and especially teachers of German to acquire a finer feeling for German style, a sense for shades of expression, and a complete mastery of certain grammatical and idiomatic difficulties. Model selections of prose will form the basis for imitative composition. The course aims to strengthen the background and broaden the range of the American teacher of German. (4 cred.; prereq. #) Staff

Second Term

- 2. Beginning German.** (5 cred.; open to all; prereq. 1 or 1 year of high school German; I-II MTWThF; JohH 314) Menze
- 142. Modern Drama in Translation: Hauptmann to Brecht.** (3 cred.; prereq. #; IV MTThF; NH 107) Menze

HISTORY (Hist.)

First Term

- 1. Civilization of the Modern World, Part I.** (3 cred.; open to all; I MTWThF; ForH 130) Onion
- 2. Civilization of the Modern World, Part II.** (3 cred.; open to all; II MTWThF; ForH 130) Onion
- 15. Ancient Civilization, Part II.** (3 cred.; III MTWThF; ForH 115) Clift
- 20. American History, Part I.** (3 cred.; soph., jr., sr.; I MTWThF; ForH 155) Chambers
- 21. American History, Part II.** (3 cred.; soph., jr., sr.; II MTWThF; ForH 120) Beatty
- 51. Ancient Civilization, Part II.** (3 cred.; III MTWThF; ForH 115) Clift
- 62. Cultural History of China, Part I.** (3 cred.; II MTWThF; ForH 208) Mather
- 79. United States in the 20th Century, Part I.** (3 cred.; III MTWThF; ForH 155) Chambers
- 93. American Diplomatic History, Part I.** (3 cred.; IV MTWThF; ForH 115) Beatty
- 98. Minnesota and the Northwest, Part II.** (3 cred.; I MTWThF; ForH 150) Jordan
- 101b. History of Rome, Part II.** (3 cred.; I MTWThF; ForH 175) Clift
- 109. Europe in the 20th Century, Part I.** (3 cred.; II MTWThF; ForH 115) Kollman
- 137a. American History, Part I.** (3 cred.; III MTWThF; ForH 130) Loehr
- 147. American Economic and Social History, Part II.** (3 cred.; II MTWThF; ForH 180) Loehr
- 176c. Readings: Recent European History, Part I.** (3 cred.; grad.; IV MTWThF; ForH 244) Kollman
- 186d. Readings: 19th-Century American History, Part II.** (3 cred.; grad.; III MTWThF; ForH 345) Jordan

Second Term

- 3. Civilization of the Modern World, Part III.** (3 cred.; open to all; II MTWThF; ForH 130) Wolf
- 22. American History, Part III.** (3 cred.; open to all; I MTWThF; ForH 130) Noble
- 67a. Renaissance and Reformation, Part III.** (3 cred.; III MTWThF; ForH 130) Hoyt
- 86. American Colonies, Part I.** (3 cred.; II MTWThF; ForH 115) Tyler
- 92. The American West, Part III.** (3 cred.; III MTWThF; ForH 175) Osgood
- 105a. Renaissance and Reformation, Part III.** (3 cred.; III MTWThF; ForH 130) Hoyt
- 107. Continental Europe, Part II.** (3 cred.; IV MTWThF; ForH 150) Wolf
- 148a. History of the South, Part III.** (3 cred.; IV MTWThF; ForH 130) Noble
- 151. Social and Intellectual History of the United States, Part III.** (3 cred.; III MTWThF; ForH 115) Tyler
- 175. Readings: Medieval and Renaissance History, Part III.** (3 cred.; grad.; IV MTWThF; ForH 244) Hoyt
- 187a. Readings: The American West, Part III.** (3 cred.; grad.; IV MTWThF; ForH 175) Osgood

HOW TO STUDY

See General Studies, Personal Orientation

HUMANITIES

See General Studies

SCHOOL OF JOURNALISM (Jour.)

First Term

- 10. Photography.** (Same as Art 10) Fundamental principles of photography. Use of cameras, developing, printing, and other elementary techniques. (3 cred.; III-IV MTWThF; MurH 20) Liebling
- 18. Principles of Advertising.** Theory, principles, and functions of advertising; its role in the economic, social, and marketing structure. Newspapers, magazines, and radio and television as advertising media. (3 cred.; soph., jr., sr.; prereq. 13, C average, and Comp. 27-28 or IComp. 27-28; I MTWThF; MurH 302) Perry
- 55. Advertising and Newspaper Typography.** For supervisors of school publications as well as for undergraduate majors and minors who meet prerequisites. Typography in relation to layout, makeup, and format; practical laboratory work in hand composition; general principles of graphic presentation. (3 cred.; prereq. Senior College standing for journalism majors, 11 and 41 for minors, ‡ for publication advisers)

Lect. VI MW, MurH 105, Wilson

Lab. 1, VI-VII TTh, MurH 315, Wilson
Lab. 2, VII-VIII MW, MurH 315, Wilson

- 73. Magazine Writing.** Planning and writing feature articles for general, class, and trade publications; marketing manuscripts; employee and industrial journal problems; problems of magazine editing. (3 cred.; prereq. 15, 19, or ‡; II MTWThF; MurH 302) Charnley

- 82. Supervision of School Publications.** Practical consideration of teaching, editorial, business management, and production problems facing supervisors of high school, junior college, and teachers college newspapers, magazines, yearbooks. (3 cred.; prereq. #; I MTWThF; MurH 311) Wilson
- 106.* Critical Writing.** Theory and practice of writing book, theater, and motion picture reviews. Analysis of the work of leading critics and critical periodicals. Practical reviewing assignments. (3 cred.; prereq. a Senior College writing course and #; III MTWThF; MurH 311) Hage
- 121.* The Press in a Dynamic Society.** Economic, political, and social determinants of the character and content of mass communications. Patterns of operations, their effect on content, and their relative social utility. Government and mass communications. (3 cred.; prereq. 15 or 18 for journalism majors, # for others; II MTWThF; MurH 311) Gerald
- 140. Interpretation of Contemporary Affairs.** Analysis of major political, economic, and social developments and their interpretation in the editorial, interpretative article, and commentary. (3 cred.; sr., grad.; prereq. 51 and 15 cred. in the social sciences; IV MTWThF; MurH 308) Gerald
- 290.* Special Problems in Mass Communications.** Individual problems course for graduate students with major or minor programs in journalism. (3 cred.; prereq. #; ar.) Ar.

Second Term

- 86. Advertising Copy Writing.** Advertising media; advertising appeals; techniques of writing advertising copy for newspapers, magazines, direct mail, posters, brochures; planning advertising campaigns. (3 cred.; prereq. 51 or 41, and 55 and 65; I MTWThF; MurH 308) Perry
- 110.* History of Journalism.** Journalism beginning with the post-Civil War period; the emergence of the modern newspaper in America. Major social influences that have shaped the pattern of the press, including magazines, broadcasting, and press associations. Contributions of leading publishers and editors. (3 cred.; II MTWThF; MurH 311) Emery
- 113.* Mass Communications.** Principles and theory based upon research into the problems of communicating information and ideas to group and mass audiences by newspaper, radio, television, film, books, and other media. Comparative studies of content, comprehension, and influence. (3 cred.; sr., grad.; prereq. #; III MTWThF; MurH 311) Jones
- 290.* Special Problems in Mass Communications.** (See first term) (3 cred.; prereq. #; ar.; MurH 206) Jones

LIBRARY SCHOOL (Lib.)

The Library School, in co-operation with the Graduate School, offers a program leading to the Master's degree with a major in library science. This is the only program preparing students for full-time professional library work. In addition, the School offers, through the College of Education, a program of 23 credits in library science to prepare students for part-time library work in connection with teaching. For requirements write to the Library School, 7 Library, University of Minnesota, Minneapolis 14.

Students who expect to enroll in the fall of 1956 for the Master's program with a major in library science and who do not meet the library science course requirements for admission are urged to register for Lib. 50, 55, 62, 70, and 83 this summer.

First Term

- 53. School Library Management.** Primarily for students without previous experience in a school library. (3 cred.; II MTWThF; Lib 4A) Carstens
- 55. Library Administration.** Introduction to principles of library administration, organization, and management. (3 cred.; III MTWThF; Lib 4A) Wezeman
- 70. Reading Guidance.** The library user, his personality and background, the matching of book and user. (3 cred.; IV MTWThF; Lib 4A) Ar.
- 74. Library Materials in the Classroom.** (2 cred.; III MTWThF; Lib 4B) Hokanson
- 157. School Library Problems.** Service in large units, relationships with public libraries, planning library quarters, budgets, training for school librarianship. (3 cred.; prereq. 55; IV MTWThF; Lib 4B) Carstens
- 163. Reference II.** Reference material in subject fields, subject bibliography. (3 cred.; prereq. 62; II MTWThF; Lib 4B) Ar.
- 172. Reading Guidance for Adolescents.** (3 cred.; I MTWThF; Lib 4A) Hokanson
- 176. Communication Media and the Library.** (3 cred.; I MTWThF; Lib 4B) Berninghausen
- 185. Special Problems.** Individual study on library problems for advanced students in library science. (1-3 cred.; prereq. approval of director of Library School; ar.) Staff
- 259. Problems in Library Administration.** Personnel, financial, and other problems. (3 cred.; prereq. 55 and one of the following: 154, 155, 156, 157; V-VI TTh; Lib 4B) Wezeman

Second Term

- 50. History of Libraries and Librarianship.** Social trends affecting libraries and their functions in society; librarianship as a profession. (3 cred.; II MTWThF; Lib 4A) Shove
- 62. Reference I.** General reference tools and other sources of information. Theory and practice of reference work. (3 cred.; I MTWThF; Lib 4A) Jackson
- 83. Cataloguing and Classification.** (3 cred.; III MTWThF; Lib 4A) Jackson
- 171. Reading Guidance for Children.** (3 cred.; VI MTWThF; Lib 4A) Callahan
- 185. Special Problems.** (See first term) (Ar.) Staff
- 262. Literature of the Natural Sciences.** (3 cred.; V-VI TTh; Lib 4B) Shove
- 277. History of Children's Literature.** For librarians, teachers, and students of our cultural history. (3 cred.; VI MW; Lib 4B) Callahan

MATHEMATICS (Math.)¶¶

See also Mathematics, Institute of Technology

First Term

- 1. Higher Algebra.** Collegiate treatment of the topics of high school algebra for those who have had 1 year of elementary algebra. (5 cred.; open to all; prereq. 1 year of elementary algebra in high school; open for credit

¶¶ See statement concerning Institute for High School Teachers of Mathematics under Special Programs.

- to any student offering not more than one-half year of high school higher algebra for entrance credit and to other students by Δ ; I-II MTWThF; FolH 105) Lindberg
- 6. Trigonometry.** Plane trigonometry and logarithms. (5 cred.; open to all; prereq. plane geometry and either 1 or high school higher algebra; open for credit even to students offering high school trigonometry for entrance; I-II MTWThF; FolH 109) Varberg
- 15. Elementary Mathematical Analysis I.** This, together with 16, provides a course for premedical and other students who desire a survey of college mathematics including trigonometry, algebra, and calculus with emphasis on fundamental ideas rather than on technical preparation for more advanced courses in mathematics. (5 cred., §7 or 8; open to all; prereq. plane geometry and either 1 or high school higher algebra; III-IV MTWThF; FolH 105) Sabidussi
- 50. Calculus I: Differential Calculus.** Derivatives and differentials of elementary functions; curve tracing; definitions of velocity, acceleration, etc.; maxima and minima; related rates; mean value theorems; indeterminate forms; infinite series; expansions of functions. (5 cred.; prereq. 30; III-IV MTWThF; FolH 109) Gibbens
- 106. Differential Equations.** Problem course; methods of solving ordinary differential equations of various types with the necessary theory for developing these methods. (3 cred.; prereq. 51; II MTWThF; FolH 101) Carlson
- 138B. Analysis of Variance and Multivariate Analysis II.** Analysis of covariance, regression, factorial experiments and balanced incomplete blocks; derivation of the tests and confidence bounds discussed in 138A; elements of factor analysis; analysis of categorical data; some general decision problems. (3 cred.; prereq. 138A and 139A, or ¶; II MTWThF; FolH 102) Roy
- 139B. Statistical Models in the Social Sciences.** Primarily for students in the social sciences who desire a working knowledge of modern principles of design and analysis (theoretical and practical) as they apply to models appropriate in social science research. (3 cred.; prereq. 16 or 51 and a course in mathematical or applied statistics at the 100 or 200 level; III MTWThF; FolH 102) Roy
- 144-145A.*§§ Fourier Series and Orthogonal Functions.** This course, together with 145B-146 (second term), provides the material of a year's sequence. The general theory of orthonormal functions is developed and applied to Fourier, Legendre, Bessel, Hermite, and other series. Convergence and summability theorems are proved, and the Fourier integral is considered. (4½ cred.; prereq. 51; I, III MTWThF; FolH 101) Orey
- 187.* Non-Euclidean Geometry.** Foundations of Euclidean geometry. Euclid's fifth postulate and its implications. Hyperbolic plane geometry and trigonometry. Elliptic plane geometry and trigonometry. Consistency of the non-Euclidean geometry. Elements of inversion. (3 cred.; prereq. 51; IV MTWThF; FolH 101) Carlson

Second Term

- 6. Trigonometry.** (See first term) (I-II MTWThF; JohH 122) Varberg
- 7. College Algebra.** Selected topics in algebra commencing with quadratic equations and extending through the theory of equations, probability,

§§ This course, together with 145B-146 in the second term, in one summer provides the material of a substantial 9-credit sequence as taught in the regular school year.

- and determinants, omitting logarithms. (5 cred.; open to all; prereq. 1 or high school higher algebra; III-IV MTWThF; JohH 122) Krule
- 16. Elementary Mathematical Analysis II.** (See 15, first term) (5 cred.; open to all; prereq. 15; III-IV MTWThF; JohH 309) Olmsted
- 135.* Integral Equations.** Introduction to integral equations with emphasis on applications and techniques of solution including the Fredholm formula, Neumann series, Laplace transforms, successive approximations and numerical methods. Relation of integral equations to systems of linear algebraic equations and to differential equations. (3 cred.; prereq. 51; II MTWThF; JohH 113) Gelbaum
- 145B-146.* Fourier Series and Orthogonal Functions.** (See 144-145A first term) (4½ cred.; prereq. 145A; I MTWThF, JohH 310, III MTWThF, JohH 113) Hatfield
- 176.* Intermediate Differential Equations.** Topics in differential equations not contained in a first course but not requiring a broad background of analysis. Emphasis on linear equations of second order of interest in physics. (3 cred.; prereq. 106; IV MTWThF; JohH 113) Gelbaum

MUSIC (Mus.)

See also Music Education

First Term

- A.** Piano.** (No cred.; for students without entrance requirements in piano; two lessons a week; ar.; ScH 107) Rymer, Weiser
- D.** Voice.** (No cred.; for students without entrance requirements in voice; two lessons a week; ar.; ScH 107) Schuessler, Paige
- 1. Fundamentals of Music.** (2 cred.; nonmusic majors—primarily child welfare students and elementary teachers; III MTWThF; ScH 104) Ar.
- 7B. Ear Training.** Résumé of aural work included in Mus. 4T-6T, with concentration on its application. (3 cred.; no credit allowed if comparable course taken in regular academic year; prereq. #; I, IV MTWThF; ScH 103) Fetler
- 8A. Harmony.** Résumé of part writing and harmonization of chorales which are included in Mus. 1T-3T with concentration on their application. (3 cred.; no credit allowed if comparable course taken in regular academic year; prereq. #; II, VI MTWThF; ScH 103) Fetler
- 10. Introduction to Music.** Basic elements of music, such as notation and characteristics of musical tone, fundamental musical concepts of rhythm, melody, harmony, polyphony, form; demonstrated by recordings and performance of music of all types in western civilization. This with Art 1, Phil. 4 and Spch. 8 forms a sequence in Fine Arts. (4 cred.; IV-V MTWThF; ScH 4) Riedel
- 11.** Piano.** Two lessons a week. (2-4 cred.; ar.; ScH 107) Rymer, Weiser
- 11C.** Class Piano.** Provides instrumental and vocal majors with a practical knowledge of the keyboard. Emphasis on transposition, harmonization, improvisation, sight reading, accompanying, repertory, technique. (2 cred.; prereq. #)
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| <p>Sec. 1, I MTWThF, MusEd 103,
Duckworth</p> <p>Sec. 2, II MTWThF, MusEd 103,
Duckworth</p> | <p>Sec. 3, III MTWThF, MusEd 103,
Duckworth</p> |
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- 12.** Voice.** Two lessons a week. (2-4 cred.; ar.; ScH 107) Schuessler, Paige

- 12C.** Class Voice.** The group approach to vocal literature; fundamentals of breath control and voice production. (2 cred.)
 Sec. 1, I MTWThF, MusEd 4, Paige Sec. 2, II MTWThF, MusEd 4, Paige
- 13.** Violin.** Two lessons a week. (2-4 cred.; ar.; ScH 107) Cullen
- 13B.** Violin.** Two lessons a week. (2-4 cred.; ar.; ScH 107) Druian
- 14.** Viola.** Two lessons a week. (2-4 cred.; ar.; ScH 107) Ar.
- 15.** Violoncello.** Two lessons a week. (2-4 cred.; ar.; ScH 107) Jamieson
- 16.** Double Bass.** Two lessons a week. (2-4 cred.; ar.; ScH 107) Fitch
- 17.** Flute.** Two lessons a week. (2-4 cred.; ar.; ScH 107) Arnegard
- 18.** Oboe.** Two lessons a week. (2-4 cred.; ar.; ScH 107) Angelucci
- 19.** Clarinet, Saxophone.** Two lessons a week. (2-4 cred.; ar.; ScH 107) Fitch, Handlon
- 20.** Bassoon.** Two lessons a week. (2-4 cred.; ar.; ScH 107) Santucci
- 21.** Trumpet.** Two lessons a week. (2-4 cred.; ar.; ScH 107) Adelstein
- 22.** French Horn.** Two lessons a week. (2-4 cred.; ar.; ScH 107) Linder
- 23.** Trombone.** Two lessons a week. (2-4 cred.; ar.; ScH 107) Isaeff
- 24.** Tuba.** Two lessons a week. (2-4 cred.; ar.; ScH 107) Isaeff
- 25.** Percussion.** Two lessons a week. (2-4 cred.; ar.; ScH 107) Dahlgren
- 26.** Harp.** Two lessons a week. (2-4 cred.; ar.; ScH 107) Miller
- 27.** Organ.** Two lessons a week. (2-4 cred.; ar.; ScH 107) Ar.
- 60B-61B-62B.** Instrumental Ensemble.** (2 cred. each; prereq. #; ar.; ScH 107) Druian
- 70. Normal Piano.** For the future and present piano teacher interested in learning group as well as private techniques. Materials from elementary to advanced levels for sight reading, transposition, harmonization, improvisation; accompaniments discussed as well as those for technique and repertory. Hours for practice teaching and demonstration arranged with instructor. (2 cred.; prereq. 2 years of piano; V MTWThF and 1 hr. ar.; MusEd 103) Duckworth
- 97-98-99. Counterpoint.** Strict, 16th-century and Bach-style in 2 and 3 parts; writing of canons, motets, inventions, fugues. (2 cred. each; prereq. 6T; III MTWThF; ScH 103) Fetler
- 104A. American Music.** Music in America from early colonial times to the present through reading and record listening. (3 cred.; jr., sr., grad.; prereq. 36, or 9 cred. in American history or American studies; I MTWThF; ScH 104) Riedel
- 108. Heinrich Schütz: His Life and Works.** Schütz's life as influenced by the political events in central Europe in the first half of the 17th century; Protestant hymn and psalm literature, its musical elaborations in the works of Schütz; Schütz's importance in the fields of the madrigal and monody, sacred concerto and cantata, and passion; Schütz compared to Bach. (3 cred.; prereq. 6 cred. in music history, history of art, German literature, political history to 1700, or #; VI MTWThF; ScH 104) Riedel
- 127-128-129. Composition.** (2 cred. each; prereq. 97-98-99 and 121-122-123; VII MTWThF; ScH 103) Fetler

- 130. Symphonies of the Classical Era.** Rise of the classical symphony through Mozart and Haydn: evolution of its form and style in relation to contemporary thought and art through the French revolution. (3 cred.; prereq. 6 cred. in music history, art, or political history since 1750, or English or German literature since 1750, or #; IV MTWThF; ScH 104) Oberg
- 204.** Graduate Applied Music.** (3 cred.; prereq. placement test by Music Dept. staff; ar.; ScH 107) Ar.
- 209-210-211.* Advanced Topics.** (3 cred. each; V MTWThF; ScH 104) Oberg
- 212.* Special Problems.** (3 to 9 cred.; prereq. 202 or 211; VII W; ScH 104) Oberg
- 227-228-229. Seminar in Composition and Orchestration.** (3 cred. each; prereq. #; VII MTWThF; ScH 103) Fetler

Second Term

- A.** Piano.** (See first term) Rymer, Weiser
- D.** Voice.** (See first term) Schuessler, Paige
- 1. Fundamentals of Music.** (See first term) (I MTWThF; ScH 4) Duckworth
- 7A. Ear Training.** Résumé of aural work included in Mus. 1T-3T, with concentration on its application. (3 cred.; no credit allowed if comparable course taken in regular academic year; prereq. #; II, VI MTWThF; ScH 103) George
- 8B. Harmony.** Résumé of part writing and harmonization of chorales which are included in Mus. 4T-6T, with concentration on their application. (3 cred.; no credit allowed if comparable course taken in regular academic year; prereq. #; I, IV MTWThF; ScH 103) George
- 11.** Piano.** (See first term) Rymer, Weiser
- 11C.** Class Piano.** (See first term)
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|--|---|
| Sec. 1, II MTWThF, MusEd 103,
Duckworth | Sec. 2, III MTWThF, MusEd 103,
Duckworth |
|--|---|
- 12.** Voice.** (See first term) Schuessler, Paige
- 12C.** Class Voice.** (See first term)
- | | |
|----------------------------------|-----------------------------------|
| Sec. 1, I MTWThF, MusEd 4, Paige | Sec. 2, II MTWThF, MusEd 4, Paige |
|----------------------------------|-----------------------------------|
- 13 through 27.**** (See first term)
- 33A. Music Literature.** Various styles, forms, and types of music. (3 cred.; primarily for students not majoring in music; II MTWThF; ScH 104) Oberg
- 60B-61B-62B.** Instrumental Ensemble.** (See first term) Druian
- 106A. American Music.** (See 104A, first term) (III MTWThF; ScH 104) Riedel
- 127-128-129. Composition.** (See first term) George
- 131. Symphonies of Beethoven.** The evolution of Beethoven's symphonic form and style as a reflection of intellectual, political, and artistic currents of the Napoleonic era. (See 130, first term) (IV MTWThF; ScH 104) Oberg
- 204.** Graduate Applied Music.** (See first term) Ar.
- 212.* Special Problems.** (See first term) Oberg
- 227-228-229. Seminar in Composition and Orchestration.** (See first term) George

PERSONAL ORIENTATION

See General Studies

PHILOSOPHY (Phil.)

First Term

1. **Problems of Philosophy.** Introduction to the subject; main fields of investigation; permanent problems; principal methods and schools of philosophy; historical and contemporary views. (3 cred.; soph., jr., sr.; II MTWThF; WeH 202) Sellars
2. **Logic.** Difference between logical and fallacious reasoning; the functions and uses of language; rules of good definition and sound argument. (3 cred.; soph., jr., sr.; IV MTWThF; WeH 202) Raab
3. **Ethics.** Problems which arise when human beings attempt to think systematically about conduct and values (are there absolute standards?—the problem of free will), and a survey of historical views about the right and the good. (3 cred.; soph., jr., sr.; III MTWThF; WeH 202) Terrell
50. **History of Philosophy (Ancient).** Greek philosophy from Thales to (and including) Aristotle. (3 cred.; soph., jr., sr.; I MTWThF; JohH 113) Sellars
106. **American Philosophy (from William James).** Major trends in American philosophy since the close of the 19th century. (3 cred.; I MTWThF; WeH 202) Raab
107. **Philosophy in Modern Literature.** Basic philosophical ideas in modern civilization as they are expressed in major works of literature. (3 cred.; IV MTWThF; JohH 113) Terrell
160. **Philosophy of Science.** An attempt to provide a clear understanding of the meaning, methods, and implications of modern science through the examination of basic concepts, presuppositions, and procedures. Topics include description, explanation, prediction, experimentation; space, time, number, matter, energy; causality, probability, statistics; organic life, evolution, mind. (3 cred.; prereq. 2 or #; II MTWThF; JohH 306) Feigl
190. **Seminar in Philosophy.** Topics to be arranged according to students' interests. (3 cred.; sr., grad.; prereq. 9 credits in philosophy or #; ar.) Staff

Second Term

1. **Problems of Philosophy.** (See first term) (I MTWThF; WeH 202) Donagan
2. **Logic.** (See first term) (II MTWThF; WeH 202) Shaw
52. **History of Philosophy (Modern).** (3 cred.; III MTWThF; WeH 202) Shaw
137. **Kierkegaard and Scandinavian Philosophy.** The philosophical tradition in the Scandinavian countries with special reference to Kierkegaard and his significance. (3 cred.; prereq. 1 course from 50-51-52 or #; IV MTWThF; WeH 202) Magel
151. **Aesthetics.** Nature of the aesthetic experience; standards of aesthetic evaluation; beauty in art and beauty in nature; status of subject matter in the arts; relation of form and content; concepts of representation, expression, style, meaning, and truth in the arts; use of symbols in art; relation of the arts to knowledge and to society; relation of aesthetics to ethics. (3 cred.; jr., sr.; II MTWThF; WeH 206) Donagan
182. **Philosophy of Religion.** Discussion of the ground and sanctions of religion, according to various philosophies. (3 cred.; jr., sr., grad.; prereq. 6 cred.; I MTWThF; JohH 113) Magel

- 191. Seminar in Philosophy.** Topics to be arranged according to students' interest. (3 cred.; sr., grad.; prereq. 9 credits in philosophy or Φ ; ar.) Staff

PHYSICAL EDUCATION FOR WOMEN (P.E.W.)

The following courses may be taken for elective credit in the College of Science, Literature, and the Arts:

First term: P.E.W. 7, 8, 12, 32.

Second term: P.E.W. 7.

PHYSICS (Phys.)

First Term

- 1. Introduction to Physical Science.** Mechanics and heat. Lectures and experimental demonstrations. (3 cred.; open to all; prereq. high school algebra and plane geometry; lect. I MTWThF; Ph 133) Rassweiler
- 1a. Physical Science Laboratory.** Laboratory course given in conjunction with Phys. 1. Combination of 1 and 1a may be applied toward group requirements in SLA. (1 cred.; open to all; prereq. Φ 1) Ar.

Lab. 1, III-IV TTh, ar.

Lab. 2, VI-VII MW, ar.

- 13. General Physics for Engineers, Part I.** Third quarter of sequence. Sound and light. Lab. (one 2-hr. period) included. (2½ cred.; open to all; prereq. 11 and 12 or equiv. and Φ analytical geometry) Valasek

Lect. and quiz III MTWThF, Ph 166

Lab. 3, VI-VII W, ar.

Lab. 1, I-II, T, ar.

4, VI-VII T, ar.

2, I-II W, ar.

- 14. Intermediate General Physics, Part I.** Mechanics and electricity, selected topics. (2 cred.; prereq. 13 and Math. 50 or Φ Math. 50; I MTWThF; Ph 170) Valasek

- 14a. Intermediate Physics Laboratory, Part I.** Laboratory course given in conjunction with Phys. 14. (½ cred.; prereq. 14 or Φ 14) Ar.

Lab. 1, III-IV M, ar.

Lab. 3, VI-VII Th, ar.

2, III-IV W, ar.

Second Term

- 2. Introduction to Physical Science.** Electricity and magnetism. (See 1, first term) (Lect. I MTWThF; Ph 133) Rassweiler

- 2a. Physical Science Laboratory.** (See 1a, first term) (1 cred.; open to all; prereq. Φ 2) Ar.

Lab. 1, III-IV TTh, ar.

Lab. 2, VI-VII MW, ar.

- 13. General Physics for Engineers, Part II.** (See first term) Wall

Lect. and quiz III MTWThF, Ph 166

Lab. 3, VI-VII W, ar.

Lab. 1, I-II T, ar.

4, VI-VII T, ar.

2, I-II W, ar.

- 14. Intermediate General Physics, Part II.** (See first term) (Lect. I MTWThF; Ph 170) Wall

- 14a. Intermediate Physics Laboratory, Part II.** (See first term) Ar.

Lab. 1, III-IV M, ar.

Lab. 3, VI-VII Th, ar.

2, III-IV W, ar.

POLITICAL SCIENCE (Pol.)

First Term

- A. The State in the Modern World.** (Part A of A-B-C) Development, principles, structure, and operation of the modern nation state. (3 cred.; open to all; IV MTWThF; ForH 180) Sibley
- 1. American Government and Politics.** (Part 1 of 1-2-3) Fundamentals of American government, nature and growth of the Constitution, citizenship, individual rights and liberties, political parties, public opinion, nominations, and elections. (3 cred.; open to all; I MTWThF; ForH 185) Jones
- 131. Public Administration.** Organization and areas, administrative responsibility. (3 cred.; prereq. 6 cred., or #; II MTWThF; ForH 185) Polley
- 141. Comparative European Government.** Government and politics of Great Britain. Emphasis is on political customs, party system, elections, problems of administration, and crisis government. (3 cred.; prereq. 6 cred., or #; IV MTWThF; ForH 120) Turner
- 145. Government and Politics of Scandinavian Countries.** Analysis and comparison of the governments of Norway, Denmark, and Sweden with reference to Finland and Iceland. Particular attention given to the Scandinavian form of parliamentary government and to the multi-party structure of Scandinavian politics. (3 cred.; prereq. 6 cred., or #; I MTWThF; ForH 12) Roberts
- 184. International Organization I.** Development and conditions of success. United Nations and regional organizations. (3 cred.; prereq. 6 cred., or #; III MTWThF; ForH 180) Jones
- 222. Seminar in Recent Political Thought.** Topics centering on the problem of freedom in political thought and treated analytically and critically rather than historically. (3 cred.; sr., grad.; prereq. 6 cred., or #; first meeting 8 a.m. first day of classes; ar.) Sibley

Second Term

- B. The State in the Modern World.** (Part B of A-B-C) (See A, first term) (3 cred.; IV MTWThF; ForH 185) Hulicka
- 2. American Government and Politics.** (Part 2 of 1-2-3) Organization of national, state, and local government; legislative, executive, and judicial branches and their procedures. (3 cred.; open to all; I MTWThF; ForH 180) Christensen
- 25. World Politics.** Introduction to the field of contemporary international relations, the policies of the great powers today, nationalism, internationalism, Europe and the postwar settlement. (3 cred.; III MTWThF; ForH 155) McLaughlin
- 114. Institute on Minnesota Government and Politics.** (See Special Programs) The Institute, to be held the first 2 weeks of the second term, is intended to introduce the student to the organization and operation of political parties in Minnesota, with emphasis being placed on the role of the party in the recruitment, nomination, and election of candidates for public office. Campaign management, campaign strategy and techniques, and campaign financing will be covered, as will the role of issues, political interest groups, and the media of communication in the formation of public opinion. Some attention will be devoted to the national party conventions, both of which are scheduled for mid-August. Panels including political party officials, candidates, and workers; journalists, educators, public officials, and leaders of political interest groups will present the topics, the panels being chaired by faculty members. In addition, the Institute will feature group discussions on the various topics and a dinner

meeting. (3 cred.; III-IV, VI MTWThF, July 16-27 only; ar.) Flom and others

Note—A related course on American Political Parties (Pol. 137) may be taken during the last 3 weeks of the second term for 3 additional credits.

- 120. Municipal Functions.** General survey of "line" functions: safety, health, welfare, works, utilities, etc. (3 cred.; prereq. 6 cred., or #; II MTWThF; ForH 150) Ludwig
- 137. American Political Parties.** Role and functions of the party in American government; party composition and organization; process of nomination and policy formulation; regulation of party organization and activities. (3 cred.; prereq. 6 cred., or #; III-IV MTWThF, July 30-August 18; ForH 180) Christensen
- 143. Government and Politics of the USSR and Adjacent States.** Government and politics of Soviet Russia that seeks to explain the rise of Bolshevism; sources and nature of its ideology; history of the Communist regime; institutional character; organization of power; role of the party; foreign, economic, and cultural policies; significance for Western Civilization. (3 cred.; prereq. 6 cred.; II MTWThF; ForH 185) Hulicka
- 183. Recent Problems in International Law.** Recent legal problems in connection with military occupation, war crimes, use and outlawry of atomic weapons, international guarantees of civil liberties, veto power and regional defense pacts in the UN security system. Suggestions for the modernization of international law; prospects for codification. (3 cred.; I MTWThF; ForH 150) McLaughlin

PSYCHOLOGY (Psy.)

First Term

- 1-2.† General Psychology.** Introductory survey of psychology; its materials, fundamental laws, applications, and relations to other sciences. (6 cred.; soph., jr., sr.; III-IV MTWThF; NH 211) Clark
- 125-126.¶¶ Psychology of Individual Differences.** Quantitative studies of such factors as age, sex, race, and nationality, physical traits, family heredity, and environment in the causation of individual differences in abilities and temperament. (6 cred.; sr., grad.; prereq. 1-2, 4-5, or 5 cred. in statistics; II-III MTWThF; WuH 201) Oakes
- 140. Social Psychology.** Experimental investigations of group behavior. Special emphasis upon the place of emotions, drives, and personality traits in the adjustment of individuals to the demands of modern societies. (3 cred.; prereq. 1-2, 4-5, and 9 cred. in social science; II MTWThF; Ph 145) Kelley
- 144-145.† Abnormal Psychology.** Normal and abnormal behavior contrasted. Emphasis on the dynamics, and particularly the social determinants, of personality maladjustments. (6 cred.; 9 cred. in psychology, or 6 cred. in psychology and either Zool. 1-2-3 or 12 cred. in social science; II-III MTWThF; WuH 202) Bird

Second Term

- 1-2.† General Psychology.** (See first term) (II-III MTWThF; WuH 202) Broen
- 4-5.† Introductory Laboratory Psychology.** Simple experiments illustrating subject matter of contemporary psychology. Included are human and

¶¶ 126 may not be taken until after completion of 125.

animal learning, visual experience, differences in artistic, musical, and other kinds of abilities, measurement of each student's personality traits, and reactions to advertisements. (4 cred.; soph., jr., sr.; prereq. 1-2; II-IV MTWThF; Psy 211) Wrightsman

118. **The Psychology of Language.** Nature and forms of verbal behavior; motivational and emotional influences in the emission of speech; problem of reference or meaning; internal language processes; etc. Emphasis on experimental data. (6 cred.; prereq. 9 cred. in psychology, or 6 cred. and #; VI-VII MTWThF; Psy 115) Jenkins, Russell
- 144-145.† **Abnormal Psychology.** (See first term) (II-III MTWThF; WuH 201) Rosen
156. **Psychology of Advertising.** Psychological analysis of the basic principles underlying advertising and selling. Consumer research is stressed. Research techniques for investigating advertising problems and the analysis of consumer wants are considered in detail. (3 cred.; prereq. 1-2 and principles of economics; II MTWThF; Psy 115) Longstaff
160. **Psychology in Personnel Work.** Psychology as applied to selection and retention of a stabilized personnel. Standardized interview; principles and technique of employment tests; methods of judging character qualities; rating scale; personnel classification methods. (3 cred.; prereq. 1-2, 4-5, or 3 cred. in statistics, and principles of economics or #; III MTWThF; Psy 115) Longstaff

ROMANCE LANGUAGES

First Term

FRENCH (Fren.)

1. **Beginning French.** (5 cred.; open to all; no prereq.; I-II MTWThF; FolH 201) Ar.
3. **Intermediate French.** (5 cred.; open to all; prereq. 2, or 3 years of high school French; I-II MTWThF; FolH 202) Ar.
4. **Intermediate French.** (5 cred.; open to all; prereq. 3, or 2 or 3 years of high school French; I-II MTWThF; FolH 202) Ar.
62. **French Civilization and Culture.** (2 cred.; jr., sr., grad.; prereq. 4A or 4B; III TWThF; FolH 202) Desgranges
- 147.* **The Drama of the 20th Century: Cocteau, Anouilh, Montherland, Camus, Sartre.** (2 cred.; prereq. Survey of French Literature or equiv.; II TWThF; FolH 203) Falk
- 154.* **19th-Century Novel: Senancour, Constant, Stendahl, Fromentin.** (2 cred.; prereq. Survey of French Literature or equiv.; III TWThF; FolH 206) Falk
162. **French Civilization and Culture.** (2 cred.; prereq. 4A or 4B; III TWThF; FolH 202) Desgranges
- 259.* **Directed Readings in French.** (Cred. ar.; grad.; prereq. #; ar.) Staff

Note—For a course of special interest to teachers of French, see Ed.C.I. 187A, Teaching of the Analysis of the French Language, under College of Education.

Offered only in Maison Française¶¶

22. **Practical French Conversation.** Primary purpose is to build a practical vocabulary and to give students an opportunity to use it appropriately in

¶¶ See Modern Language Institute.

small drill sections under the guidance of native instructors. (5 cred.; prereq. 1-2 or equiv.) Desgranges and staff

58. Advanced Practical French Conversation. Students will acquire fluency by presenting short oral reports and participating in debates, etc. They will be divided into small groups under the guidance of native instructors. (5 cred.; prereq. 3-4 or equiv.) Desgranges and staff

109a. Oral Diction. To enable advanced students to acquire a finer feeling for the language, a sense of shades of expression, a knowledge of specialized and technical vocabulary, and a complete mastery of certain grammatical and idiomatic difficulties. (4 cred.; prereq. #) Desgranges and staff

SPANISH (Span.)

1. Beginning Spanish. (5 cred.; open to all; III-IV MTWThF; FolH 201) Pattison

3. Intermediate Spanish. (5 cred.; open to all; prereq. 2, or 2 years of high school Spanish; III-IV MTWThF; FolH 203) Grismer

20. Intermediate Spanish. (5 cred.; open to all; prereq. 3, or 3 years of high school Spanish; III-IV MTWThF; FolH 203) Grismer

83. La Novela Hispano-Americana y los Problemas Sociales. (2 cred.; prereq. 20 or 53 or #; VI TWThF; FolH 203) Cuneo

90. Spanish Civilization and Culture. (2 cred.; prereq. 21 or #; I TWThF; FolH 203) Pattison

132.* History of Spanish Drama. (2 cred.; prereq. Survey of the Literature of Spain; II TWThF; FolH 108) Grismer

190. Spanish Civilization and Culture. (2 cred.; jr., sr.; prereq. 21 or #; I TWThF; FolH 203) Pattison

259.* Directed Readings in Spanish. (Cred. ar.; prereq. #; ar.) Staff

Offered only in Casa Hispanica¶¶

22. Practical Spanish Conversation. For students who understand Spanish fairly well but need assurance in self-expression and a basic active vocabulary. Students divided into small groups will devote all their time to practical conversation under the guidance of native instructors. (5 cred.; open to all; prereq. 1-2 or equiv.) Cuneo and staff

58. Advanced Practical Spanish Conversation. Intended primarily to develop self-confidence in expressing ideas in Spanish. The students will be divided into small groups for conversation on assigned topics, informal debates, and oral reports on current events, political and economic life, and development in Latin America and Spain. (5 cred.; open to all; prereq. 3-4 or equiv.) Cuneo and staff

109a. Oral Diction. Study of Spanish expression, enabling advanced students and especially teachers of Spanish to acquire a finer feeling for the language and a mastery of certain grammatical and idiomatic difficulties. (4 cred.; prereq. #) Cuneo and staff

Second Term

FRENCH (Fren.)

2. Beginning French. (5 cred.; open to all; prereq. 1, or 1 year of high school French; I-II MTWThF; ForH 80) Clefton

¶¶ See Modern Language Institute.

142.* **18th-Century French Literature: Voltaire.** (2 cred.; prereq. Survey of French Literature or equiv.; IV TWThF; ForH 80) Clefton

259.* **Directed Readings in French.** (Cred. ar.; prereq. #; ar.) Clefton

SPANISH (Span.)

2. **Beginning Spanish.** (5 cred.; open to all; prereq. 1, or 1 year of high school Spanish; III-IV MTWThF; JohH 115) Ar.

SCANDINAVIAN AREA STUDIES

First Term

Soc.117. Scandinavian Folk Movements: Their Social and Political Significance. Development, structure, and activities of the various Scandinavian folk movements. Organizations for adult education, consumer co-operatives, labor unions, and temperance organizations are some of the groups considered. Latter portion of course will be devoted to gaining a clearer understanding of the relationship of these movements to the individual, to formal government, and to other forms of social organization. (3 cred.; prereq. Soc. 1 or #; III MTWThF; ForH 175) Roberts

Pol.145. Government and Politics of Scandinavian Countries. Analysis and comparison of the governments of Norway, Denmark, and Sweden with reference to Finland and Iceland. Particular attention is given to the Scandinavian form of parliamentary government and to the multi-party structure of Scandinavian politics. (3 cred.; prereq. 6 cred. in political science or #; I MTWThF; ForH 12) Roberts

Second Term

Scan.161.†† The 19th-Century Scandinavian Novel. Examination of "the great tradition" in the modern Scandinavian novel, together with the circumstances, intellectual and political, social and economic, out of which it grew. (3 cred.; prereq. Scan. 4-5-6 or 10-11-12 or 8 cred. in literature; II MTWThF; JohH 306) Gustafson

Scan.171.†† Ibsen and the Beginnings of the Modern Drama. Intensive examination of the plays of Ibsen, especially with reference to the role he has played as "the founder" of the modern European drama. (3 cred.; prereq. Scan. 4-5-6 or 10-11-12 or 8 cred. in literature; IV MTWThF; JohH 310) Gustafson

SCHOOL OF SOCIAL WORK (S.W.)

First Term

Soc.50. Introduction to the Theory and Practice of Social Work. (See Sociology) Cohn

Soc.91. Case Method Applied to the Study of Human Problems. (See Sociology) Cohn

C.W.140. Behavior Problems. (See Institute of Child Welfare) Cummings

275. Social Group Work. Introduction to the social group work method. (3 cred.; IV MTWThF; ForH 175) Pernel

285.* Special Studies in Social Work. Supervised experience in research on an independent project to be offered for fulfillment of degree project require-

††No knowledge of Scandinavian language is required except for majors in Scandinavian.

ments for the MSW degree. (1-9 cred.; prereq. 45 graduate cred. in social work) Pernel

Second Term

C.W.140. Behavior Problems. (See Institute of Child Welfare) Bassham

260. Principles of Administration in Social Work. Process of transforming social policy into social services. (3 cred.; I MTWThF; ForH 175) Kidneigh

285.* Special Studies in Social Work. (See first term) Kidneigh

SOCIAL SCIENCE

See General Studies

SOCIOLOGY (Soc.)

First Term

- 1. Introduction to Sociology: Man in Modern Society.** Characteristics of human group life. An analysis of the factors associated with development of human group life and man's social environment; the structure of the social environment and its influence upon the individual's behavior. (3 cred.; II MTWThF; ForH 155) Taves
- 2. The American Community.** Sociological analysis of modern American society. Topics emphasized include the distribution of population, urban-rural differences, social factors in business systems, occupational groups, determination of social status, and minority group adjustment. An attempt is made to familiarize the student with current research methods. (3 cred.; prereq. 1 or 1A; I MTWThF; ForH 120) Martindale
- 14. Rural Sociology.** Factual data necessary to an understanding of the problems of rural social life. (3 cred.; IV MTWThF; ForH 155) Taves
- 50. Introduction to the Theory and Practice of Social Work.** Survey of social service with consideration of areas of social needs, social agencies, their purpose and function, and the methodology and philosophy of social work practice. (3 cred.; prereq. 3; IV MTWThF; ForH 130) Cohn
- 91. Case Method Applied to the Study of Human Problems.** General application of the interviewing method for students who plan to work in fields involving interpersonal relationships. (3 cred.; prereq. 3 or #; VI MTWThF; ForH 175) Cohn
- 117. Scandinavian Folk Movements: Their Social and Political Significance.** Development, structure, and activities of the various Scandinavian folk movements. Organizations for adult education, consumer co-operatives, labor unions, and temperance organizations are some of the groups considered. Latter portion of course will be devoted to gaining a clearer understanding of the relationship of these movements to the individual, to formal government, and to other forms of social organization. (3 cred.; prereq. 1, or #; III MTWThF; ForH 175) Roberts
- 120. Social Psychology.** Research and theory regarding the relation of the individual to social groups. Emphasis on the socialization processes; effects of social interaction and isolation; individual behavior under conditions of social organization and disorganization; cultural influence and its limits. (3 cred.; prereq. 1 or #; IV MTWThF; ForH 185) Stone
- 140. Social Organization.** Organization and structure of social groups; basic culture patterns of economic, political, and social institutions. Integration and disintegration of social groups and institutions. Essentials of social dynamics. (3 cred.; prereq. 1 or #; I MTWThF; ForH 180) Stone

- 170. Analytical Social Theory.** Examination of the major problems of sociological theory; survey of main types of sociological theory (positivistic, rationalistic, idealistic); study of major theoretical concepts. (3 cred.; prereq. 1 or ‡; III MTWThF; ForH 150) Martindale
- 171. Social Life and Cultural Change.** How man alters his culture especially through his effort to use energy sources other than food. Emerging values and institutions, and their probable future, with particular attention to American developments. (3 cred.; prereq. 1 or ‡; II MTWThF; ForH 150) Cottrell

Second Term

- 1. Introduction to Sociology: Man in Modern Society.** (See first term) (II MTWThF; ForH 155) Donohue
- 3. Social Problems.** (Formerly Soc. 49) Contemporary social problems with especial emphasis on personal demoralization and social disorganization. (3 cred.; IV MTWThF; ForH 155) Francis
- 118. Delinquent Behavior.** Critical analysis of the nature of delinquent behavior and its "causes" with consideration of the help that understanding of causes can give to its modification and its prevention. (3 cred.; prereq. 53, or teaching experience, or ‡; I MTWThF; ForH 185) Monachesi
- 123. Intergroup Relations.** Interaction of social and cultural groups in America. Processes leading to group contact; characteristics and contributions of ethnic groups in the United States; mechanisms and problems of group adjustment. Democratic theory and practice; sources of prejudice; contemporary status of principal minority groups; international implications; trends and proposed solutions. (3 cred.; prereq. 1 or ‡; II MTWThF; ForH 180) Francis
- 162. Rural Social Institutions.** Factors in the rural environment which condition the functioning of rural social institutions, including the family, school, church, local government, health, and welfare. (3 cred.; prereq. 1 or ‡; IV MTWThF; ForH 115) Donohue
- 180. Methods of Social Research.** Major methods employed in social research, including a consideration of their advantages and limitations when applied to specific types of problems. (3 cred.; prereq. 45 or equiv.; III MTWThF; ForH 185) Monachesi

SPEECH AND THEATER ARTS (Spch.)

See *Speech and Drama Institute and Program in Audiology* under Special Programs

First Term

The facilities of the University Speech and Hearing Clinic are available both terms to students desiring a personal speech or hearing analysis or wanting help with their speech or hearing problems. Interested students are invited to confer with Professor E. H. Henrikson, Director of the Speech and Hearing Clinic (Office of the Dean of Students), 205 Shevlin Hall.

- 1.†† Fundamentals of Speech.** Development of basic skills in speech: voice and action, oral reading, discussion, extemporaneous speaking. (3 cred.; fr., soph., jr., sr.) Gilkinson, Smith, and staff

Sec. 1, I MTWThF, FoIH 305
2, II MTWThF, FoIH 305

Sec. 3, IV MTWThF, FoIH 305

†† Credit for Spch. 1 without Spch. 2 by petition only.

2. **Fundamentals of Speech.** Second quarter of 1-2. (3 cred.; fr., soph., jr., sr.; prereq. 1; III MTWThF; FolH 305) Gilkinson, Smith, and staff
3. **Fundamentals of Speech.** Continuation of 1-2. (3 cred.; fr., soph., jr., sr.; prereq. 1-2 or 5; III MTWThF; FolH 305) Gilkinson, Smith, and staff
51. **Advanced Public Speaking.** Preparation and delivery of speeches on current public issues. (3 cred.; prereq. 1-2 or 5; I MTWThF; FolH 308) Gilkinson
61. **Personal Development Through Speech.** Behavior as indicated through speech; speech symptoms evaluated from cause and effect relations; psychologic factors in speech; analysis of individual problems of self-consciousness, stage fright; speech as a means of self-control as applied to teacher and pupil. (3 cred.; prereq. 1-2 or 5, Psy. 1-2; II MTWThF; FolH 308) Bryngelson
65. **Radio and Television Speech.** Speech arts and psychology of radio and television. Practice, exercises, projects, and reports on problems of appeal and audience response. (3 cred.; prereq. 1-2 or 5; IV MTWThF; MurH 302) McGraw
92. **Stage Lighting.** Theory and practice in applying methods and principles of lighting in the theater. (3 cred.; prereq. 1-2 or 5, 31; IV MTWThF; ShH 110) Josal
- 106.* **Discussion.** Co-operative thinking; recognition and definition of problems, critical analysis, examination of possible solutions. Planning, preparing for, participating in, and leading classroom, public, radio, and television discussions. (3 cred.; prereq. 1-2 or 5; I MTWThF; FolH 207) Smith
- 109.* **Classical Rhetoric.** (3 cred.; prereq. 1-2 or 5, and #; III MTWThF; FolH 414) Smith
- 112.* **Stage Direction.** Rehearsal problems and the direction of 2 one-act plays. (3 cred.; sr., grad.; prereq. 1-2 or 5, 31, 32, 33, 34, 91, 92, 93, and #; III MTWThF; ScH 19) Graham
- 119.* **Introduction to Speech Correction.** Basic orientation in speech correction. Analysis of common disorders of speech, their characteristics, prevention, and correction. Designed as a basis for more advanced study in speech pathology or for a basic understanding of the field. (3 cred.; prereq. 1-2 or 5, or #; IV MTWThF; FolH 306) Fletcher
- 122.* **Introduction to Research.** Graduate research in speech; selections of topics and methods of investigation. Required of all graduate majors in speech. (3 cred.; sr., grad.; prereq. 1-2 or 5, Psy. 1-2; II MTWThF; FolH 303) Gilkinson
- 126.* **History and Criticism of Public Address.** Historical and critical studies of oratory. Study of orators: education and training, style, speech composition, topics and issues, historical settings. (3 cred.; prereq. 1-2 or 5, Psy. 1-2; II MTWThF; FolH 303) Gilkinson
- 140.* **Introduction to Voice Science.** Fundamental aspects of the phonetic, anatomic, physiologic, and physical bases of speech. (3 cred.; prereq. 1-2 or 5, Psy. 1-2; I MTWThF; FolH 406) Fletcher
- 152.* **Hearing Disorders.** Basic orientation to audiology. Physiology and anatomy of auditory mechanism. Symptomatology and pathology of hearing disorders, their medical and surgical treatment. Clinical and classroom management, including discovery programs, hearing aids, language development, lip reading, speech correction, auditory training, psychology of hard-of-hearing and deaf, vocational guidance, educational channels. (3 cred.; prereq. 1-2 or 5, 61, 67, Psy. 1-2, or #; IV MTWThF; Mayo A-675) Lassman

155. **Lipreading and Lipreading Methods.** Detailed examination of schools and methods of teaching lipreading. Supervised practice in teaching lipreading to hard-of-hearing persons. (3 cred.; prereq. 1-2 or 5, 67, 152, Psy. 1-2, or #; I MTWThF; Mayo A-675) Lassman
- 157.* **Clinical Practice in Audiology.** Supervised practice with communication problems of deaf and hard-of-hearing persons, including lip reading, auditory training, language development, speech conservation. (3 cred.; prereq. 152, 153, 155, or #; ar.; Hosp D-311) Lassman
- 163.* **Speech Pathology.** Pathologies of speech: causes, characteristics, and therapy. (3 cred.; prereq. 1-2 or 5, 61, 67, 119; III MTWThF; FoH 306) Bryngelson
- 164-165-166.* **Clinical Methods and Practice in Speech Pathology.** (9 cred.; sr., grad.; prereq. 1-2 or 5, 61, 67, 119, 162, 163; ar.) Bryngelson, Henrikson, Ptacek
- 181-182-183.* **Readings in Speech.** Directed reading and preparation of reports on selected subjects. (Cred. ar.; prereq. 1-2 or 5 and 6 additional cred. and #; ar.) Staff
- 192.* **Technical Stage Problems.** Advanced study in theory of scenic design, theater architecture, stagecraft, and lighting. Special projects and reports. (3 cred.; prereq. 111, 112, 113; ar.) Josal
- 261.* **Seminar in Speech Pathology.** (3 cred.; prereq. 122, 163, or #; ar.) Bryngelson, Henrikson
- 291-292-293.* **Research in Special Problems.** (9 cred.; prereq. 1-2 or 5 and #; ar.) Staff

First term speech courses listed under the College of Education:

Ed.C.I.123. **Speech in the Elementary School.** Henrikson

Ed.C.I.140. **Teaching of Speech.** Smith

Second Term

1. **Fundamentals of Speech.** (See first term) (I MTWThF; NH 207) Howell and staff
2. **Fundamentals of Speech.** (See first term) (II MTWThF; ForH 160) Howell and staff
3. **Fundamentals of Speech.** (See first term) (II MTWThF; ForH 170) Howell and staff
33. **Beginning Acting: Stage Technique.** Fundamentals of body movement, rhythm, and stage technique. Individual and group performances. (3 cred.; prereq. 32; II MTWThF; ShH 115) Moulton
66. **Radio and Television Drama.** Historical development of radio and television drama, with an analysis of the various types of dramas including production, direction, and acting techniques. (3 cred.; prereq. 1-2 or 5 [65 recommended]; I MTWThF; MurH 302) McGraw
81. **Interpretative Reading.** Aesthetic theory of literature and of oral reading. Practice in reading for interpretation and mastery of technique. Deals with prose fiction. (3 cred.; prereq. 1-2 or 5; III MTWThF; WeH 302) Thompson
- 103.* **Argumentation and Persuasion.** Theories of modern motivational rhetoric. Analysis of persuasive speaking; practice in preparation and delivery of oral argument. (3 cred.; prereq. 1-2 or 5, Psy. 1-2, 10 cred. in social science; IV MTWThF; MurH 302) Howell

- 106.* **Discussion.** (See first term) (I MTWThF; NH 209) Howell
- 107.* **Platform Reading.** Advanced course in oral interpretation of selected poems and plays. Speech melody, rhythm, platform technique. Problems in aesthetic analysis. Lecture recitals. (3 cred.; prereq. 81, 82, 83 with a grade of B in 83; II MTWThF; WeH 302) Thompson
- 112.* **Stage Direction.** Rehearsal problems and the direction of 2 one-act plays. (3 cred.; sr., grad.; prereq. 1-2 or 5, 31, 32, 33, 34, 91, 92, 93, and #; III MTWThF; ShH 115) Whiting
- 127.* **Language Training for the Deaf.** Language problems resulting from marked and/or early deafness. Methods of developing and teaching language to the deaf. Underlying theory and supervised practice with deaf individuals. (3 cred.; prereq. 152 or #; I MTWThF; WeH 302) Simmons
- 131.* **Creative Dramatics.** Principles and methods of developing original dramatizations with children. Observation of children's classes in creative dramatics. Readings, projects, term papers. (3 cred.; prereq. 1-2 or 5, 31 or elementary education major, or # [Ed.C.I. 63 recommended]; IV MTWThF; NH 209) Graham
- 132.* **Children's Theater.** Theory and practice of selection, direction, and production of plays for children's audiences, co-ordinated with current productions of the Young People's University Theater. (3 cred.; prereq. 1-2 or 5, 31 or #; II MTWThF; NH 209) Graham
- 156.* **Auditory Training.** Problems of auditory discrimination and of hearing aid usage in persons with hearing deficiencies. Methods of developing skills in listening with and without acoustic amplification. Supervised practice with acoustically handicapped children and adults. (3 cred.; prereq. 152 or #; IV MTWThF; WeH 302) Simmons
- 164-165-166.* **Clinical Methods and Practice in Speech Pathology.** (See first term) (Ar.) Bryngelson, Henrikson, Ptacek
- 169.* **Speech and Language in Human Behavior.** Basic orientation in the place of speech and language in human behavior. Individual projects and collateral reading. (3 cred.; prereq. #; II MTWThF; Ph 170) Ptacek
- 181-182-183.* **Readings in Speech.** (See first term) (Ar.) Staff
- 203.* **Debate Coaching.** Study of literature concerning and methods of directing extracurricular interscholastic public speaking, discussion, and debate activities. Each seminar member directs the preparation and practice of a group of undergraduate student speakers. (2 cred.; prereq. 1-2 or 5, 101-102-103, Psy. 1-2, 10 credits in social science; ar.) Howell
- 291-292-293.* **Research in Special Problems.** (See first term) (Ar.) Staff
- For speech courses listed under the College of Education see:
- Ed.C.I.174-175-176. **Clinical Methods and Practice in Speech Pathology.**
(3 cred.) Bryngelson
- See also Speech and Drama Institutes under Special Programs.

ZOOLOGY (Zool.)

First Term††

- 1.11 **General Zoology.** Structure, physiology, embryology, classification, and evolution of animals. (5 cred.; lect. V MTWTh, V-VI F, Bo B6; lab. VI-VIII MTWTh, Z 101) Olson

†† For additional courses in the first term, see Lake Itasca Forestry and Biological Station.

‡‡ Entire course in elementary zoology includes both 1 and 2. No credit is given for 1 until the satisfactory completion of 2.

100. Zoological Techniques. (Cred. and hrs. ar.; grad. only) Staff

197.* Problems. Advanced work in some special line. (3 cred. or more; prereq. 1-2-3 and special requirements; ar.) Ar.

Second Term

2.11 General Zoology. Continuation of 1. (See first term) (5 cred.; open to all; prereq. 1 or equiv.; lect. V MTWTh, V-VI F, Bo B6; lab. VI-VIII MTWTh, Z 101) Merrell

83. Introduction to Genetics and Eugenics. Facts and theories of heredity with special reference to man; chances of man to inherit traits; possible benefits of control by man for the betterment of himself and society. (3 cred.; jr., sr.; prereq. 1-2-3 or equiv. or 10 cred. in botany; II MTWThF; Bo B6) Merrell

101. Zoological Techniques. (Cred. and hrs. ar.; grad. only) Staff

198.* Problems. Advanced work in some special line. (3 cred. or more; prereq. 1-2-3 and special requirements; ar.) Ar.

11 Entire course in elementary zoology includes both 1 and 2. No credit is given for 1 until the satisfactory completion of 2.

INSTITUTE OF TECHNOLOGY

College of Engineering††

CIVIL ENGINEERING (C.E.)

First Term

23. **Surveying Camp.** (Page 80) (9 cred.; prereq. 20; ar.) Kersten, Fant, Johnson

DRAWING AND DESCRIPTIVE GEOMETRY (Draw.)

First Term

4. **Engineering Drawing.** (Page 84) (3 cred.; prereq. 10; VI-VIII MWThF, VI-IX T; E 18) Springer
6. **Engineering Drawing.** (Page 85) (3 cred.; prereq. 5; VI-VIII MWThF, VI-IX T; E 201) Schuck
34. **Lettering.** (Page 85) (1 cred.; prereq. 4; V MW; E 18) Schuck

Second Term

5. **Descriptive Geometry.** (Page 85) (3 cred.; prereq. 4; VI-VIII MWThF, VI-IX T; E 18) Palmer
10. **Solid Geometry.** (Page 85) (No cred.; prereq. plane geometry; VI MTWThF; E 201) Kleinhenz
34. **Lettering.** (See first term) (V MW; E 18) Kleinhenz

ELECTRICAL ENGINEERING (E.E.)

First Term

36. **Electrical Engineering Survey.** (Page 87) (3 cred.; for M.E. and Chem.E.; prereq. M.M. 26 or 84) Caverley

Lect. IV MTWTh, EE 237
Lab. 1, VI-IX M, EE 207c
2, VI-IX T, EE 207c

Lab. 3, VI-IX W, EE 207c
4, VI-IX Th, EE 207c

Second Term

37. **Electrical Engineering Survey.** (Page 87) (3 cred.; for M.E. and Chem.E.; prereq. 36) Cartwright

Lect. IV MTWTh, EE 237
Lab. 1, VI-IX M, EE 207a
2, VI-IX T, EE 207a

Lab. 3, VI-IX W, EE 207a
4, VI-IX Th, EE 207a

†† The page number in parentheses after the course title indicates the page in the *Bulletin of the Institute of Technology* for 1955-57 on which course description is given.

ENGINEERING ENGLISH (Engl.)

Comp. 4, 5, 6, in the College of Science, Literature, and the Arts are open to students in the Institute of Technology.

First Term

85. **Advanced Technical Communication.** (3 cred.; prereq. 6) Haga

Sec. 1, I MTWThF, E 215

Sec. 2, II MTWThF, E 215

Second Term

86. **Advanced Technical Communication.** (3 cred.; prereq. 85) Guthrie

Sec. 1, I MTWThF, E 215

Sec. 2, II MTWThF, E 215

GENERAL ENGINEERING (G.E.)

First Term

70. **The Slide Rule.** (Page 92) (1 cred.; prereq. I.T.M. 11 or ¶11; V TTh; E 106) Springer

Second Term

70. **The Slide Rule.** (See first term) (V TTh; E 106) Kleinhenz

HYDROMECHANICS (Hydr.)

First Term

103. **Fluid Mechanics.** (Page 97) (5 cred.; prereq. M.M. 26 or 84; I-II MTWThF; ME 114) Olson

104. **Hydraulics Laboratory.** (Page 97) (1 cred.; prereq. 101 or 102 or 103 or Ch.En. 101, or ¶101 or 102 or 103 or Ch.En. 101) Olson

Sec. 1, VI-IX T, Ex 138

Sec. 2, VI-IX Th, Ex 138

INDUSTRIAL ENGINEERING (I.E.)

First Term

90.§§ **Industrial Assignment, Part I.** (Page 98) (1½ cred.; prereq. ¶work-study program; ar.) Algren

91.§§ **Industrial Assignment, Part I.** (Page 98) (1½ cred.; prereq. ¶work-study program; ar.) Algren

92.§§ **Industrial Assignment, Part I.** (Page 98) (1½ cred.; prereq. ¶work-study program; ar.) Algren

93.§§ **Industrial Assignment, Part I.** (Page 98) (1½ cred.; prereq. ¶work-study program; ar.) Algren

94.§§ **Industrial Assignment, Part I.** (Page 98) (1½ cred.; prereq. ¶work-study program; ar.) Algren

95.§§ **Industrial Assignment, Part I.** (Page 98) (1½ cred.; prereq. ¶work-study program; ar.) Algren

§§ These courses carry 3 credits and will be given on a quarter basis. Credit not given for first term unless course is completed second term.

150. Elements of Industrial Engineering and Management. (Page 98) (3 cred.; prereq. 3rd yr.) Block

Lect. 1, II MTWThF, VI T, ME 102 Lec. 2, III MTWThF, IV F, ME 102

Second Term

- 90.§§ Industrial Assignment, Part II.** (See first term) Algren
91.§§ Industrial Assignment, Part II. (See first term) Algren
92.§§ Industrial Assignment, Part II. (See first term) Algren
93.§§ Industrial Assignment, Part II. (See first term) Algren
94.§§ Industrial Assignment, Part II. (See first term) Algren
95.§§ Industrial Assignment, Part II. (See first term) Algren

MATHEMATICS (I.T.M.)

See also Mathematics, College of Science, Literature, and the Arts

First Term

- 12. College Algebra and Trigonometry II.** (Page 100) (5 cred.; prereq. 11; III-IV MTWThF; E 203) Culmer
13. Analytic Geometry. (Page 100) (5 cred.; prereq. 11, 12 and Draw. 10 or equiv.; I-II MTWThF; E 106) Loye
25. Calculus II: Integral. Integration, definite integral, geometric applications, liquid pressure, work, centroids, moments of inertia, multiple integrals, infinite series, expansion of functions. (5 cred.; prereq. 24; I-II MTWThF; E 205) Stenberg
80. Elementary Differential Equations. Equations of first order, singular solutions; linear equations with constant coefficients, simultaneous equations, integration in series, numerical solutions. (3 cred.; prereq. 25; III MTWThF; E 205) Wilcox
132. Introduction to Statistics and Probability. Descriptive statistics, correlation, permutations and combinations, probability distributions, elementary limit theorems. (3 cred.; prereq. 25; I MTWThF; E 104) Lindgren
150.¶¶ Calculus III. Intermediate Calculus. Limit concept, derivative, Riemann integral, numerical integration, partial differentiation, multiple integrals. (3 cred.; prereq. 25; II MTWThF; E 104) Munro
154.* Vector Analysis. (3 cred.; prereq. 25; IV MTWThF; E 205) Wilcox
168. Elementary Theory of Complex Variables. Derivative and integral of a function of a complex variable. Cauchy's integral theorem and formula, residues. Application to evaluation of integrals, conformal mapping. (3 cred.; prereq. 152 and 153, or #; III MTWThF; E 104) Munro

Second Term

- 13. Analytic Geometry.** (See first term) (I-II MTWThF; E 106) Polansky
25. Calculus II: Integral. (See first term) (III-IV MTWThF; E 106) Braden

§§ These courses carry 3 credits and will be given on a quarter basis. Credit not given for first term unless course is completed second term.

¶¶ 152 and 153 may be taken simultaneously in the second term; 150, 152, and 153 form a 9-credit sequence regularly taught during the academic year.

- 90.¶¶ Industrial Assignment, Part II. (See first term) Algren
 91.¶¶ Industrial Assignment, Part II. (See first term) Algren
 92.¶¶ Industrial Assignment, Part II. (See first term) Algren
 93.¶¶ Industrial Assignment, Part II. (See first term) Algren
 94.¶¶ Industrial Assignment, Part II. (See first term) Algren
 95.¶¶ Industrial Assignment, Part II. (See first term) Algren
 131. Thermodynamics. (Page 106) (3 cred.; prereq. 130) Ibele
 Lect. 1, I MTWThF, VI T, ME 208 Lect. 2, II MTWThF, VI M, ME 208
 180. Refrigeration. (Page 108) (3 cred.; prereq. 132) Threlkeld
 Lect. 1, II MTWThF, VII F, ME 214 Lect. 2, III MTWThF, IV F, ME 214

MECHANICS AND MATERIALS (M.M.)

First Term

26. Engineering Statics. (Page 110) (5 cred.; prereq. I.T.M. 25; I-II MTWThF; E 203) Anderson
 127. Engineering Dynamics. (Page 110) (5 cred.; prereq. 26; I-II MTWThF; Ex 193) Warner
 128. Engineering Solid Mechanics. (Page 110) (5 cred.; prereq. 26) Miller, Doeringsfeld
 Sec. 1, III-IV MTWThF, E 106 Sec. 2, III-IV MTWThF, Ex 193
 141. Solid Mechanics Laboratory. (Page 111) (1 cred.; prereq. 185 or 128) Miller, Anderson
 Sec. 1, VI-VII MW, Ex 130 Sec. 2, VI-VII TTh, Ex 130

Second Term

127. Engineering Dynamics. (See first term) Doeringsfeld, Hsiao
 Sec. 1, III-IV MTWThF, Ex 193 Sec. 2, III-IV MTWThF, Ex 22
 128. Engineering Solid Mechanics. (See first term) (I-II MTWThF; Ex 193) Miller

School of Chemistry

ANALYTICAL CHEMISTRY (An.Ch.)

First Term

1. Quantitative Analysis. (Gravimetric) Introductory course covering general principles and methods of gravimetric analysis. Typical problems are assigned and attention given to proper laboratory practice. (5 cred.; prereq. In.Ch. 13 [for chemists], In.Ch. 12 [for chem. eng.]; lect., rec., quiz V-VI TTh, V F, C 325; lab. V-VIII MW, VII-VIII TTh, VI-VIII F, C 310) Herr

¶¶ These courses carry 3 credits and will be given on a quarter basis. Credit not given for first term unless course is completed second term.

7. **Quantitative Analysis.** (Premed.) Introductory course covering the general principles and methods of quantitative analysis, both gravimetric and volumetric. Typical problems are assigned and attention given to proper laboratory practice. (4 cred.; prereq. In.Ch. 11 or 12; lect., rec., quiz V MWF, C 325; lab. VI-VIII MWF, V-VIII TTh, C 310) Herr
- 123.* **Advanced Analytical Chemistry.** Analysis of complex materials by modern methods. (3 cred.; prereq. 1, 2, or 4; ar.) Herr
- 301.* **Research in Quantitative Analysis.** (Cred. and hrs. ar.) Herr

INORGANIC CHEMISTRY (In.Ch.)

First Term

4. **General Inorganic Chemistry.** Study of the general laws of chemistry and of the nonmetals and their compounds. (4 cred.; for premedics, etc; lect. II MTWThF, C 100; rec. V T, C 100; lab. V-VII MW, C ar.) Brasted
9. **General Inorganic Chemistry.** Study of the general laws of chemistry and of the nonmetals and their compounds. (5 cred.; lect. I MTWThF, C 100; rec. V Th, C 100; lab. V-VIII MWF, C ar.) Ar.
11. **Semimicro Qualitative Analysis.** Laboratory work in systematic qualitative analysis of the cations with lectures on solutions, ionization, chemical and physical equilibria, oxidation and reduction, etc. (4 cred.; prereq. 2 or 5 or 7 or 10 or 15; lect. III MTWThF, C 100; rec. V M, C 100; lab. V-VIII MW, C ar.) Britton
12. **Semimicro Qualitative Analysis.** Laboratory work in systematic qualitative analysis of the cations with lectures on solutions, ionization, chemical and physical equilibria, oxidation and reduction, etc. (5 cred.; prereq. 2 or 5 or 7 or 10 or 15; lect. III MTWThF, C 100; rec. V M, C 100; lab. V-VIII MWF, C ar.) Britton
- 104.* **Chemistry of the More Representative Elements.** (4 cred. for grad., 3 cred. for undergrad.; prereq. An.Ch. 1, 2, Or.Ch. 62; lect. I MTWThF, C 215; rec. IV Th, C 115) Britton
- 105.* **Co-ordination Compounds.** (3 cred.; prereq. An.Ch. 1, 2, Or.Ch. 62; lect. IV MTWThF, C 215; rec. I Th, C 115) Brasted
- 301.* **Research in Inorganic Chemistry.** (Cred. and hrs. ar.) Brasted, Britton, and ar.

Second Term

5. **General Inorganic Chemistry.** (See 4, first term) (4 cred.; prereq. 4; lect. II MTWThF, C 100; rec. V T, C 100; lab. V-VII MW, C ar.) Reynolds
10. **General Inorganic Chemistry.** (See 9, first term) (5 cred.; prereq. 9; lect. I MTWThF, C 100; rec. V Th, C 100; lab. V-VIII MWF, C ar.) Pervier
11. **Semimicro Qualitative Analysis.** (See first term) (Lect. III MTWThF, C 100; rec. V M, C 100; lab. V-VIII MW, C ar.) Pervier
12. **Semimicro Qualitative Analysis.** (See first term) (Lect. III MTWThF, C 100; rec. V M, C 100; lab. V-VIII MWF, C ar.) Pervier
- 103.* **Atomic Structure and the Properties of the Elements Based Thereon.** (3 cred.; prereq. An.Ch. 1, 2, Or.Ch. 62; lect. IV MTWThF, C 100; rec. V T, C 215) Reynolds
- 302.* **Research in Inorganic Chemistry.** (Cred. and hrs. ar.) Pervier, Reynolds

ORGANIC CHEMISTRY (Or.Ch.)

First Term

- 61.†† Elementary Organic Chemistry.** (For all colleges) Discussion of important classes of organic compounds, both aliphatic and aromatic. Laboratory includes the preparation of typical substances. (4 cred.; prereq. 12-15 cred. in chemistry; lect. I MTWThF, C 325; rec. II TTh, C 325; lab. II-IV MWF, C 390; lab. conf. III TTh, C 325) Lauer
- 102. Organic Qualitative Analysis.** (Elementary course) Introduction to the methods of organic qualitative analysis. (4 cred.; limited to 20 students; prereq. 1 year of organic chemistry; lect. II MW, C 315; 12 hrs. of lab work ar.) Wright
- 110. Organic Qualitative Analysis.** (Advanced course) Reactions of typical functional groups, identification of pure organic compounds, separation and identification of constituents of mixtures. (4 cred.; limited to 20 students; prereq. 102 or equiv.; lect. IV MW, C 315; 12 hrs. of lab. work ar.) Wright

Second Term

- 62.†† Elementary Organic Chemistry.** (See 61, first term) (4 cred.; prereq. 61; lect. I MTWThF, C 325; rec. II TTh, C 325; lab. II-IV MWF, C 390; lab. conf. III TTh, C 325) Noland
- 139. Advanced Organic Chemistry Laboratory Work.** Selected laboratory problems of an advanced nature, including some original work. Ability to read German assumed. (3 cred.; limited to 20 students; prereq. 63 and 64; ar.) Wright

PHYSICAL CHEMISTRY (P.Ch.)

First Term

- 104.105. Physical Chemistry Laboratory.** (1 or 2 cred.; prereq. 101 for 104, 102 for 105; VI-VIII MW; C 190) Wertz
- 107.‡‡ Elementary Physical Chemistry.** (3 cred.; primarily for premed. students; prereq. 2 years of college chemistry, 1 year of college physics, Math. 15-16 or 6-7; lect. I MTWTh, C 225; rec. I F, C 225; lab. VI-VIII MW, C 190) Wertz
- 301. Research in Physical Chemistry.** (Cred. and hrs. ar.) Staff

Second Term

- 105.106. Physical Chemistry Laboratory.** (1 or 2 cred.; prereq. 102 for 105, 103 for 106; VI-VIII MW; C 190) Wertz
- 108.‡‡ Elementary Physical Chemistry.** (3 cred.; primarily for premed. students; prereq. 107; lect. I MTWTh, C 225; rec. I F, C 225; lab. VI-VIII MW, C 190) Wertz
- 301. Research in Physical Chemistry.** (See first term) Staff

†† To receive credit for any part of this course, a student must complete both 61 and 62.

‡‡ Course 108 is a continuation of 107. The entire course 107-108 must be completed before credit will be assigned (6 credits). Grades will not be sent in at the end of the first term.

School of Mines and Metallurgy†† §§

METALLURGY (Met.E.)§§

First Term

- 124.* **Special Problems in Mineral Dressing.** (Page 113) Detailed study of mineral dressing problems. (Cred. and hrs. ar.; prereq. 112) Cooke
156. **Physical Metallurgy.** (Mech.E., Min.E., Pet.E., Ag.E., Aero.E.) (Page 114) (3 cred.; prereq. 3rd yr.) Jerabek
160. **Physical Metallurgy.** (Chem.E.) (Page 114) (3 cred.; prereq. 3rd yr.) Jerabek
- 170-171.* **Special Problems in Physical Metallurgy.** (Page 114) (1, 2, or 3 cred.; prereq. 5th yr. Met.E. or grad.; hrs. ar.) Jerabek
- 201.* **Research in Process Metallurgy.** (Page 114) (Cred. ar.)

Second Term

- 124.* **Special Problems in Mineral Dressing.** (See first term)
- 170-171.* **Special Problems in Physical Metallurgy.** (See first term)
- 201.* **Research in Process Metallurgy.** (See first term)

MINING ENGINEERING (Min.)§§

First Term

15. **Mine Surveying Field Work.** (Page 115) (6 cred.; prereq. 13; 4 weeks beginning about June 15) Yardley, Lacabanne
- 151-152-153.* **Special Mining Engineering Problems.** (Page 115) (Cred. and hrs. ar.; prereq. 113) Ar.

Second Term

- 151-152-153.* **Special Mining Engineering Problems.** (See first term)

Third Term

139. **Mining Field Trip.** (Page 116) Study of mining operations, mine plant, and metallurgical plants in several mining camps. Engineering report. (6 cred.; prereq. ‡; 3 weeks beginning about September 1) Pfeider, Bruzewski

PETROLEUM ENGINEERING (Pet.E.)§§

First Term

- 155-156-157.* **Special Problems in Petroleum Engineering.** (Page 118) (Cred. and hrs. ar.; prereq. †144 or 145, or ‡) Lacabanne

Second Term

- 155-156-157.* **Special Problems in Petroleum Engineering.** (See first term)

†† The page number in parentheses after the course title indicates the page in the *Bulletin of the Institute of Technology* for 1955-57 on which course description is given.

§§ Open only to students previously registered at the University of Minnesota. Advance arrangement necessary.

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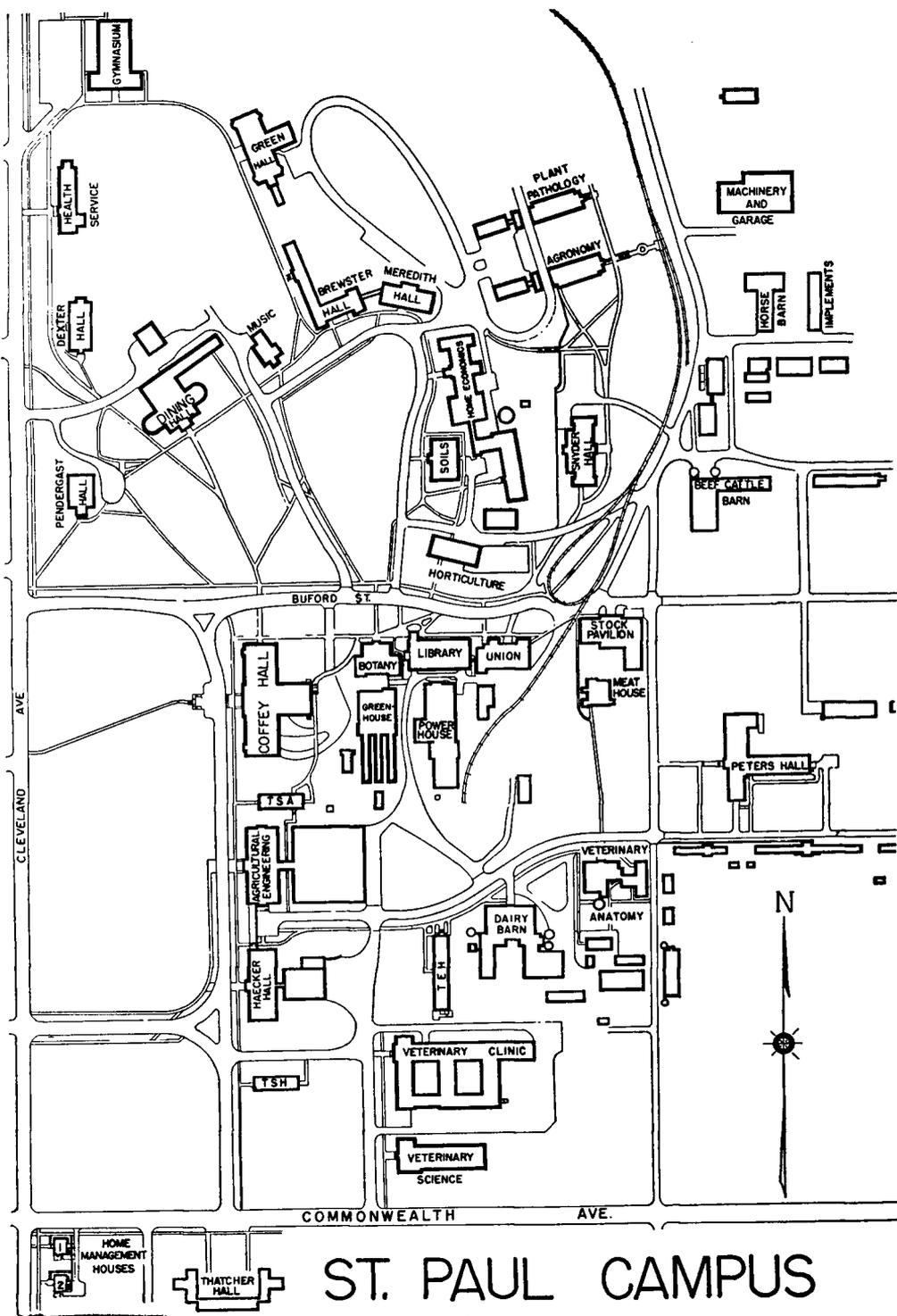
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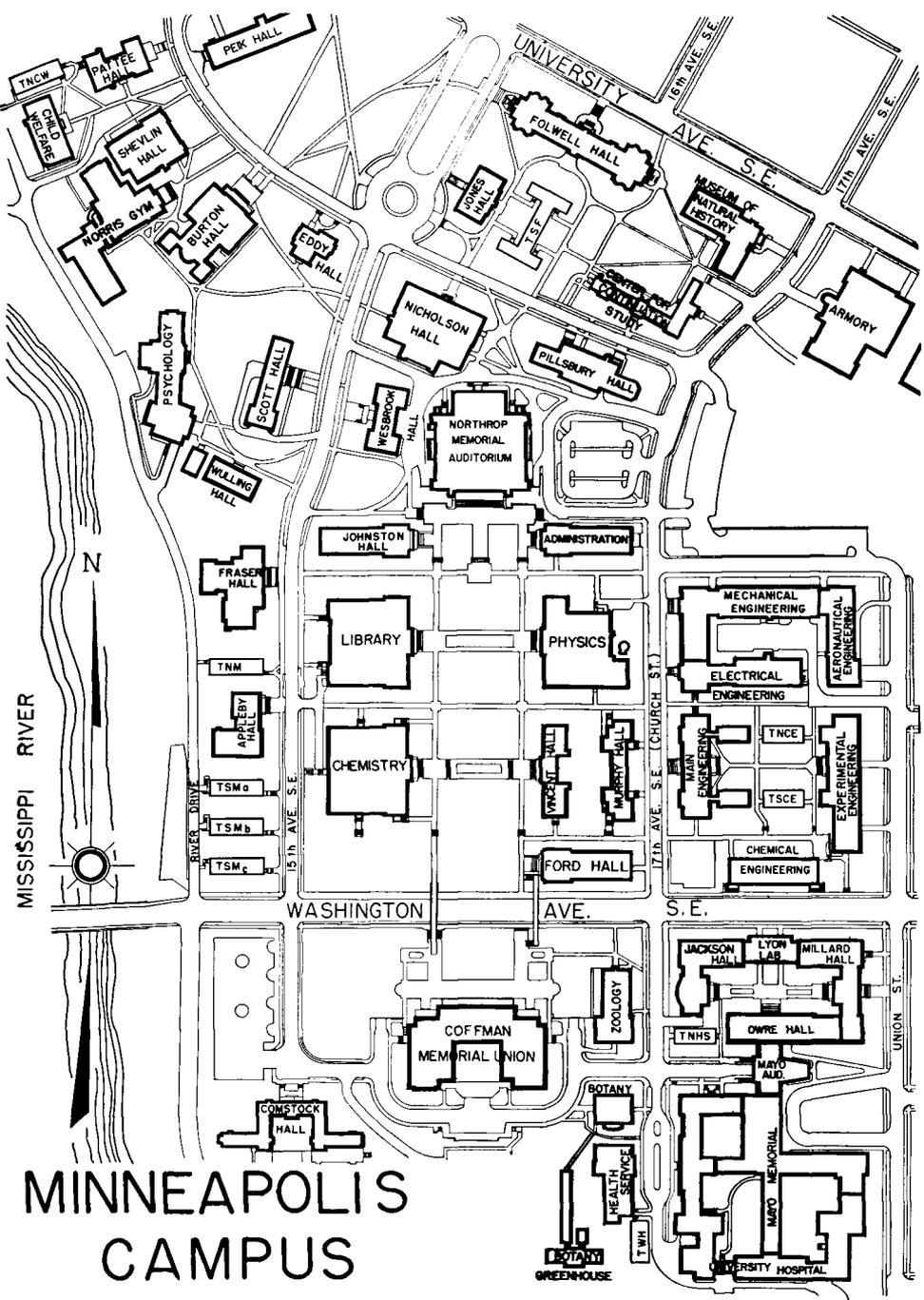
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ST. PAUL CAMPUS



MINNEAPOLIS CAMPUS

Building Abbreviations

A, Armory
AE, Aeronautical Engineering
Ag(StP), Agronomy
AgLib(StP), Agricultural Library
AgrBot(StP), Agricultural Botany
AH, Appleby Hall
Bo, Botany
Bu, Burton Hall
C, Chemistry
CH, Cooke Hall
ChE, Chemical Engineering
CofH(StP), Coffey Hall
CW, Child Welfare
DCB(StP), Dairy Cattle Barn
E, Main Engineering
EdH, Eddy Hall
EE, Electrical Engineering
En(StP), Agricultural Engineering
Ex, Experimental Engineering
FieldHse, Fieldhouse
FolH, Folwell Hall
ForH, Ford Hall
FraH, Fraser Hall
GH(StP), Green Hall
Gy(StP), Gymnasium
HE(StP), Home Economics
HH(StP), Haecker Hall
Hosp, University Hospitals
Hr(StP), Horticulture
J, Jones Hall
JacH, Jackson Hall
JohH, Johnston Hall
Lib, Library
LsPav(StP), Livestock Pavilion
LyonL, Lyon Laboratories
Mayo, Mayo Memorial
ME, Mechanical Engineering
MeH(StP), Meredith Hall
MEx, Mines Experiment Station
MH, Millard Hall
MMA, Mayo Memorial Auditorium
MNH, Museum of Natural History
MSh(StP), Meat Shop
MurH, Murphy Hall
MusEd, Music Education
NGW, Norris Gymnasium for Women
NH, Nicholson Hall
NMA, Northrop Memorial Auditorium
Owre, Owre Hall
P, Pillsbury Hall
PeikG, Peik Hall Gymnasium
PeikH, Peik Hall
PetH(StP), Peters Hall
Ph, Physics
PoH, Powell Hall
PP(StP), Plant Pathology
Psy, Psychology
Pt, Pattee Hall
SBH, State Board of Health
Sch, Scott Hall
ShH, Shevlin Hall
SnH(StP), Snyder Hall
So(StP), Soils
TCH, Temporary, Court of Hospitals
TEH(StP), Temporary, East of Haecker Hall
TNCE, Temporary, North Court of Engineering
TNCW, Temporary, North of Child Welfare
TNHS, Temporary, North of Health Service
TNM, Temporary, North of Mines (Appleby Hall)
TSA(StP), Temporary, South of Administration (Coffey Hall)
TSCE, Temporary, South Court of Engineering
TSF, Temporary, South of Folwell
TSH(StP), Temporary, South of Haecker Hall
TSMa, First Temporary, South of Mines (Appleby Hall)
TSMb, Second Temporary, South of Mines (Appleby Hall)
TSMc, Third Temporary, South of Mines (Appleby Hall)
TWH, Temporary, West of Hospitals
VCHH, Variety Club Heart Hospital
VetA(StP), Veterinary Anatomy
VetC(StP), Veterinary Clinic
VetS(StP), Veterinary Science
VH, Vincent Hall
WeH, Westbrook Hall
WuH, Wulling Hall
Z, Zoology