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BULLETIN OF THE UNIVERSITY OF MINNESOTA

1957

summer
session



preliminary announcement

Volume LX, Number 2

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UNIVERSITY OF MINNESOTA

Minneapolis Minnesota

SUMMER SESSION

First Term

June 17- July 20

Second Term

July 22 - August 24



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 1957. We hope that you will be among those who accept the invitation.



Special Programs

**SPECIAL
PROGRAMS
INFORMATION**

The programs listed in this section are new or outstanding projects of special interest. For further information about any of these programs, for copies of the Complete Summer Session Bulletin, or for additional copies of this bulletin write to the Dean of Summer Session, 750 Johnston Hall, University of Minnesota, Minneapolis 14.

**INTENSIVE
RUSSIAN**

An unusual opportunity for intensive study of the Russian language is offered for the second time in the Summer Session. Students, with no knowledge of Russian, may register for Russian 1a-2a (Slavic and Oriental Languages) in the first term and devote twenty hours weekly to the mastery of this important language.

Russian 1a-2a will present a balanced approach to the language, with the first two hours of each morning devoted to reading and composition, while the second two hours will be occupied by actual conversation between students and native speakers in small drill sections.

There is a special course fee of \$20 per term in addition to the regular Summer Session fees.

**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.

Other courses in which radio and television students may be interested are the Opera Production courses offered co-operatively by the Department of Speech and Theater Arts (147, 148) and the Department of Music (147, 148); Television in the High School Classroom (Curriculum and Instruction 111), a new course designed for high school teachers of social studies and the language arts should benefit persons interested in this field; and the Development of Radio and Television Communications (Journalism 120).

**SEMINARS
ON SCHOOL
PSYCHOLOGY**

Two seminars in the first term will provide instruction on problems and methods in school psychology. Introduction to School Psychological Services (Educational Psychology 152) will emphasize the relationship of the psychologist to teachers, administrators, parents, and the community, and the use of various resources by the specialist dealing with psychological problems of children in the schools. A Seminar and Laboratory in School Psychological Services (Educational Psychology 153) will include seminar research reports, field visits, clinic observation, and supervised experience in case study for staff members already having some experience in school psychological work. An outstanding school psychologist will direct the seminars with several of the resident graduate faculty co-operating.

**GRADUATE
PROGRAM FOR
COUNSELORS**

Introductory and advanced training for counselors is featured at the University of Minnesota. In both terms, complete offerings of graduate courses for high school counselors will be available, as well as courses for college student personnel workers. A special leaflet describing this work will be sent on request.

**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 the Institute at the Center for Continuation Study, to be held June 24 through June 28. The Institute will emphasize sound practices for elementary and secondary school instruction in the language arts.

**DRIVER
EDUCATION**

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

**HIGHER
EDUCATION
WORKSHOP**

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

**WORKSHOP FOR
INDUSTRIAL
ARTS
TEACHERS**

In the first term, 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, two workshops are scheduled for the first term: Improvement of Instruction in the Secondary School (Curriculum and Instruction 270) and Problems in State

School Administration (Educational Administration 234). Each 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 the 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.

**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 (Educational Administration 167).

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

Special observation facilities will be provided in the first term at the Tuttle Elementary Demonstration School to illustrate the adaptation of educational procedures for blind children. In addition, two courses especially designed for teachers of the visually handicapped are included in first term offerings; one on teaching Braille and the other on visual impairment (Curriculum and Instruction 178, 179).

**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. In University High School, a new class combining instruction in art and industrial arts will provide particularly useful observation for teachers in these areas.

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

**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 (General Education 75A, first term, and 75B, second term) have been planned particularly for persons with Bachelor's degrees who wish to prepare themselves for teaching in the elementary schools. Admission to the College of Education as a regular student is prerequisite for registration in these courses.

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

**SPECIAL
EDUCATION**

The basic course on the Teaching of Exceptional Children (Educational Psychology 182) will be given in both summer terms; and courses on the teaching of mentally retarded children and special problems of working with gifted children will also be available. This work, together with special programs for teachers of the visually handicapped and the auditorially handicapped will provide much needed assistance to the schools in view of the increasing effort to improve all special education services in public education.

**MARRIAGE AND
FAMILY LIFE**

A recent meeting of the Minnesota Governor's Youth Commission highlighted the need for instruction in the schools on problems of marriage and family life. Many upper midwest schools currently are working toward the planning of such instruction. The first term offerings will include a special course to assist public school staff members and workers from co-operating agencies in the planning of materials and the discussion of methods for teaching in the marriage and family life area (Curriculum and Instruction 112). Mrs. Dorothy Dyer, the instructor of this course, is a national leader, at present serving as Chairman of the Local Advisory Committee for the National Council of Family Relations Office.

**TELEVISION IN
LANGUAGE ARTS
AND SOCIAL
STUDIES**

Television in the High School Classroom (Curriculum and Instruction 111) is a new course designed for high school teachers of social studies and the language arts. Interest groups within the class will attempt to establish standards of judgment for evaluating materials currently available on television channels. Emphasis will also be given to the production of programs by secondary school students and their instructors. Plans are under way for using the closed-circuit television equipment in University High School to illustrate ways of improving instruction in the language arts and the social studies.

**MUSIC
EDUCATION**

A course in recent research and literature (Music Education 170) proved of particular value to music teachers when it was given for the first time in the second term last year. This year it will be available in the first term for elementary teachers as well as music education majors.

Of interest to teachers and supervisors of both vocal and instrumental music is a new course, Organization and Supervision of Vocal-Instrumental Music in Elementary Schools (Music Education 150, second term). It will include individual and group projects and is designed to help teachers as well as prospective supervisors keep abreast of the latest methods and materials in presenting music to children of grade school age.

Supplementing these two courses is a broad offering under both Music and Music Education.

**WORKSHOPS
FOR HOME
ECONOMICS
TEACHERS**

The Department of Home Economics Education will offer three workshops of two and one-half weeks each, two in the first term and one in the second term. Teachers at secondary, college, and adult levels will find opportunity for stimulating lectures, discussions, and group work in these workshops. They will deal with family relationships and child development (196B, June 17-July 3); the home experience and extended program (196F,

July 5-July 20); and Future Homemakers of America in the secondary school (196G, July 22-August 7). Each workshop carries three quarter credits.

**WORKSHOP ON
CASE MATERIAL
IN NURSING**

For teachers of nursing and nursing service administrations, a five-week workshop, running through the first term, will provide assistance in developing and using case material. The workshop offers six credits. Registrants may take one three-credit course in addition to the workshop. Professor Lucy H. Beal, of Boston University School of Nursing, will conduct the workshop. Miss Beal is an authority in the writing of cases for use in nursing. She has worked with personnel of the Harvard School of Business Administration and has conducted workshops on the use of the case method in teaching and administration.

Advance registration is requested. For application forms, write to Dean of Summer Session, 750 Johnston Hall, University of Minnesota, Minneapolis 14.

**JOURNALISM
AND
COMMUNI-
CATIONS**

The School of Journalism program includes 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 on the Senior College-Graduate level in the area of Mass Communications. Courses that carry senior college and graduate credit are Literary Aspects of Journalism, History of Journalism, International Communications and Foreign Affairs, Development of Radio and Television Communications, the Press in a Dynamic Society, and Special Problems in Mass Communications.

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.

**AMERICAN
STUDIES
PROGRAM**

During the summer of 1957, visiting professors in art, literature, and the social sciences 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).

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.

**SPEECH
PATHOLOGY
AND
AUDIOLOGY**

The Department of Speech and Theater Arts offers an expanded program in elementary and advanced Speech Pathology. First term courses are Speech 119, Introduction to Speech Correction; Speech 141, Anatomy and Physiology of the Voice Mechanism; Speech 150, Organic Speech Disorders—Aphasia; 162, Speech Pathology; Speech 164, 165, 166, Clinical Methods and Practice in Speech Pathology; and two graduate seminars, Speech 261, Speech Pathology; and Speech 281, Organic Disorders of Speech. Second term offerings are Speech 149, Speech Habilitation for Persons with Neuromuscular Disorders; Speech 164, 165, 166, Clinical Methods and Practice in Speech Pathology; and Speech 169, Speech Language in Human Behavior.

The Department of Speech and Theater Arts, in co-operation with the Audiology Clinic at the University Hospitals, will offer five special courses and an institute for parents of deaf children. The first term courses are Speech 152, Hearing Disorders; Speech 153, Audiometry and Hearing Aids; 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.

**SCANDINAVIAN
STUDIES**

The Scandinavian Studies program, held alternate summers at the University of Wisconsin and the University of Minnesota is scheduled for the summer of 1957 at the University of Wisconsin from June 28 to August 24. For detailed information consult Professor Einar Haugen, Department of Scandinavian Studies, University of Wisconsin, Madison, Wisconsin, or Professor Alrik Gustafson, Department of Scandinavian, 13 Folwell Hall, University of Minnesota, Minneapolis 14.

**INSTITUTE ON
MINNESOTA
GOVERNMENT
AND POLITICS**

Local Government in Minnesota will be the theme of the fourth annual Institute, which will be offered the first two weeks of the second term (July 22 to August 2) by the Summer Session as Political Science 114 (3 credits).

Designed especially for the social studies teacher and the civic-minded citizen as well as for the general student and practitioner of government, the Institute will bring together as panel members experts, officeholders, and administrators to discuss and explore such topics and problems as: Local Government under Minnesota's Constitution, County Organization, Home Rule Charters and Optional Forms of Government, The Role of the Township in Rural Government, The School District in Relation to other Local Governments, Annexation and Incorpora-

tion of Urban Areas, The Courts and Local Law Enforcement, Local Government Finance, Community Planning, Major Functions of Local Government—Highways, Welfare; and The Citizen and Local Government Elections—Are Party Labels Necessary?

A related course on Local Government (Political Science 117) may be taken during the last three weeks of the second term by those who wish to earn additional credit.

**OPERA
WORKSHOP**

For the first time since 1950 students will have an opportunity to study and participate in opera. The Department of Music and the University Theater will collaborate in offering two courses (Music 147, 148 and Speech 147, 148) with credit in both the Music Department and the Department of Speech and Theater Arts. The courses will present the manifold problems involved in opera including analysis of different types of opera, assigning roles, coaching singers, conducting, scenery, costuming, lighting, and stage production.

The members of the opera classes will have the opportunity to gain firsthand experience by participating as soloists, as members of the ensemble, or as part of the stage crew in the production of *The Tender Land*, a new opera by Aaron Copland, one of America's most distinguished composers.

Graduate students will have the added experience of staging, directing, or conducting a scene from an opera as their term paper.

**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.

**DESIGN
APPLIED TO
CRAFTS**

There will be an opportunity for beginners and advanced students to work in various areas of crafts in a concentrated course given in the School of Home Economics (Home Economics 25 and 126). This will interest not only teachers but those wishing to develop some skill in creative leisure time activities.

**CULTURAL
RESOURCES
OF THE
TWIN CITIES**

Cultural Resources of the Twin Cities (Home Economics 119) will be presented again this summer. This course will provide students an opportunity to take advantage of the broad range of arts available in the metropolitan area. 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.

**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. Cúneo for the Casa Hispánica; and Dr. Harry L. Butler 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.

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 will be available.

**EFFICIENT
READING**

Adult reading needs are a matter of real concern. The course Efficient Reading (Rhetoric 47), designed for the average and above-average adult reader, provides a unique combination of activities for improving reading speed, comprehension, and vocabulary.

**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.

**INSTITUTES FOR
TEACHERS OF
SCIENCE**

Institutes for college, high school, and junior high school teachers of science under grants from both the National Science Foundation and the Louis W. and Maud Hill Family Foundation will be held on the three campuses.

**MINNEAPOLIS
CAMPUS**

**High School
Teachers of
Mathematics,
Chemistry,
and Physics**

During the eight-week period July 17 to August 10 the University will conduct an Institute for High School Teachers of Physics, Chemistry and Mathematics. Special courses in mathematics, physics and chemistry designed explicitly for secondary school teachers will be offered. Graduate credit will be given to those in the Graduate School who are majoring in Education with specialization in mathematics or the physical sciences. Through grants from the Louis W. and Maud Hill Family Foundation and the National Science Foundation stipends of \$600 plus allowances of \$120 per dependent (maximum of four) will be paid. In addition the usual tuition and fees will be paid for the participants from the Foundation grants and some allowances made for travel expenses. Anyone interested in attending should write to Dean J. W. Buchta, Johnston Hall, University of Minnesota, for application forms.

DULUTH CAMPUS

Approximately 70 teachers of high school physics, chemistry, and biology and junior high school general science will be awarded scholarships under a grant from the National Science Foundation for an institute to be conducted on the Duluth Campus.

For further information see the section on the Duluth Campus.

**ITASCA
STATION
College**

Stipends for ten college teachers of biology will be available at the Station in 1957 and 1958 under the terms of a grant by the National Science Foundation. Grantees will carry out research on a project of their choosing, enroll in one course, and hold

seminars on mutual problems. The stipends allow \$375, plus cost of academic fees, as well as travel and dependency allowances.

For information about the Biological Station, see the section on Colleges.

High School

An Institute for High School Teachers of Biology will be held at the Station again this year. The Louis W. and Maud Hill Family Foundation has granted funds to provide for stipends of \$375, plus cost of academic fees, travel, and dependency allowances for twenty teachers.

For information about the Biological Station, see the section on Colleges.

**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, Arles, Nice, Genoa, Pisa, Rome, Florence, Siena, Ravenna, Venice, Vienna, Innsbruck, Salzburg, Munich, Rothenburg, Heidelberg, Amsterdam, Haarlem, and London. Five credits will be given in Art 59 to students successfully completing the course. Cost, \$1,020 including University fees.

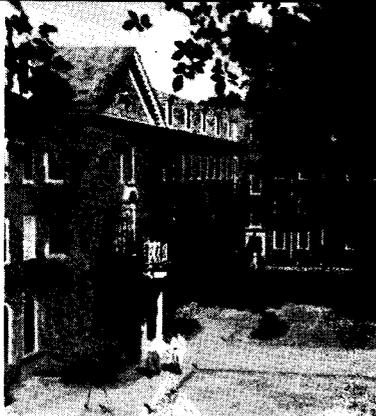
The group will depart from Quebec by steamer on July 6, spend approximately 6 weeks in Europe, and disembark in Quebec on September 4 (or fly from New York July 13 and return by air August 26).

**CENTER FOR
CONTINUATION
STUDY PROGRAMS**

The Center for Continuation study has tentatively scheduled the following institutes and workshops. For information please write directly to the Director, Center for Continuation Study, University of Minnesota, Minneapolis 14.

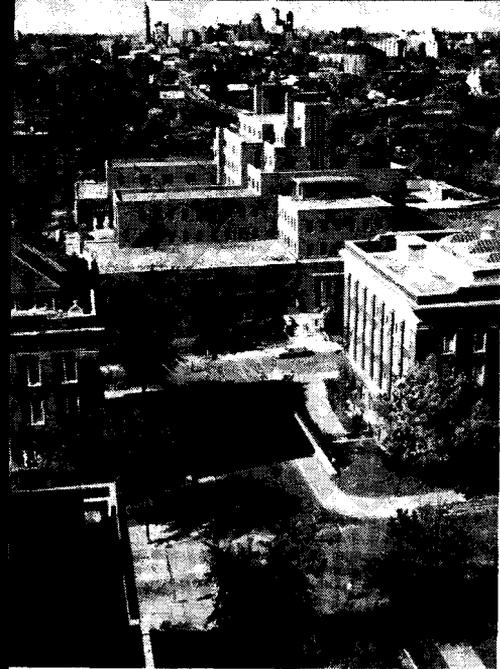
June 24-28	Language Arts Institute
July 8-12	Institute for Organists
July 15-26	Seminar on Philosophy and Religion
July 22-26	Piano Workshop (Minneapolis Campus)
July 29-August 2	Piano Workshop (Duluth Campus)
July 22-August 2	Institute on Minnesota Government and Politics (See section on Special Pro- grams in this bulletin)
August 5- 9	Creative Keyboard Methods
August 12-16	Arithmetic Workshop
August 26-30	Institute for Parents of Young Deaf Children

Two additional programs—in the planning stage—are an Institute on Creative Arts and a Course on the Teaching of Science at the Elementary Level.



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

General Information



Panoramic view of the Minneapolis campus showing the metropolitan skyline in the background.

**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, 750 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 17 to July 20 and July 22 to August 24. 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 18. First term classes on the Minneapolis Campus will begin Tuesday, June 18, 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 22. Classes for this term will open Tuesday, July 23.

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

**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.

Graduates greeting friends and relatives in the spacious lobby of Northrop Auditorium.



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 Biology Session of 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)

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.

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.

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.

**UNIVERSITY
HEALTH
SERVICE**

The University 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 in the vicinity of the campus are made in case of emergency.

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

**HOUSING AND
FOOD SERVICE
COMSTOCK HALL**

Ada Comstock Hall, the residence hall for women situated next to Coffman Memorial Union, will offer rooms only for the first and second terms this summer contingent upon the number of applications. Construction of the new wings to the building will be in progress during the summer and also the installation of two modern cafeteria counters. For those wishing to live at Comstock, meals will be available in Coffman Memorial Union Cafeteria Monday through Friday of each week.

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

Comstock Hall, dormitory for women, is located on the rocky bluffs of the Mississippi River.



SANFORD HALL

Sanford Hall, another residence hall for women, is situated on University Avenue near the entrance to the campus. Sanford Hall will be open for room and board for the first summer term; also for room and board for second term provided there is a sufficient number of residents. This hall offers comfortable living with its spacious, newly decorated lounges and dining rooms and large double and single rooms, which have been refurnished in recent years. Well planned, healthful meals will be served under the direction of a trained dietitian. Applications for reservations should be sent directly to Sanford Hall as early as possible because of the limited number of accommodations. Applications will be filled in order of the date received.

Write for applications and additional information to the 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 provided 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, rooming houses, fraternities, and sororities. These facilities are University-inspected and approved and are listed with the Student Housing Bureau, 209 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. Lists of Summer Session sub-lets are available beginning in May upon request.

**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. Service in these units is provided Monday through Friday of each week.

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.

Second Term

July 22: 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.

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.*

LATE REGISTRATION

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

Wednesday, June 19.....	\$2.00
Thursday, June 20.....	3.00
Friday, June 21.....	4.00
Monday, June 24.....	5.00

No registrations are allowed for the first term after Thursday, June 20, without special permission of the dean of the school or college concerned.

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

Tuesday, July 23.....	\$2.00
Wednesday, July 24.....	3.00
Thursday, July 25.....	4.00
Friday, July 26.....	5.00

No registrations will be accepted for the second term later than Thursday, July 25, 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.

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
Total fee (per term).....	<u>\$58.50</u>

**PART-TIME
FEE**

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
Total fee (per term).....	<u>\$47.50</u>

**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**

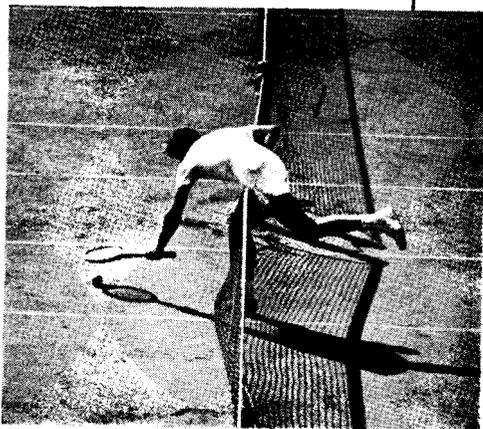
A maximum of 9 quarter credits or two 5-credit courses is considered a full program for either term. Registration for a greater number requires special permission from the Committee on Student Scholastic Standing or the dean of the school or college in which the student is registered.

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**

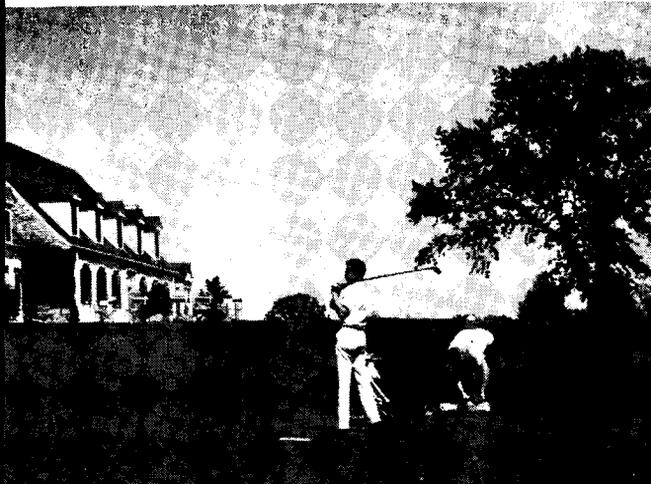
The University of Minnesota Summer Session has a planned program of activities available on campus at very little or no cost to the student.

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



*Clubhouse on the University
golf course.*

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.

**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.



A scene from Shakespeare's "A Midsummer Night's Dream," a recent production of the University Theater.

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. Most of these are 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.

**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.

Croquet on the Union lawn is one of the many recreational activities offered during the Summer Session.



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 Monday through Saturday and from 2:00 to 5:00 o'clock on 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, study exhibitions are arranged to supplement textbooks and lectures for specific University classes. Pictorial reference materials are available in 315 Northrop.

RENTAL SERVICE

Students registered for the Summer Session may borrow framed original prints and reproductions from the Student Rental Collection of the University Gallery, 315 Northrop. This rental service will be open from 10:00 to 12:00 and from 2:00 to 4:00 Tuesday through Friday the first week of each term. The rental fee varies from 15 to 25 cents for one term, or 25 to 50 cents for two terms. The pictures are due on Thursday of the last week of the term for which they are rented.

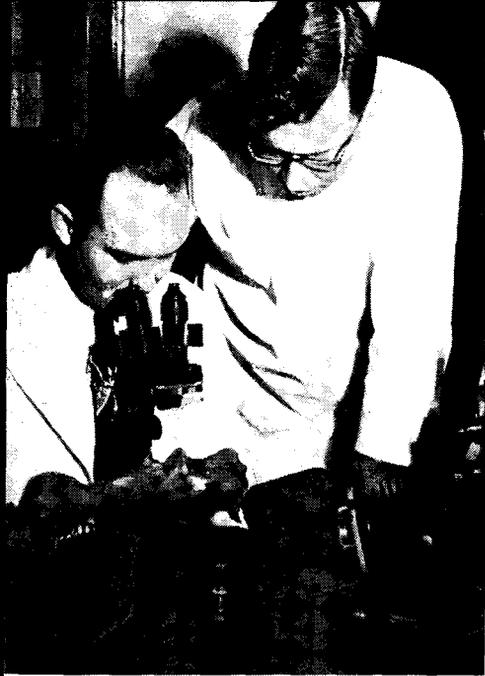
ART LIBRARY

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 Physics
Institute of Agriculture
College of Agriculture, For-
estry, and Home Economics
School of Veterinary Medicine
General College
Institute of Child Welfare
School of Dentistry
College of Education
Physical Education for Men
Physical Education for Women
School of Business Administra-
tion (including Economics)
Law School
Medical School
School of Nursing
School of Public Health
Biological Station



Dental research on hamsters is but one aspect of the graduate program.

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 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 prepare students for further liberal education, professional or vocational curricula, or for taking their 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-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 for the student seeking special competence for graduate, professional work, or teaching is provided by the Department of English.
- 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.
- INTERDISCIPLINARY STUDIES IN GENERAL EDUCATION** Courses in the Department of Interdisciplinary 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.
- LIBRARY SCHOOL** The Library School offers courses leading to a Master's degree, a 23-credit program leading to certification for school library work, and minor programs for undergraduates in the College of Science, Literature, and the Arts and the College of Education.

Courses are offered on a rotation plan in alternate summers for students not able to enroll during the regular academic year. It is possible to complete a Master's program attending only Summer Sessions. 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 the Library School meets this requirement. Inquiries concerning admission to this program should be addressed to Dean of Summer Session, 750 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 and composition under nationally known musicians.

A major feature of the first term will be an opera workshop described in detail under Special Programs. Courses for graduate credit will be offered by both the Department of Music and the Department of Speech and Theater Arts (Music 147, 148 and Speech 147, 148).



Class piano instruction in the Music Department.

Artist-performer teachers are available for graduate as well as undergraduate instruction in all phases of applied music: piano, voice, violin, organ and all instruments of the orchestra and band.

Students wishing a broader knowledge of symphonic literature may register for the courses Music Literature (Music 31A), Symphonies of the Classical Era (Music 130) and Symphonies of the Romantic Era (Music 132). 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 (Music 11C) and Class Voice (Music 12C) will again be offered 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.

The concertmaster of the Minneapolis Symphony Orchestra will be on campus this summer to instruct those particularly interested in string work (Music 13B, Violin, and 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 as preparation for professional work. Also, there are advanced courses for students already possessing 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, the School of Mines and Metallurgy, and the School of Physics.

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 and the Department of Home Economics Education programs include concentrated courses, workshops, readings, seminar and special problems, as well as regularly scheduled classes. These are planned to meet the varying needs of undergraduate and graduate students, of

*Weaving rugs in a home economics
crafts class.*



experienced teachers, and other home economists. Transfer students and students wishing to qualify for vocational certification may meet some of their requirements through Summer Session attendance.

Courses in a variety of subject matter areas are offered in both terms of 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*.

**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.

**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.

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.

Beginning and advanced courses for counselors, school psychological workers, reading specialists, and teachers of special classes for exceptional children are strongly emphasized this year. A two-year graduate program in school Psychological Services has been planned, and the full resources of several related departments are available for the instruction and graduate advising.

In elementary education where the demand is rising sharply for teachers and well qualified principals, a wide selection of courses on improvement of instruction in the elementary schools



Teaching blind children to read Braille during the 1956 special program for teachers of the visually handicapped.

is offered in both terms. Prospective elementary school principals will be interested in courses presenting current materials on the community school and on all phases of elementary instruction, supervision, and administration.

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 social sciences, literature, speech, music, art, and all of the other liberal arts departments. Special attention of social studies teachers is called to the Institute on Minnesota Government and Politics during the second term (Political Science 114), devoted to problems of local government in Minnesota. Supplementing this institute is a varied offering in all the social studies departments and in consumer education in both terms. 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.

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.

**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.

**SPECIAL
INSTITUTE**

An Institute on School Health Education in the elementary school will be presented by the department during the second week of the first term. At one session, a nationally known leader and author will discuss the direct relationship between a school health program and the specific needs of the children at each grade level. Practical help will be given on major concepts to be stressed in units and specific methods of evaluation. At another session, elementary classroom teachers experienced in teaching school health education will present practical materials and activities for implementing the needs at the various levels.

**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. 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. The core group of courses required for the Minnesota B.B.A. is available.

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.

LAW SCHOOL

Beginning law students are permitted to enter the Law School in the Summer Session. Three basic first year courses are offered (see index). To qualify for admission, students must present at least 90 quarter credits of acceptable pre-law work and must have taken the Princeton Law School Admission Test. Further information about pre-law courses and the Law School Admission Test will be found in the Law School bulletin. Students on the four-year law program can complete the course of study in three years if they commence their work in the summer session and continue to attend Summer Sessions thereafter. Students who enter the Law School with a B.A. degree may complete their work in two and one-half years by the same method.

A student who has completed at least one year of work in this Law School or in another accredited Law School may take the advanced courses listed in this bulletin.

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 during 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 17. 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 Workshop on Case Material in Nursing, about which additional information is given under Special Programs in the front of this bulletin, will be conducted during the first term.

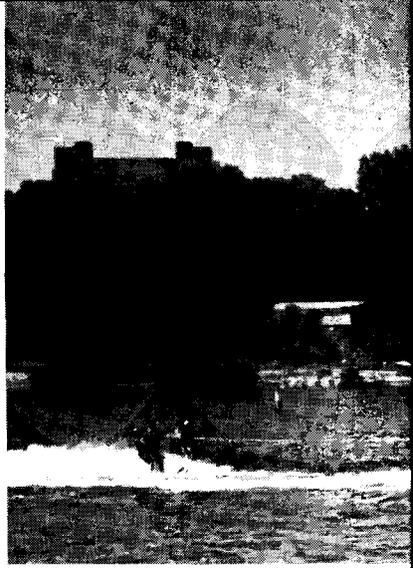
**NURSING SCHOOL
FEES**

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
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.

The workshop which will deal with principles of human relations in public health nursing supervision (Public Health 175) will be conducted during the weeks of July 1-12. During the first two weeks of the second session, July 22-August 2, there will be a workshop on Rehabilitation Nursing (Public Health 148). These workshops are limited in registration. Inquiries should be addressed directly to the School of Public Health.

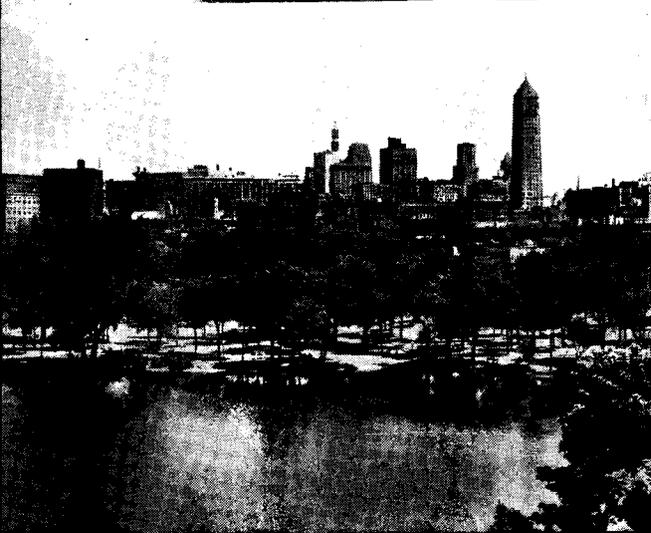


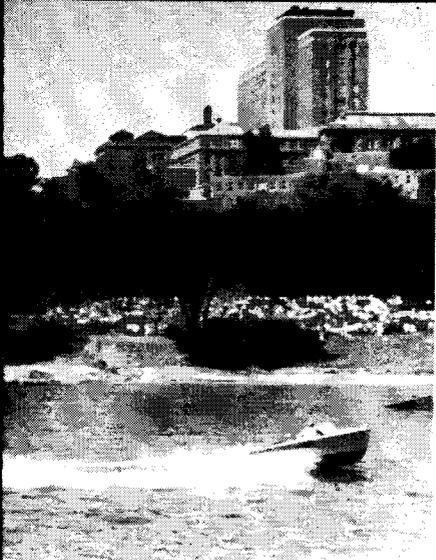
Upper Center—Water skiing on the Mississippi River adjoining the campus.

Upper Left—Viewing one of the art exhibits in the Northrop Auditorium Gallery.

Left—Reception following a Summer graduation ceremony.

Lower Left—One of the many beautiful parks and lakes situated within the bounds of Minneapolis.



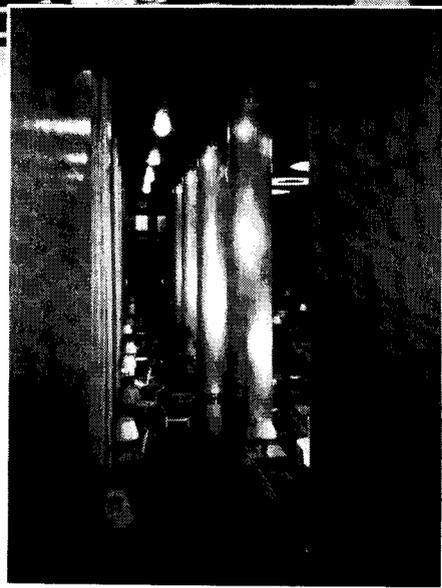


Upper Right—Graduates assembling on the Mall.

Right—The Main Lounge of the University's Coffman Memorial Union.

Lower Right—Taking snapshots on the Mall in front of Northrop Memorial Auditorium.

Lower Center—Crossing over the Washington Avenue footbridge, a familiar landmark to Minnesota students.



**BIOLOGICAL
STATION**

The Biology Session at the Lake Itasca Forestry and Biological Station is open during the first term. The Station is located in the famous Itasca State Park with its wide variety of natural habitats all within easy reach of several well-equipped laboratories. A wide selection of 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 17.

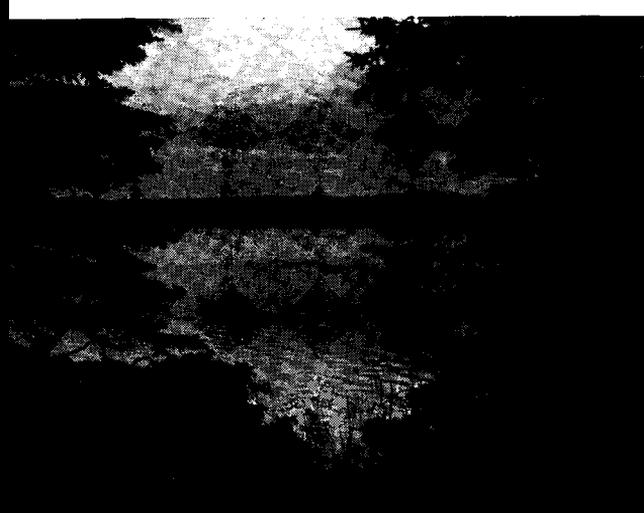
**TWO INSTITUTES
FOR TEACHERS
OF BIOLOGY
COLLEGE**

Ten research and training stipends for College Teachers of Biology will be available 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. (See Special Programs)

HIGH SCHOOL

An Institute for High School Teachers of Biology will be held at the Station for teachers interested in spending a summer in this field laboratory with other high school biology teachers. (See Special Programs)

For more detailed information regarding any of these programs write to Dean of Summer Session, 750 Johnston Hall, University of Minnesota, Minneapolis 14.



A Biology Session is conducted during the first term at beautiful Lake Itasca State Park in northern Minnesota.



General Information
Facilities
Recreation
Master of Arts Degree
Bachelor of Science Program
Workshop in Advanced Painting
Speech and Hearing Clinic
Science Institute
Rural Education:
 The Community School
Mexican Tour
Lake Superior Regional Study

Duluth Branch



Beautiful Kirby Student Center, left, and the UMD library as seen from a Science building doorway.

DULUTH CAMPUS A highly diversified selection of courses at the graduate and undergraduate levels is available at the Duluth Campus of the University of Minnesota.

GENERAL INFORMATION

In a spectacular setting and invigorating climate that assure visual beauty and physical comfort for summer study, the Duluth Campus 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 summer student. The 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 the city 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.

FACILITIES

On a 196-acre tract donated by far-seeing citizens and local governmental agencies in 1949, a new campus is emerging at Duluth.

Buildings totaling approximately \$6,000,000 in cost have been erected or are under construction. Now in use are a new science group, library, health and physical education building, ROTC building, student center, and dormitories. Under construction are a humanities building and a science addition.

On the 55-year-old lower campus are more dormitory facilities, a snack bar, faculty offices, classrooms, and a Laboratory school.

At 6008 London road, overlooking the outlet of scenic Lester River into Lake Superior, is Lakeshore Studio, where the summer art workshop is conducted. At 910 West Third street, Darling Observatory, a popular community and campus facility in summer, opens for regular lectures and observation periods with the nine-inch refracting telescope.

RECREATION

The 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 the climate and

Well ventilated and lighted, the library is a favorite spot for the Duluth student.



recreational resources healthful and relaxing. On the 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.

**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 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.) If the student wants to take all of his graduate work at the Duluth Branch, he should write for information to the Academic Dean, University of Minnesota, Duluth Branch, Duluth 11.

**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.

**WORKSHOP IN
ADVANCED
PAINTING**

One of the vital stimuli in summer art instruction in America is the annual workshop in advanced painting on the Duluth Campus. The distinguished faculty for this offering, which draws students from throughout the United States and other countries, has included Charles Burchfield, the late Yasuo Kuniyoshi, Max Weber, Arnold Blanch, Millard Sheets, Fletcher Martin, Philip Evergood, and Dong Kingman. For the ninth annual workshop, an artist will be appointed whose contributions to American art and whose vitality as a teacher will assure continuance of the outstanding workshop tradition. For details: Humanities Division, University of Minnesota, Duluth Branch, Duluth 11.

**SPEECH AND
HEARING
CLINIC**

Opportunity is provided for observation at the fifth annual clinic for children with speech and hearing disorders, held June 24 to August 16. 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.

**LAKE
SUPERIOR
REGIONAL STUDY**

A course describing the Lake Superior region is offered during the first and second terms. Included are Saturday field trips to the beautiful north shore of Lake Superior, to the Mesabi Iron Range, to Itasca State Park, and to the Apostle Islands, off the south shore of Lake Superior. Classes are held Tuesday and Thursday afternoons.

SCIENCE INSTITUTE UMD is among a select number of campuses in the United States chosen as sites for 1957 Science Institutes sponsored by the National Science Foundation, Washington, D.C.

Approximately 70 high school teachers of science subjects will be awarded scholarships covering travel and campus expenses in attending the Institute, scheduled June 17-July 19.

Distinguished scientists and science teachers will make up the faculties for the Institutes. The objectives are to improve subject-matter competence of the participating teachers, to strengthen their ability to motivate students toward science careers, and in other ways to enhance the interest and the prestige of high school teachers of science.

Eligible are high school teachers of physics, chemistry, and biology and junior high school teachers of general science. Scholarship allowances are \$75 per week for living expenses on campus, plus \$15 per dependent per week up to a maximum of four, and travel expense of four cents a mile from the teacher's home to a maximum of \$80.

Although the Institute scholarship allowance is limited to 70, others may participate in the Institute at their own expense or as observers while taking other Summer Session work. Applicants for stipends must have had sufficient undergraduate preparation in physics and chemistry and/or biology. For details write: W. R. McEwen, Director, Science Institute, University of Minnesota, Duluth Branch, Duluth 11.

**REMEDIAL
READING**

Experienced teachers will have an unusual opportunity for work in the field of remedial reading. The program, which extends over the entire ten weeks of the session, will begin with a first-term course entitled Reading Difficulties (Ed.C.I. 145). Each student will observe and participate in activities of the Reading Clinic of the Duluth Public Schools, relating his experiences to the regular classwork.

During the second term, Clinical Practice in Remedial Teaching (E.Psy. 150) offers more intensive work in the clinic. Prob-

The new bookstore is attractively arranged and well illuminated for self-service.



lems relating to remedial reading in the classroom and the work of remedial reading teachers will be treated in detail.

Enrollment for these courses will be limited. Persons wishing to enter them should write: Division of Education and Psychology, University of Minnesota, Duluth Branch, Duluth 11.

**RURAL
EDUCATION: THE
COMMUNITY
SCHOOL**

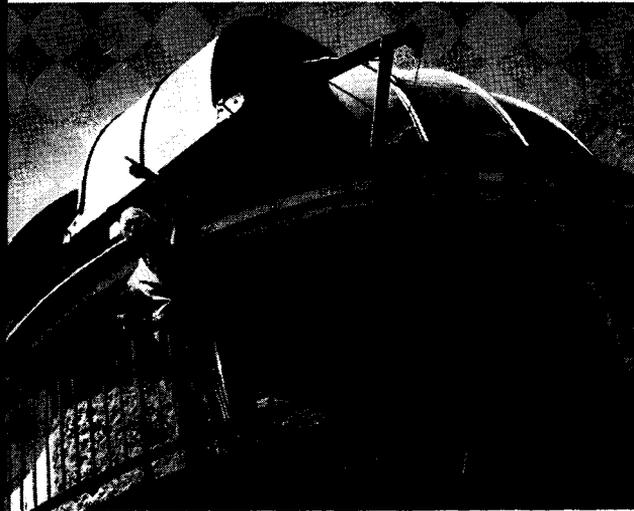
Rural educators, teachers and administrators alike, will have an opportunity to become more familiar with the rapidly-developing concept of the community school—a vital force in the life of rural village communities. Among the topics considered will be the role of the school in providing a continuous learning opportunity for youth and adults, and the relationship of the school to other community agencies. For details: Division of Education and Psychology, University of Minnesota, Duluth Branch, Duluth 11.

**DRIVER
EDUCATION**

During the second term, teachers may take work enabling them to teach courses in driver education in the secondary schools. For details: Department of Health and Physical Education for Men.

MEXICAN TOUR

The fourth in a series of regional studies is a Mexican tour arranged for the second summer term. Included are nine days in and near Mexico City, where students will visit ancient Indian civilizations and important cultural and educational centers. En-route to and from Duluth, students will visit New Mexico (including the Carlsbad Caverns), Arizona, and Texas. For details: Division of Social Sciences, University of Minnesota, Duluth Branch, Duluth 11.



Curator Frank Halstead on the balcony of Darling Observatory, one of UMD's most popular attractions.

**EUROPEAN
TOUR OF 1958**

Students interested in the European Tour of 1958 may inquire for additional information or registration materials from: Division of Social Sciences, University of Minnesota, Duluth Branch, Duluth 11.



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	105	Advanced Farm Management (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 and	201	Research in Farm Crops (3-9)	Dunham, Schmid
Second Terms	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)	Cummings, Hanson, Harvey, Meade
Second Term	213	Research in Animal Husbandry (3-5)	Cummings, Hanson, Harvey, Meade

Dairy Husbandry

First and Second Terms	208	Research in Dairy Production (ar.)	Cole, Donker, Petersen, Williams, Graham, Clifton
	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 (Offered at Lake Itasca)

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)	Arneman

Home Economics

First Term	F.L.15	The Home and Its Furnishings (3)	Ludwig
	25	Design Applied to Crafts (June 17-July 3) (3)	Everson
	28	Construction and Refinishing of Home Furnishings (3)	Myren
	34	Nutrition Problems (4)	Pilcher
	49	Household Equipment (June 17-July 3) (3)	Stulberg
	86	Home Management Laboratory (4)	Ar.
	119	Cultural Resources of the Twin Cities (2-3)	Esteros
	126	Special Problems in Crafts (June 17-July 3) (1-3)	Everson
	139	Advances in the Management and Preparation of Foods (3)	Trammell
	152	Problems in Consumer Textiles (3)	Davison
	153	Recent Developments in Clothing Construction (July 5-20) (3)	Moser
	179	Readings in Nutrition (2)	Leichsenring
	180	Home Planning and Furnishing (5)	Ludwig
	184	Home Management Principles (3)	Ar.
	220	Readings in Related Art (1-3)	Esteros
	249	Seminar in Foods (1-2)	Noble
	295	Home Economics Problems (Family Relations, Nutrition, Related Art, Textiles) (1-5)	Bellinger, Davison, Esteros, Leichsenring

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

† See Forestry for other course offerings.

Second Term	86	Home Management Laboratory (4).....	Ar.
	179	Readings in Nutrition (2).....	Leichsenring
	295	Home Economics Problems (Family Relations, Nutrition) (1-5).....	Bellinger, Leichsenring

Home Economics Education

See courses listed under College of Education.

Horticulture

First and	190-191-192	Special Problems in Horticulture (2-4).....	Staff
Second Terms	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	206	Research in Plant Pathology (ar.).....	J. J. Christensen, Eide, Hart, C. M. Christensen, Dosdall, King, DeVay, French, Kommedahl
Second Terms	210	Special Problems in Mycology (ar.).....	J. J. Christensen, C. M. Christensen, Dosdall
	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	214	Research in Poultry Husbandry (ar.).....	Johnson and staff
Second Terms	215	Research in Poultry Nutrition (ar.).....	Johnson, Waibel
	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 (5 sec.) (3).....	Brown, Mondale, Thompson
	51	Exposition (3).....	Nichols
Second Term	22	Public Speaking (3).....	Drake
	47	Efficient Reading (4 sec.) (3).....	Mixon, Seymour

Soils

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

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

† Offered only at Lake Itasca. See Forestry, second term.

‡ 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, Roepke, Lindorfer
	130 †	Problems in Animal Physiology (ar.)	Sellers, Good
	157 †	Veterinary Postmortem Pathology (ar.)	Sautter, Kernkamp
	158 ‡	Veterinary Surgical Pathology (ar.)	Sautter, Kernkamp
	171 †	Problems in Veterinary Pharmacology (ar.)	Stowe, Hammond
	191 §	Special Studies in Veterinary Anatomy (ar.)	Kitchell, Weber
	201 *	Advanced Poultry Diseases (ar.)	Pomeroy
	201 ‡	Advanced Veterinary and Poultry Pathology (ar.)	Sautter, Kernkamp, Fenstermacher
	201 ¶	Advanced Studies in Veterinary Medicine (ar.)	Hoyt, Mather, Sorensen
	201 #	Special Problems in Animal Reproduction (ar.)	Zemjanis
	202 ¶	Advanced Studies in Diagnosis and Therapeutics of Animal Diseases (ar.)	Hoyt, Mather, Sorensen
	203 ¶	Seminar in Veterinary Medicine (ar.)	Hoyt
	203 ‡	Neoplasms of Domestic Animals (ar.)	Sautter
	205 *	Advanced Veterinary Bacteriology (ar.)	Pomeroy, Fenstermacher
	210 Δ	Advanced Veterinary Radiology (ar.)	Spurrell
	220 Δ	Advanced Veterinary Surgery (ar.)	Arnold
	241 ‡	Problems in Veterinary Parasitology (ar.)	Griffiths

BIOLOGICAL STATION

First Term

Botany

112	Aquatic Flowering Plants (4)	Morley
116	Summer Flora (ar.)	Morley
135	Ecology of the Itasca Region (4)	Buell
155	Fresh-water Algae (4)	Evans
157	Bryophytes (4)	Evans
196	Problems (1-5)	Staff
208	Research Problems in Taxonomy (1-5)	Morley
224	Research Problems in Ecology (1-5)	Buell
236	Research Problems in Cryptogams (1-5)	Evans

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

* Veterinary Bacteriology and Public Health

† Veterinary Physiology and Pharmacology

‡ Veterinary Pathology and Parasitology

§ Veterinary Anatomy

¶ Veterinary Medicine and Clinics

Veterinary Obstetrics

Δ Veterinary Surgery and Radiology

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
119	Limnology (4)	Eddy
135	Field Ornithology (4)	Ar.
143	Animal Parasites (Not offered in 1957)	
197	Problems in Ornithology, Ecology, and Limnology (ar.)	Staff

SCHOOL OF BUSINESS ADMINISTRATION

(including ECONOMICS)

First Term	Econ.3	Elements of Money and Banking (3)	Coen
	Econ.6	Principles of Economics (3)	Harper and Ar.
	Econ.24	Principles of Accounting (3)	Lund
	Econ.26	Principles of Accounting (3)	Ar.
	Econ.50	Insurance Principles (3)	Strand
	B.A.51	Business Law: Contracts (3)	Wright
	B.A.54	Elementary Accounting (4)	Ar.
	B.A.58	Elements of Public Finance (3)	Borak
	B.A.65	Analysis of Financial Statements (3)	Matthews
	Econ.73	Manpower Economics and Labor Problems (3)	Turnbull
	B.A.74	Business Statistics A (3)	Neter
	Econ.75	Corporation Finance (3)	Borak
	B.A.77	Survey in Marketing (3)	Harper
	Econ.81	Intermediate Economic Analysis: Firms and Households (3)	Kareken
	Econ.85	Government Regulation of Business (3)	Seltzer
	B.A.89	Production Management (3)	Wickesberg
	Econ.103	Advanced Price Theory (3)	Ar.
	Econ.107	Insurable Risks and Insurance (3)	Ar.
	B.A.112	Time Series Analysis and Quality Control (3)	Neter
	Econ.121	Introduction to the Theory of Statistics (3)	Neter
	Econ.124	Theory of Employment, National Income, and the Price Level I (3)	Coen
	B.A.139	Corporate Statements (3)	Matthews
	Econ.144	Economic Analysis: Firms and Households (3)	Kareken
	B.A.150A	Intermediate Accounting I (3)	Nelson
	B.A.150C	Intermediate Accounting III (3)	Matthews
	B.A.152	Cost Accounting (3)	Lund
	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)	Turnbull
	Econ.162	Labor Movements (3)	Seltzer
	Econ.164	Labor Legislation: Collective Bargaining (3)	Ar.
	B.A.173	Market Analysis and Research (3)	Holloway
	Econ.175	Government Regulation of Market Behavior (3)	Seltzer
	B.A.181D	Senior Topics: Industrial Relations (3)	Ar.
	B.A.184	Scientific Management in Industry (3)	Wickesberg
	Econ.185	Economics of Marketing (3)	Harper
	B.A.187	Administration of Production (3)	Wickesberg

	Econ.189	Economics of Public Finance (3)	Borak
	Econ.213	General Equilibrium Theory (3)	Ar.
	B.A.299	Graduate Research in Business Administration (ar.)	Staff
	Econ.299	Graduate Research in Economics (ar.)	Staff
Second Term	Econ.5	Elements of Statistics (3)	Ar.
	Econ.7	Principles of Economics (3)	Ar.
	Econ.25	Principles of Accounting (3)	Nightingale
	B.A.55	Elementary Accounting (4)	Ar.
	Econ.64	Economics of Money and Banking (3)	Ar.
	B.A.66	Managerial Costs (3)	Jaedicke
	B.A.71	Transportation I: Principles (3)	Nightingale
	Econ.73	Manpower Economics and Labor Problems (3)	Ar.
	B.A.77	Survey in Marketing (3)	Lewis
	Econ.80	Intermediate Economic Analysis: Income and Employment	Smith
	Econ.104	Market Structure and Price Theory (3)	Ar.
	B.A.113	Sales Management (3)	Lewis
	B.A.130	Managerial Cost Accounting (3)	Jaedicke
	B.A.133	Advanced Cost Accounting (3)	Meyers
	Econ.142	Monetary and Banking Policy (3)	Smith
	Econ.143	Economic Analysis: Income and Employment (3)	Ar.
	B.A.146	Investments (3)	Sutton
	B.A.150B	Intermediate Accounting II (3)	Jaedicke
	B.A.153	Cost Accounting (3)	Meyers
	B.A.156	Finance Management (3)	Sutton
	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.166	Settlement of Industrial Disputes (3)	Ar.
	B.A.167	Introduction to Industrial Relations (3)	Mahoney
	Econ.172	Economics of Transportation (3)	Nightingale
	Econ.176	Introduction to International Relations (3)	Smith
	B.A.182D	Senior Topics: Industrial Relations (3)	Heneman
	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)	Johnson
	131	Development of Personality and Social Behavior (3)	Johnson
	140	Behavior Problems (3)	Bassham
	142	Psychology of Atypical Children (3)	Bassham
	150	Childhood Education (3)	Fuller
	270	Readings and Research in Child Development (ar.)	Fuller
	See also Curriculum and Instruction 162 and 164, and Methods and Student Teaching 77 and 78, under College of Education.		
Second Term	130	Development of Skill, Language, and Thought in the Child (3)	Holbrook
	132	Later Childhood and Adolescence (3)	Holbrook
	140	Behavior Problems (3)	Cummings
	170	Parent Education (3)	Cummings
	270	Readings and Research in Child Development (ar.)	Staff

SCHOOL OF DENTISTRY

See index.

COLLEGE OF EDUCATION

Agricultural Education

First Term	82	Teaching Agriculture in the Secondary School (4)	Kitts
	121	Enterprise Analysis (3)	Granger
	125	Teaching Units in Plant and Animal Diseases (3)	Swanson
	156	Rural Education through Extension Method (3)	Swanson
	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)	Kitts, Swanson
	232	Research in Agricultural Education (3-9)	Kitts, Swanson

Art Education*

First Term	17	Pictorial Expression for Elementary Education (3)	Hastie
	18	Design Activities for Elementary Education (3)	Bratlee
	19	Functional Arts and Crafts in Elementary Education (3)	Bratlee
	156	Intercultural Education through Art (3)	Gayne
	184	Improving Art Programs in the Elementary School (3)	Gayne
	185	Improving Art Programs in the Secondary School (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

Educational Administration

First Term	General Courses		
	117	Schools in Rural Areas (3)	Archer
	124	Public School Administration (3)	Prentis
	210	Financial Aspects of Public School Business Administration (3)	Prentis
	225	Pupil Personnel Administration (3)	Wakefield
	226	School Plant Planning and Management (3)	Domian
	227	Teacher and Employee Administration (3)	Lane
	228	Special Problems in Educational Administration (1-3)	Lane, Prentis, Wakefield
	230	Public Relations for Schools (3)	Pond
	234	Problems in State School Administration (4)	Wakefield, Pond
	236	Field Study in Educational Administration (0-10)	Domian, Lane, Prentis, Wakefield

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.)	Domian, R. Keller, Lane, Prentis, Wakefield

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

263	Organization of the Secondary School (3)	Lane
264	Administration of Instructional Activities in the Secondary School (3)	Thompson
270	Special Problems in Secondary Education (ar.)	Bossing, R. Keller, Lane, Prentis, Wakefield

Second Term General Courses

124	Public School Administration (3)	Prentis
210	Financial Aspects of Public School Business Administration (3)	Prentis
225	Pupil Personnel Administration (3)	Wakefield
226	School Plant Planning and Management (3)	Domian
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, Lane, Prentis, Wakefield

Elementary Education

115	Administration of the Elementary School (3)	Curtin
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Secondary Education

218	Recent Literature in Secondary Education (ar.)	Domian, R. Keller, Lane, Prentis, Wakefield
264	Administration of Instructional Activities in the Secondary School (3)	Abel
265	Administration of Noninstructional Activities in Secondary School (3)	Lane
270	Special Problems in Secondary Education (ar.)	R. Keller, Lane, Prentis, Wakefield

Curriculum and Instruction

First Term General Courses

101	Driver Education (June 17-28) (2)	Neal and ar.
105	Audio-Visual Materials in Education (3)	Pearson
109	Audio-Visual Materials and Equipment Laboratory (3)	Pearson
111	Television in the High School Classroom (3)	Ballet
112	Materials and Procedures in Marriage and Family Life Education (3)	Dyer
133	Consumer Education in the Schools (3)	Price
145	Reading Difficulties (3)	Tinker
151	Diagnosis and Treatment of Learning Difficulties (3)	Clymer
171	Curriculum Laboratory Practice (3)	Bossing
178	Educational and Social Implications of Visual Impairment (3)	Kantar
179	Principles and Methods of Teaching Braille (Sec. 1 for beginners; Sec. 2, for those with working knowledge of the Braille system) (3)	Ar.
205	Problems in Audio-Visual Education (ar.)	Pearson
227	Problems in Rural Education (ar.)	Archer
271	Problems in Curriculum Construction (ar.)	Archer, Boeck, Bossing, Goossen, D. Johnson, Curtin, Ruddell
273	Problems in Reading (ar.)	Clymer, Tinker, Reynolds

Elementary Education

61	The Teaching of the Social Studies in the Elementary School (3)	LaBlonde
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62B	The Teaching of Arithmetic in the Intermediate Grades (3)	Ruddell
102	Teaching the Social Studies in the Elementary School (3)	Chase
103	Teaching of Science in the Elementary School (3)	Boeck
119	Elementary School Curriculum (2 sec.) (3)	Goossen
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)	Clymer, Odland
149	Teaching and Supervision of Arithmetic in the Elementary School (3)	Ruddell
150	Supervision and Improvement of Instruction (3)	Curtin
153	Supervision and Teaching of English in the Elementary School (3)	Chase
162	Laboratory in Nursery School and Kindergarten Instructional Practices (3)	Fuller
164	Play Materials, Rhythms, and Nature Study for Young Children (3)	Headley
186	Laboratory in Elementary Instructional Practices (2)	Jensen
261	Special Problems in the Improvement of Instruction (ar.)	Goossen, Curtin, Ruddell

Secondary Education

113	High School Curriculum (3)	Bossing
125	Occupational Information Laboratory (3)	Borow
132	Teaching the Basic Business Subjects (3)	Bahr
135	Group Procedures in Guidance (3)	Borow
136	Organization and Administration of Distributive Education (3)	Latterell
140	Teaching of Speech (3)	D. K. Smith
141	Co-operative Part-Time Work Experience Programs (3)	Meyer
142	Business and Distributive Program for Adults (3)	Latterell
144	Teaching of Reading in Secondary Schools (3)	Kegler
159	Materials Laboratory, Secondary School Distributive Education (3)	Meyer
161	Curriculum Construction in Business Education (3)	Price
170B	Curriculum and Course of Study Construction (3)	Bossing
191	Advanced Teaching, Supervision of Secondary Mathematics (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, Lane, Prentis, Wakefield
238	Problems in Distributive Education (ar.)	Meyer
239	Problems in Business Education (ar.)	Price
266	Supervision of High School Instruction (3)	Thompson
270	Improvement of Instruction in the Secondary School (4)	R. Keller, Cramer
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 (6)	Eckert, McCune, 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 29-August 9) (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).....	Balow
205	Problems in Audio-Visual Education (ar.).....	Pearson
227	Problems in Rural Education (ar.).....	Archer
271	Problems in Curriculum Construction (ar.).....	Archer, Birkmaier, Boeck, D. Johnson, Curtin, Ruddell
273	Problems in Reading (ar.).....	Reynolds, Clymer

Elementary Education

102	Teaching the Social Studies in the Elementary School (3).....	Curtin
103	Teaching of Science in the Elementary School (3).....	Boeck
119	Elementary School Curriculum (3).....	Kearney
143	Teaching and Supervision of Reading in the Elementary School (3).....	Clymer, Odland
149	Teaching and Supervision of Arithmetic in the Elementary School (3).....	Ruddell
150	Supervision and Improvement of Instruction (3).....	Kearney
153	Supervision and Teaching of English in the Elementary Schools (3).....	Archer
181	Foundations of Elementary School Methods (3).....	Archer
261	Special Problems in the Improvement of Instruction (ar.).....	Curtin, Ruddell

Secondary Education

113	High School Curriculum (3).....	Birkmaier
122	Literature for Adolescents (3).....	Kegler
125	Occupational Information Laboratory (3).....	White
134	Materials and Methods in Consumer Education (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
144	Teaching of Reading in Secondary Schools (3).....	Kegler
155	Materials Laboratory for Social Studies Teachers (3).....	Gardner
156	Trends in Business Education (3).....	Price
173B	Organizing Units of Instruction in the Secondary School (3).....	Birkmaier
199E	Internship (ar.).....	Fitzgerald
225	Special Problems in Supervision of Instruction in Secondary Schools (ar.).....	Lane, Prentis, Wakefield
238	Problems in Distributive Education (ar.).....	Meyer
239	Problems in Business Education (ar.).....	Price
266	Supervision of High School Instruction (3).....	Abel
296	Special Problems in Teaching English (ar.).....	Kegler

Higher Education

228	Workshop: Problems of Higher Education and Teacher Education (July 29-August 23) (6).....	Boeck, Mork, Howe, 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
117	Basic Principles of Measurement (3)	Hoyt, Collier
140	Instruments and Techniques of Measurement (3)	Edson
142	Individual Mental Testing (3)	Reynolds
148	Clinical Diagnosis of Reading Difficulties (3)	Balow
150	Clinical Practice in Remedial Teaching (3)	Tinker, Balow
151	Clinical Practice in Educational Diagnosis (3)	Tinker, Balow
152	Introduction to School Psychological Services (3)	Gamclin
153	Seminar and Laboratory in School Psychological Services (3)	Gamelin
159	Personality Development and Mental Hygiene (3)	Jones
182	Education of Exceptional Children (3)	Reynolds
184	Education of the Slow-Learning Child (3)	Geary
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
225	Diagnosis as a Phase of Counseling (3)	Wrenn
233	Problems in Guidance and Personnel Work (ar.)	Dugan, Borow, Wrenn
253	Research Problems (ar.)	Dugan, P. O. Johnson, Edson, Wrenn, Hoyt, Mork, Collier, Reynolds
293	Psychology of Learning (3)	Mork

Secondary Education

133	Basic Procedures in Student Personnel Work (3)	Lundgren
134	School Counseling Procedures (3)	Dugan
282	Practice in High School Personnel Work (3)	Dugan, Jones

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)	Clymer, Balow
151	Clinical Practice in Educational Diagnosis (3)	Clymer, Balow
159	Personality Development and Mental Hygiene (3)	Borow
182	Education of Exceptional Children (3)	Reynolds
183	Education of Gifted Children (3)	Reynolds
185	Education of the Auditorially Handicapped Child (3)	Ar.
193	Psychology of Human Learning (3)	Mork
217	Statistical Methods in Education (3)	Collier
217a	Statistical Methods in Education—Laboratory (2)	MacEachern
226	Interviewing Procedures in Counseling (3)	Wrenn
233	Problems in Guidance and Personnel Work (ar.)	Dugan, Borow, Wrenn
253	Research Problems (ar.)	Dugan, Wrenn, Mork, Reynolds, Collier

Secondary Education

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

General Education

First Term	75A	Introduction to Elementary School Teaching (5).....	Odland
	81	Education for Public Health Nurses (3).....	Dvorak
Second Term	75B	Introduction to Elementary School Teaching (5).....	Odland

History and Philosophy of Education

First Term	131	Comparative Education (3).....	Beck
	141	Critical Issues in Contemporary Education (3).....	Beck
	180	The School and Society (2 sec.) (3).....	Vikner
	241	Problems in the History and Philosophy of Education (ar.).....	Beck
Second Term	141	Critical Issues in Contemporary Education (3).....	Beck
	180	The School and Society (2 sec.) (3).....	Ar.
	182	Comparative Philosophies of Education (3).....	Beck
	241	Problems in the History and Philosophy of Education (ar.).....	Beck

Home Economics Education

First Term	193b	Home Economics Curriculum (College Level) (3).....	Holmblade
	194A	Adult Education in Home Economics (3).....	Ford
	196B	Child Development and Human Relations (Workshop, June 17-July 3) (3).....	Holmblade, Bellinger
	196F	Home Experiences and Extended Employment (Workshop, July 5-July 20) (3).....	Ar.
	293	Problems in Home Economics Education (1-9).....	Ford
Second Term	294	Research Methods (3-6).....	Ford
	190	Readings in Home Economics Education (1-3).....	Holmblade
	196C	Future Homemakers of America (Workshop, July 22- August 7) (3).....	Ar.
	293	Problems in Home Economics Education (1-9).....	Ford
	295	Seminar in Home Economics Education (Recent Research) (1).....	Holmblade

Industrial Education

First Term	100	Industrial Instruction (3).....	Nelson
	106	Industrial Education Workshop—Industrial Arts in the Junior High School (3-6).....	Kavanaugh
	109	Conference Leading for Industry (3).....	Widdowson
	125	Philosophy, Practice (3).....	Widdowson
	200	Research Problems (3-6-9).....	Micheels, H. Nelson
	251	Research in Industrial Education (3).....	Micheels
Second Term	103	Instructional Aids (3).....	Kavanaugh
	110	Vocational Guidance (3).....	H. Nelson
	135	Course Construction (3).....	Kavanaugh
	200	Research Problems (3-6-9).....	H. Nelson

Methods and Student Teaching

First Term	Nursing Education		
	51A	The Teaching of Nursing (2).....	Dunning, Weise

Elementary Education

53A	Teaching Handicapped Children (6)	Ar.
77	Student Teaching in the Nursery School (3)	Fuller
78	Student Teaching in the Kindergarten (3)	Headley

Secondary Education

52	Student Teaching (ar.)	Ar.
84A-B-C	Practice and Field Work in Recreation Leadership (2)	Fitzgerald
85A-B-C	Practice and Field Work in Recreation (1 or 2)	Fitzgerald

Second Term *Nursing Education*

51A	The Teaching of Nursing (2)	Dunning, Weise
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Secondary Education

84A-B-C	Practice and Field Work in Recreation Leadership (2)	Fitzgerald
85A-B-C	Practice and Field Work in Recreation (1 or 2)	Fitzgerald

Music Education*

First Term	51	Teaching of Music (3)	Peck
	52	Teaching of Music (3)	Peck
	60-61-62	Supervision and Teaching of Music (3 each)	Ivory
	124	Selection and Conducting of Choral Materials (3)	Caswell
	125	Selection of Instrumental Music Materials (3)	Ivory
	170	Recent Research and Literature (3)	Ivory, Caswell
	194	Advanced Selection and Conducting of Choral Materials (3)	Caswell
	224	Research Problems (3-9)	Ivory, Caswell
	225E	Advanced Applied Music (2-4)	Ar.
	Second Term	51	Teaching of Music (3)
52		Teaching of Music (3)	Ivory
150		Organization and Supervision of Vocal-Instrumental Music in Elementary Schools (3)	Ivory, Caswell
224		Research Problems (3-9)	Ivory, Caswell
225E		Advanced Applied Music (2-4)	Ar.

Physical Education for Men

First Term	1A	Beginning Golf (1)	Bolstad
	1B	Intermediate Golf (1)	Bolstad
	1C	Beginning Swimming (1)	Piper
	5B	Gymnastics (1)	Shawbold
	5C	Stunts, Contests, Softball (1)	Shawbold
	7A	Games and Relays (1)	Shawbold
	9B	Square and Ballroom Dancing (1)	Piper
	51	Mechanics of Movement (3)	Oscell
	73-74-75	Directed Teaching (2)	Piper
	101	Principles of Physical Education (3)	Keller
	224	Research Problems in School Health Education, Physical Education, and Recreation (ar.)	Graduate Staff
	234	The Curriculum in Physical Education (3)	Donnelly
	236	Recent Literature and Research in Physical Education (3)	Donnelly

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

	238	Administration of Physical Education in Colleges and Universities (3)	Keller
	241	Administration of Public Recreation (3)	Fitzgerald
Second Term	1A	Beginning Swimming (1)	Piper
	2A	Intermediate Golf (1)	Bolstad
	2B	Intermediate Swimming (1)	Piper
	8	Tennis and Golf (1)	Piper, Bolstad
	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
	233	Administration of Physical Education in Schools (3)	Donnelly
	261A	Seminar in Contemporary Problems in Physical Education (3)	Donnelly

Physical Education for Women

First Term	5	Team Sports and Methods (2)	Hauptfuehrer
	7	Tennis for Beginners (2 sec.) (1)	Eibner
	8	Golf for Beginners (2 sec.) (1)	Reiter
	13	Tumbling, Stunts, and Methods (2)	Hauptfuehrer
	18	Elementary Folk Dancing, Games, and Methods (2)	Lampe
	32	Elementary Swimming (1)	Eibner
	62	Teaching Basic Skills in Physical Education Activities (3)	Hauptfuehrer
	102	Physical Education Program for Elementary and Secondary Schools (3)	Jaeger
	113	Physical Education in the Elementary School (3)	Baker
	114	Administration of School Health Education (3)	Slocum
	117A	School Health Instruction (Elementary School Section) (3)	Slocum
	118E	Problems in Teacher Education in Health, Physical Education, and Recreation (ar.)	Graduate Staff
	125	Curriculum Trends in Professional Education of Teachers (3)	Jaeger
	224	Problems in Health, Physical Education, and Recreation (3-9)	Graduate Staff
Second Term	7	Tennis for Beginners (2 sec.) (1)	Hauptfuehrer
	37	Individual and Dual Sports and Methods (2)	Hauptfuehrer
	81	Methods in Posture Education and Functional Exercise (2)	Wilson
	118E	Problems in Teacher Education in Health, Physical Education, and Recreation (ar.)	Graduate Staff
	130	Contributions of Basic Sciences to Physical Education (3)	Wilson
	224	Problems in Health, Physical Education, and Recreation (3-9)	Graduate Staff

GENERAL COLLEGE

First Term	7D	Physical Science: Elements of Geology (3)	M. Harris
	8A	Applied Mathematics (3)	McCutcheon
	10A	Human Biology: Fundamental Similarities in the Living World (3)	Dearden
	23A	Art Laboratory (3)	Safer
	29B	Fundamentals of Usage and Style (3)	Finnberg
	30A	Invitation to Literature: Western World I (3)	Burrows

	37	Social Trends and Problems (3)	Stovall
	38	General Geography (3)	Phelps
	40B	The Logic of Straight Thinking (3)	Benson
Second Term	3	Home Life: Marriage and Family Living (3)	Anderson
	10B	Human Biology: How the Living Machinery in Man Works (3)	Jefferson
	19A	Problems of Business Transactions (3)	Rassweiler
	29A	Reading Development (3)	Kivits
	31D	Writing Laboratory: Business Writing (3)	Kurak
	32A	Oral Communication: Basic Principles (3)	Hansen
	44B	Current History (3)	F. J. Harris

LAW SCHOOL

First and Second Terms (combined)	<i>First year courses</i>		
	101	Contracts (9)	Hogg
	104	Introduction to Public Law (3)	Cound
	100	Agency (3)	McCoid
	<i>Advanced courses</i>		
	149	Income Taxation (6)	Waterbury
	161	Modern Social Legislation (3)	McCoid
	165	Trade Regulation (3)	Cound
First Term	143A	Creditors' Remedies A (State Remedies) (3)	Sovern
Second Term	143B	Creditors' Remedies B (Bankruptcy) (3)	Sovern

COLLEGE OF MEDICAL SCIENCES

MEDICAL SCHOOL

Anatomy

First Term	104	Human Histology (3)	Williams
	111	Human Neurology (5)	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 Term	101	Principles of Anesthesia (1)	Van Bergen and staff
First and Second Terms (combined)	265	General Anesthesia (12)	Van Bergen and staff
	266	Regional Anesthesia (4)	Van Bergen and staff
	267	Pre- and Post-operative Evaluation (2)	Van Bergen and staff
	268	Seminar in Anesthesia (2)	Van Bergen and staff
	269	Research in Anesthesia (ar.)	Van Bergen and staff

Bacteriology and Immunology

First Term	53	General Bacteriology (5)	Johansson
	201	Research (ar.)	Johansson

Second Term	102	Medical Bacteriology (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	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, Prem, and staff
	205	Advanced Obstetrics and Gynecology, Part II (ar.)	McKelvey, Janda, Prem, and staff
	209	Advanced Obstetrics and Gynecology, Part III (ar.)	McKelvey, Janda, Prem, and staff
	216	Research (ar.)	McKelvey, Janda, Prem, and staff
	301	Externship (6)	McKelvey, Janda, Prem, and staff
Second Term	204	Advanced Obstetrics and Gynecology, Part I (ar.)	Kaiser, Janda, Prem, and staff
	208	Advanced Obstetrics and Gynecology, Part II (ar.)	Kaiser, Janda, Prem, and staff
	212	Advanced Obstetrics and Gynecology, Part III (ar.)	Kaiser, Janda, Prem, and staff
	219	Research (ar.)	Kaiser, Janda, Prem, and staff
	302	Externship (6)	Kaiser, Janda, Prem, and staff

Ophthalmology

First and	202	Clinical Ophthalmology (6)	Hansen and staff
Second Terms	206	Surgery of the Eye (3)	Hymes and staff

Otolaryngology

First and	230	Clinical Otology (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 and Second Terms	152	Fundamental Principles of Nutrition and Metabolism as Applied to Children (1)	John Anderson, Ziegler, Raile
	154	Endocrinology as Applied to Pediatrics (1)	Raile, John Anderson
	162	Common Behavior Disturbances in Childhood (1)	Jensen and staff
	170	Rheumatic Infection and Heart Diseases in Childhood (1)	Dwan, Good, R. Anderson, P. Adams
	174A	Dispensary Externship in Pediatrics (4)	Good, John Anderson, Platou, Jensen, Stoesser, Raile, and senior staff
	174B	In-Patient Externship in Pediatrics (4½)	Good, John Anderson, Jensen, Raile, and junior staff
	200	Graduate Seminar in Pediatrics (1½)	John Anderson, Ziegler, and senior staff
	202	Pediatric Clinic (5)	John Anderson, Jensen, and junior staff
	204	Three-Month Residence in Pediatrics (7)	John Anderson and staff
	208	Pediatric Research (ar.)	John Anderson, Good, Jensen, Raile, Ziegler
	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)	King
	109	Pharmacological Problems (ar.)	Bieter, Wright, Cranston
	203	Research in Pharmacology (ar.)	Bieter

Physical Medicine and Rehabilitation

First and Second Terms	103	Physical Therapy Clinic (ar.)	Kottke, Kubicek
	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, Barnum, Carr
	153	Problems in Physiological Chemistry (ar.)	Armstrong, Barnum, Carr

	205	Research in Physiological Chemistry (ar.)	Armstrong, Barnum, Carr
Second Term	101	Physiological Chemistry (6)	Barnum, Carr, Van Pilsun
	153	Problems in Physiological Chemistry (ar.)	Barnum, Carr, Van Pilsun
	205	Research in Physiological Chemistry (ar.)	Barnum, Carr, Van Pilsun

Physiology

First Term	4	Human Physiology (4)	McClintock, Love
	107	Human Physiology (5)	Visscher, Lifson, Brown, King
	203	Research in Physiology (ar.)	Visscher and staff
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 (8)	Baker, Hastings, Hathaway, Glueck	
	120	Emotional Growth, Development (1)	Hastings, Glueck	
	145	Reading in Psychiatry (ar.)	Glueck, Hastings, Hathaway	
	145x	Reading in Neurology (ar.)	Baker	
	155	Therapeutics in Neurology (2)	Baker	
	208	Clinical Neurology (4)	Baker	
	208x	Clinical Psychiatry (12)	Hastings, Glueck, Hathaway	
	208y	Clinical Child Psychiatry (12)	Jensen	
	209	Research in Psychiatry and Neurology (ar.)	Baker, Hastings, 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
		145x	Reading in Neurology (ar.)	Brown
		152	Externship in Psychiatry (6)	Schiele, Schofield
153		Externship in Neurology (6)	Brown	
208		Clinical Neurology (4)	Brown	
208x		Clinical Psychiatry (12)	Schiele, Schofield	
208y		Clinical Child Psychiatry (12)	Jensen	
209		Research in Psychiatry and Neurology (ar.)	Schiele, Schofield, Brown	
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	
245		Case Conference for Psychologists (1)	Schofield	

Radiology

First Term	111	Medical Roentgenologic Conference (1)	Staff
	121	Roentgen Diagnosis, Radium Therapy, for Junior Medical Students (cont.)	Staff

124	Pediatric Roentgenologic Conference (1)	Staff
135c	Surgical Roentgenologic Conference (1)	Staff
163a	Neurosurgical Roentgenologic Conference (1)	H. Peterson
200	Research in Roentgenology (ar.)	Staff
204	Research Related to Radiation Therapy (ar.)	Mosser and staff
206	Roentgenoscopy (3)	Staff
207	Roentgen and Radium Therapy (ar.)	Mosser and staff
209	Roentgen Diagnosis (3)	Staff
210	Roentgen Technique (2)	Staff
238	Roentgen-Surgical Pathology Conference (1)	Staff
240	Conference in Radiation Therapy (1)	Mosser, Vermund

Second Term

109	Externship in Roentgen Diagnosis and Radiation Therapy (4)	Staff
111	Medical Roentgenologic Conference (1)	Staff
124	Pediatric Roentgenologic Conference (1)	Staff
135c	Surgical Roentgenologic Conference (1)	Staff
163a	Neurosurgical Roentgenologic Conference (1)	H. Peterson
200	Research in Roentgenology (ar.)	Staff
204	Research Related to Radiation Therapy (ar.)	Mosser and staff
206	Roentgenoscopy (3)	Staff
207	Roentgen and Radium Therapy (ar.)	Mosser and staff
209	Roentgen Diagnosis (3)	Staff
210	Roentgen Technique (2)	Staff
238	Roentgen-Surgical Pathology Conference (1)	Staff
240	Conference in Radiation Therapy (1)	Mosser, Vermund

Surgery

First Term

121	Principles of Surgery (3)	Wangensteen and staff
127	Surgical Diseases of the Nervous System (1)	Peyton and staff
129	Surgical Clinics for Juniors (3)	Wangensteen and staff
135	Junior Clinical Clerkship (8)	Wangensteen and staff
152	Problems in Clinical Investigation (ar.)	Wangensteen and staff
167	Problems in Experimental Surgery (ar.)	Wangensteen and staff
200	Out-Patient Clinic in Surgery (1)	Wangensteen and staff
203	Proctoscopy and Sigmoidoscopy (1)	Wangensteen and staff
204	Tumor Clinic (1)	Wangensteen and staff
205	Surgical Diagnosis (1)	Wangensteen and staff
208	Surgical Service (1)	Wangensteen and staff
211	Operative Surgery (1)	Wangensteen and staff
214	Surgical Ward Conference (1)	Wangensteen and staff
215	Roentgenological-Surgery Conference (1)	Wangensteen and staff
216	Surgical Research (1)	Wangensteen and staff
217	Surgical Seminar (1)	Wangensteen and staff
218	Medical and Surgical Pathology Conference (1)	Wangensteen and staff of Pediatrics and Medicine
219	Surgery Literature Conference (1)	Wangensteen and staff
220	Vascular Conference (1)	Wangensteen and staff
221	Surgery-Physiology Conference (1)	Wangensteen and staff

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 (1)	Wangensteen and staff
205	Surgical Diagnosis (1)	Wangensteen and staff
208	Surgical Service (1)	Wangensteen and staff
211	Operative Surgery (1)	Wangensteen and staff
215	Roentgenological-Surgery Conference (1)	Wangensteen and staff
216	Surgical Research (1)	Wangensteen and staff
218	Medical-Surgical Pathology Conference (1)	Wangensteen and staff

Urology

First and	250	Urological Surgery (4)	Creevy and staff
Second Terms	252	Urological Conference (4)	Creevy and staff
	253	Urological Research (4)	Creevy and staff

SCHOOL OF NURSING*

First Term	Nu.182	Workshop: Case Material in Nursing (6)	Beal
	Nu.Ad.160	Ward Administration (5)	Grainger
	Nu.Ad.175	Elements of Administration in Nursing (5)	Miller
	Nu.Ad.176	Elements of Administration in Nursing (5)	Walseth
	Nu.Ad.193	Principles of Administration Applied to Nursing Service Administration (3)	Miller
	Nu.Ed.162	Personnel Work in Nursing (3)	Johnston
	Nu.Ed.190	The Survey in Nursing Education (3)	Harrington
Second Term	Nu.Ad.170	Foundations of Nursing Service Administration (3)	Walseth
	Nu.Ad.193	Principles of Administration Applied to Nursing Service Administration (3)	Miller

SCHOOL OF PUBLIC HEALTH

First Term	50	Personal and Community Health (3)	Bates	
	62	Public Health Nursing I (5)	Sanburn	
	63a	Public Health Nursing II (limited to students registered in winter and spring quarters) (3)	Murphy	
	65	Field Work in Public Health Nursing (ar.)	Sanburn	
	95	Human Nutrition (3)	Stief	
	110	Biometric Principles (3)	Bearman	
	111	Biometric Laboratory (2)	Weckwerth	
	133	Mental Hygiene (3)	Cline	
	175	Workshop on Human Relations in Public Health Nursing Supervision (3)	Von Bergen, Williams, Cline	
	Second Term	59	Health of the School Child (3)	Eichenlaub
		63	Public Health Nursing II (5)	Murphy
65		Field Work in Public Health Nursing (ar.)	Sanburn	
69		The Nurse in the School (3)	Murphy	
75		Introduction to Environmental Sanitation (3)	Bosch	
100		Elements of Preventive Medicine and Public Health (3)	Anderson	
130		Biostatistics II (3)	Johnson	
131		Biostatistics Laboratory II (2)	Johnson	
148		Workshop on Rehabilitation Nursing (3)	E. Anderson	
230	Field Practice in Environmental Sanitation (ar.)	Bosch		

MORTUARY SCIENCE

First Term	3	Introduction to Restorative Art (1)	Gates
	11	Introduction to Mortuary Management (2)	Slater
	12	Introduction to Embalming (3)	Slater

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

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

American Studies

First Term	Hum.22	American Life II (3)	Ar.
	200	Introduction to American Studies (3)	McDowell
	250	Readings in American Civilization (ar.)	Ar.
Second Term	Hum.23	American Life III (3)	Kwiat
	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)	Reining
	161	Primitive Religion (3)	Reining
	190	Directed Research (ar.)	Ar.
Second Term	2A	Introduction to Anthropology: Cultural Anthropology (3)	Hoebel
	80	The American Indian (3)	Weingrod
	150	Contacts of Cultures (3)	Weingrod
	165	Personality and Culture (3)	Hoebel
	191	Directed Research (ar.)	Ar.

Art

First Term	<i>Introductory and General</i>		
	1	Introduction to Art (3)	Tselos

History and Criticism

59	Traveling Summer Course in European Art (5)	Torbert, Eitner
106	Art in Egypt, Mesopotamia, and Greece (3)	Tselos
236-237-238	Problems in Art History and Criticism (ar.)	Tselos

Design

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

70-71-72	Oil Painting (3)	Arnest
150-151-152	Problems in Painting (ar.)	Arnest
200-201-202	Advanced Problems in Studio Work (ar.)	Arnest

Photography

10	Photography (3)	Liebling
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Printmaking

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

Sculpture

40-41-42	Sculpture I (3)	Morton
80A-81A-82A	Metal Sculpture in Relief, Repoussé (3)	Morton
140	Design in Jewelry (3)	Morton
200-201-202	Advanced Problems in Studio Work (3)	Morton

Film and Photography

86	The Art of the Film (3)	Amberg
186	The Art of the Film (3)	Amberg

Second Term History and Criticism

1	Introduction to Art (3)	Elsen
138	Art in the United States (3)	Elsen
206-207-208	Seminar: European and American Art (ar.)	Elsen

Drawing and Painting

20	Elements of Drawing (3)	Quirt
23-24-25	Drawing and Design (3)	Downs
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

Photography

10	Photography (3)	Downs
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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
	124	Technical Terminology (3)	McDonald

Latin

171	Independent Reading (3)	McDonald
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Communication

See Interdisciplinary Studies.

* For botany courses given at the Biology Session at the Lake Itasca Forestry and Biological Station, see index.

Economics

See index.

English

First Term

Courses in Literature

23	Introduction to Literature (6)	Buckley
55	Shakespeare (3)	del Plaine
56	Shakespeare (3)	Christie
73	American Literature (3)	Turpie
75	Chaucer (3)	Allen
100	Old English (6)	Clark
113	American Short Story (3)	Turpie
143	Twentieth-Century Literature (3)	O'Connor
156	American Drama (3)	Hornberger
162	Milton (3)	Unger
165	Introduction to Modern English (3)	Allen
182	The Far West in Literature (3)	Ar.
199	Seventeenth-Century Literature (3)	Unger
213	Bibliography and Methods of Literary Research (3)	O'Connor
298	Independent Reading (3)	Staff

Courses in Composition

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

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

Second Term

Courses in Literature

22	Introduction to Literature (6)	Montgomery
39	Modern Literature (3)	Steinmann
55	Shakespeare (3)	Stange
56	Shakespeare (3)	Blum
74	American Literature (3)	Levenson
106	Whitman and Mark Twain (3)	Kwiat
110	Romantic Poets of the Early Nineteenth Century (3)	Jackson
126	Drama, 1660-1730 (3)	Ar.
137	Nineteenth-Century Literature (3)	Stange
142	Twentieth-Century Literature (3)	Howarth
143a	Frost and Faulkner (3)	Levenson
155	American Novel (3)	Bowron
189a	Dominant Ideas in Eighteenth-Century Literature (3)	Steinmann
197	Seventeenth-Century Literature (3)	Howarth
299	Independent Reading (3)	Staff

Courses in Composition

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

Family Life

See Interdisciplinary Studies.

Foreign Study Seminar

See Interdisciplinary Studies.

Geography

First Term	41	Geography of Commercial Production (5)	Webb
	90	Readings (ar.)	Webb
	113	Eastern Anglo-America (3)	Lukermann
	114	Historical Geography of North America (3)	Lukermann
Second Term	1	Geography of Natural Resources (5)	Mather
	90	Readings (ar.)	Gosling
	120	South Asia (3)	Gosling
	122	East Asia (3)	Gosling
	301	Research Problems (ar.)	Mather

Geology and Mineralogy

First Term	1	General Geology (5)	Thiel
	100	Field Work in Northern Minnesota (3)	Wright
	159	Black Hills Field Course (6)	Craddock, Sloan
	170	Geologic Problems (3)	Thiel
Second Term	2	Historical Geology (5)	Sloan
	170	Geologic Problems (3)	Sloan

German

First Term	1	Beginning German (5)	Prottingeier
	3	Beginning German (5)	Pfeiffer
	4	Intermediate German (5)	Pfeiffer
	92	German Civilization and Culture: Luther to Lessing (3)	Prottingeier
	185	Studies in the Literature of the Twentieth Century: Expressionism (3)	Wood
	188	Lyric Poetry: Heine (3)	Pfeiffer
		A Deutsches Haus is being planned. (See index)	
Second Term	2	Beginning German (5)	Menze
	159	Directed Readings (3)	Menze

History

First Term	1	Civilization of the Modern World, Part 1 (3)	McGrew
	2	Civilization of the Modern World, Part 2 (3)	Deutsch
	16	Ancient Civilization, Part 3 (3)	Jones
	20	American History, Part 1 (3)	Chambers
	21	American History, Part 2 (3)	Loehr
	52	Ancient Civilization, Part 3 (3)	Jones
	63a	Cultural History of Japan (3)	Shea
	80	United States in the Twentieth Century (3)	Chambers
	88	American Colonies (3)	Tyler
	99	Minnesota and the Northwest (3)	Jordan
	111	Europe in the Twentieth Century (3)	Deutsch
	126	History of Russia, Part 2 (3)	McGrew
	138a	American History, Part 2 (3)	Loehr
	151	Social and Intellectual History of the United States (3)	Tyler
	187d	Readings in Minnesota and the Northwest (3)	Jordan
	200	Historical Bibliography and Criticism (3)	Jones
Second Term	2	Civilization of the Modern World, Part 2 (3)	Bowditch
	3	Civilization of the Modern World, Part 3 (3)	Waite
	22	American History, Part 3 (3)	Noble
	94	American Diplomatic History (3)	Beatty
	106	Continental Europe (3)	Wolf
110	Europe in the Twentieth Century (3)	Wolf	

127	History of Russia, Part 3 (3).....	Waite
146a	History of the South (3).....	Noble
157	Latin American History (3).....	Beatty
176d	Readings in Nineteenth Century European History (3).....	Bowditch

How to Study

See Interdisciplinary Studies.

Humanities

See Interdisciplinary Studies.

Interdisciplinary Studies

First Term

Communication

3	Communication (3)	Paulson
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Family Life

1	Preparation for Marriage (3).....	Luckey
15	The Home and Its Furnishings (3).....	Ludwig

Foreign Study

161	Seminar for Foreign Study I (6).....	Block, Colwell, Marburg, Ranta
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Humanities

1	Humanities in the Modern World I (3).....	Amberg
2	Humanities in the Modern World II (3).....	Berryman
4	Humanities in the Modern World IV (3).....	Berryman
22	American Life II	Ar.
52	Humanities in the Modern World (3).....	Ross
63	Renaissance and Reformation (Florentine) (3).....	Ames
132	Humanities Proseminar (3).....	Ross

Natural Science

165	Science in World Affairs (3).....	Graubard
175	Survey of Science History (3).....	Graubard

Personal Orientation

1	How to Study (2).....	Walz
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Social Science

1	Introduction to Social Science.....	Cooperman
3	Introduction to Social Science.....	Cooperman
13	International Relations	Holt

Second Term

Family Life

1A	Preparation for Marriage (3).....	Dyer
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Foreign Study

162	Seminar for Foreign Study II (6)	Block, Colwell, Marburg, Ranta
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Humanities

3	Humanities in the Modern World III (3)	Bryan
4	Humanities in the Modern World IV (3)	Blum
23	American Life III (3)	Kwiat
53	Humanities in the Modern World	Bryan
61	The Greek Heritage	Ames

Personal Orientation

1	How to Study (2)	Lucky
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Social Science

2	Introduction to Social Science	Kanun
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School of Journalism

First Term	10	Photography (3)	Liebling
	51	News Editing (3)	Price
	55	Advertising and Newspaper Typography (3)	Wilson
	82	Supervision of School Publications (3)	Wilson
	120	Development of Radio and Television Communications (3)	Charnley
	121	The Press in a Dynamic Society (3)	Gerald
Second Term	140	Interpretation of Contemporary Affairs (3)	Gerald
	290	Special Problems in Mass Communications (3)	Staff
	10	Photography	Downs
	73	Magazine Writing (3)	Hage
	103	Literary Aspects of Journalism (3)	Hage
	110	History of Journalism (3)	Emery
111	International Communications and Foreign Affairs (3)	Price	
	290	Special Problems in Mass Communications (3)	Staff

Library School

First Term	50	History of Libraries and Librarianship (3)	Shove
	53	School Library Management (3)	Callahan
	55	Library Administration (3)	Ar.
	83	Cataloging and Classification (3)	Simonton
	153	History of Books and Printing (3)	Shove
	166	Reference Work (3)	Wezeman
	171	Reading Guidance for Children (3)	Callahan
	173	Reading Guidance for Adults (3)	Wezeman
	266	Research Methods in Librarianship (3)	Simonton
	Second Term	62	Reference I (3)
70		Selection of Library Materials (3)	Ar.
74		Library Materials in the Classroom (2)	Callahan
172		Reading Guidance for Adolescents (3)	Callahan
184		Cataloging and Classification II (3)	Simonton
258		Problems in College and University Librarianship (3)	Berninghausen
259		Problems in Public Librarianship (3)	Berninghausen
272		Children's and Young People's Work (3)	Berninghausen

Mathematics*

First Term	1	Higher Algebra (5)	Collins, Lindberg
	6	Trigonometry (5)	Varberg
	15	Elementary Mathematical Analysis I (5)	Harper
	50	Differential Calculus (5)	Lewis
	62	Theory of Equations (3)	Gibbens
	136	Solid Analytic Geometry (Reading Course) (3)	Gibbens
	178	Probability (3)	Shapiro
	188	Topics in Topology (3)	Shapiro
Second Term	6	Trigonometry (5)	Collins
	7	College Algebra (5)	Varberg
	16	Elementary Mathematical Analysis II (5)	Harper
	109	Theory of Numbers (3)	Munro
	125A	Introduction to Theory of Functions (3)	Olmsted
	126	Calculus of Finite Differences (3)	Munro
	131	Advanced Algebraic Theory (Reading Course) (3)	Olmsted

Music†

First Term	1	Fundamentals of Music (2)	Duckworth
	7B	Ear Training (3)	Fetler
	8A	Harmony (3)	Fetler
	A	Piano (0)	Duckworth, Rymer, Weiser
	D	Voice (0)	Schuessler, Paige
	11	Piano (2-4)	Duckworth, Rymer, Weiser
	11C	Class Piano (2)	Duckworth
	12	Voice (2-4)	Schuessler, Paige
	12C	Class Voice (2)	Paige
	13	Violin (2-4)	Cullen
	13B	Viola (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, Williams
	20	Bassoon (2-4)	Santucci
	21	Trumpet (2-4)	Adelstein
	22	French Horn (2-4)	Speyer
	23	Trombone or Baritone (2-4)	Stamm
	24	Tuba (2-4)	Walton
	25	Percussion (2-4)	Dahlgren
	26	Harp (2-4)	Miller
	27	Organ (2-4)	Berryman
	60B-61B-62B	Instrumental Ensemble (2)	Druian
	106A	American Music (3)	Riedel
	109	Lasso, Palestrina (3)	Riedel
	127-128-129	Composition (2)	Fetler
	132	Symphonies of the Romantic Era (3)	Oberg
	147	Opera Production, Music (3)	Aliferis, Schuessler, and staff
	148	Opera Production, Theater (3)	Whiting and staff
175	Training in Advanced Musicianship (3)	Fetler	
204	Graduate Applied Music (3)	Ar.	
212	Special Problems (3-9)	Riedel	
227-228-229	Seminar in Composition and Orchestration	Fetler	

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

† See also Department of Music Education, College of Education.

Second Term	1	Fundamentals of Music (2)	Paige
	A	Piano (0)	Rymer, Weiser
	D	Voice (0)	Schuessler, Paige
	11	Piano (2-4)	Rymer, Weiser
	12	Voice (2-4)	Schuessler, Paige
	12C	Class Voice (2)	Paige
	13 thru 26	See first term.	
	27	Organ (2-4)	Westenburg
	31A	Music Literature (3)	Oberg
	60B-61B-62B	Instrumental Ensemble (3)	Druian
	104A	American Music (3)	Riedel
	110	Music Bibliography (3)	Riedel
	115A	Vocal Literature (3)	Schuessler
	130	Symphonies of Classical Era (3)	Oberg
	204	Graduate Applied Music (3)	Ar.
	212	Special Problems (3-9)	Oberg

Personal Orientation

See Interdisciplinary Studies.

Philosophy

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

Political Science

First Term	A	The State in the Modern World (3)	Holt
	1	American Government and Politics (3)	Christensen
	25	World Politics (3)	Mills
	137	American Political Parties (3)	Christensen
	163	The Political Theory of Utopia (3)	Sibley
	184	International Organization (3)	Levi
	187	Problems of European Politics (3)	Levi
	197	The Mediterranean Area in World Affairs (3)	Mills
Second Term	B	The State in the Modern World (3)	McClosky
	2	American Government and Politics (3)	McLaughlin
	114*	Institute on Minnesota Government and Politics: (Local Government) (July 22-August 2) (3)	Ludwig, Flom
	117	Local Government (August 5-24) (3)	Warp
	142	Comparative European Government (3)	Turner
	153	Japanese Government and Politics (3)	Turner

* For further information regarding the Institute, see index.

167	Political Behavior (3)	McClosky
178	Conduct of American Foreign Relations (3)	McLaughlin

Psychology

First Term	1-2	General Psychology (6)	Mecherikoff
	4-5	Introductory Laboratory Psychology (4)	Wrightsmen
	125-126	Psychology of Individual Differences (6)	Vernon
	144-145	Abnormal Psychology (6)	Schofield
Second Term	1-2	General Psychology (6)	Rosenberg
	4-5	Introductory Laboratory Psychology (4)	Clark
	111	Frontiers of Psychology (3)	Heron
	128	Psychology of Learning (3)	Heron
	156	Psychology of Advertising (3)	Longstaff
	160	Psychology in Personnel Work (3)	Longstaff

Romance Languages

First Term *French*

1	Beginning French (5)	Ar.
3	Beginning French (5)	Ar.
4	Intermediate French (5)	Ar.
125	The Classical Drama: Corneille and the Origins of the Classical Drama (2)	Creore
165	Poetry in the Twentieth Century: Apollinaire, Valéry, Eluard (2)	Blinoff
259	Directed Readings in French (ar.)	Staff

A Maison Française is being planned. (See Index)

Spanish

1	Beginning Spanish (5)	Pattison
3	Beginning Spanish (5)	Grismer
20	Intermediate Spanish (5)	Grismer
84	La Novela Hispano-Americana y los Problemas Sociales (2)	Cúneo
130	Cervantes: Don Quijote (2)	Pattison
133	History of Spanish Drama (2)	Grismer
184	La Novela Hispano-Americana y los Problemas Sociales (2)	Cúneo
259	Directed Readings in Spanish (ar.)	Staff

A Casa Hispánica is being planned. (See Index)

Second Term *French*

2	Beginning French (5)	Falk
110	French Romanticism (2)	Falk
259	Directed Readings in French (ar.)	Falk

Spanish

2	Beginning Spanish (5)	Ar.
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Scandinavian Area Studies

See Special Programs section.

Slavic and Oriental Languages

First Term *Russian*

1a-2a	Intensive Russian (10)	Magner and assistants
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Social Science

See Interdisciplinary Studies.

School of Social Work

First Term	Soc.50	Introduction to Theory and Practice of Social Work (3).....	Compton
	Soc.91	Case Method Applied to the Study of Human Problems (3)	Compton
	C.W.140	Behavior Problems (3).....	Bassham
	201	Use of Group Method in Social Casework Practice (3).....	Saloshin
	285	Special Studies in Social Work (1-9).....	Saloshin
Second Term	C.W.140	Behavior Problems (3).....	Cummings
	271	Community Organization (3).....	Kidneigh
	285	Special Studies in Social Work (1-9).....	Kidneigh

Sociology

First Term	1	Introduction to Sociology: Man in Modern Society (3).....	Donohue
	50	Introduction to Theory and Practice in Social Work (3).....	Ar.
	53	Elements of Criminology (3).....	Vold
	91	Case Method Applied to the Study of Human Problems (3).....	Ar.
	101	Criminological Theories: Historical and Contemporary (3).....	Vold
	120	Social Psychology (3).....	Stone
	145	Urban Sociology (3).....	Stone
	160	Rural Community (3).....	Donohue
Second Term	1	Introduction to Sociology: Man in Modern Society (3).....	Johnson
	3	Social Problems (3).....	Johnson
	14	Rural Sociology (3).....	Nelson
	111	Population Trends (3).....	Nelson
	118	Delinquent Behavior (3).....	Monachesi
	172	Backgrounds of Modern Social Thought (3).....	Francis

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
	31	Introduction to the Theater (3).....	Ballet
	33	Beginning Acting (3).....	Moulton
	51	Advanced Public Speaking (3).....	Gilkinson
	61	Personal Development Through Speech (3).....	Bryngelson
	65	Radio and Television Speech (3).....	Schinske
	106	Discussion (3).....	Smith
	119	Introduction to Speech Correction (3).....	Fletcher
	122	Introduction to Research (3).....	Gilkinson
	131	Creative Dramatics (3).....	Graham
	132	Children's Theater (3).....	Graham
	141	Anatomy and Physiology of the Voice Mechanism (3).....	Fletcher
	147	Opera Production, Music (3).....	Aliferis, Schuessler, and staff
	148	Opera Production, Theater (3).....	Whiting and staff
	150	Organic Speech Disorders—Aphasia (2).....	Lundeen
	152	Hearing Disorders (3).....	Lassman
	153	Audiometry and Hearing Aids (3).....	Lassman
	157	Clinical Practice in Audiology (3).....	Lassman
	162	Speech Pathology (3).....	Bryngelson
	164-165-166	Clinical Methods and Practice in Speech Pathology (9).....	Bryngelson, Henrikson, Ptacek
	181	Readings in Speech (1-3).....	Staff

	261	Seminar: Speech Pathology (3).....	Bryngelson, Henrikson
	275	Seminar: Rhetoric (3).....	Smith
	281	Seminar: Organic Disorders of Speech (2).....	Henrikson
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
	32	Beginning Acting: Creative Approach (3).....	Moulton
	66	Radio and Television Drama (3).....	McGraw
	81	Interpretative Reading (3).....	Thompson
	101	Argumentation and Persuasion (3).....	Howell
	107	Platform Reading (3).....	Thompson
	127	Language Training for the Deaf (3).....	Ar.
	149	Speech Habilitation for Persons with Neuromuscular Disorders (2).....	Starr
	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
	182	Readings in Speech (1-3).....	Staff
	207	Seminar: Persuasion (3).....	Howell
		For the teaching of speech, see College of Education, Curriculum and Instruction 123 and 140.	

Zoology

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

INSTITUTE OF TECHNOLOGY

COLLEGE OF ENGINEERING

Civil Engineering

First Term	23	Surveying Camp (9).....	Kersten, Fant, Johnson, Pederson
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Drawing and Descriptive Geometry

First Term	4	Engineering Drawing (3).....	Bullen
	6	Engineering Drawing (3).....	Clausen
Second Term	5	Descriptive Geometry (3).....	Quaid
	6	Engineering Drawing (3).....	Kleinhenz

* For zoology courses given at the Biology Session at the 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.

Electrical Engineering

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

English (Engineering)

First Term	85	Advanced Technical Communication (3)	Haga
Second Term	86	Advanced Technical Communication (3)	Guthrie

Composition 4, 5, and 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)	Bullen
Second Term	70	Slide Rule (1)	Kleinhenz

Industrial Engineering

First Term	150	Elements of Industrial Engineering and Management (3)	McElrath
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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)	Lindgren
	154	Vector Analysis (3)	Wilcox
	165A	Introduction to Programming Modern Digital Calculators (3)	Munro
	184	Elementary Numerical Analysis in Engineering (3)	Munro
	Second Term	13	Analytic Geometry (5)
24		Differential Calculus (5)	Polansky
25		Integral Calculus (5)	Stenberg
80		Elementary Differential Equations (3)	Rang
152 †		Calculus IV: Advanced Calculus (3)	Thompson
153 †		Calculus V: Advanced Calculus (3)	Thompson

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

* 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; 150, 152, 153 form a 9 credit sequence regularly taught during the academic year.

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

	130	Thermodynamics (3)	Ibele
	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
	141	Heat Power Engineering (3)	Murphy
	180	Refrigeration (3)	Threlkeld

Mechanics and Materials

First Term	26	Engineering Statics (5)	Anderson
	127	Engineering Dynamics (5)	Mentel
	128	Engineering Solid Mechanics (5)	Doeringsfeld, Miller
Second Term	127	Engineering Dynamics (5)	Doeringsfeld, Hsiao
	128	Engineering Solid Mechanics (5)	Miller

SCHOOL OF CHEMISTRY

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

Inorganic Chemistry

First Term	4	General Inorganic Chemistry (4)	Reynolds
	11	Semimicro Qualitative Analysis (4)	Hugus
	26	Introduction to Chemical Principles (5)	Hugus
	103	Atomic Structure and the Properties of the Elements Based Thereon (3)	Hugus
	113	Mechanisms of Inorganic Reactions (3)	Reynolds
Second Term	5	General Inorganic Chemistry (4)	Hugus
	11	Semimicro Qualitative Analysis (4)	Britton
	26	Introduction to Chemical Principles (5)	Britton
	104	Chemistry of the More Representative Elements (3 or 4)	Britton
	107	Oxidation-Reduction Systematics (3)	Hugus

Organic Chemistry

First Term	61	Elementary Organic Chemistry (4)	Noland
	102	Organic Qualitative Analysis (4)	Fenton
	110	Organic Qualitative Analysis (4)	Fenton

* 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.

	199	Selected Topics (ar.)	Ar.
	212	Mechanisms of Organic Reactions (4)	Fenton
	301	Research in Organic Chemistry (ar.)	Fenton, Noland
Second Term	62	Elementary Organic Chemistry (4)	Tombouliau
	139	Advanced Organic Chemistry Laboratory Work (4)	Kreevoy
	215	Theoretical Organic Chemistry (4)	Kreevoy
	301	Research in Organic Chemistry (ar.)	Kreevoy

Physical Chemistry

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

SCHOOL OF MINES AND METALLURGY

Metallurgy

First Term	156	Physical Metallurgy (3)	Jerabek
	159	Dental Physical Metallurgy (2)	Jerabek
	160	Physical Metallurgy (3)	Jerabek
	170-171	Special Problems in Physical Metallurgy (1, 2, or 3)	Jerabek
Second Term	170-171	Special Problems in Physical Metallurgy (1, 2, or 3)	Jerabek

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.

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

SCHOOL OF PHYSICS

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

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

	14a	Intermediate General Physics Laboratory (Parallel to Physics 14) (½).....	Wall
	151	Intermediate Mechanics (3).....	Wall
	152	Intermediate Atomic Physics (3).....	Valasek
Second Term	2	Introduction to Physical Sciences (Heat and Electricity) (3).....	Verbrugge
	2a	Introduction to Physical Sciences Laboratory (1).....	Ar.
	13	General Physics for Engineers—Third Quarter, Part II (Sound and Light) (2½).....	Cheston
	14	Intermediate General Physics, Part II (Mechanics and Electricity) (2).....	Cheston
	14a	Intermediate General Physics Laboratory (Parallel to Physics 14) (½).....	Cheston

DULUTH CAMPUS

DIVISION OF EDUCATION AND PSYCHOLOGY

Child Welfare

First Term	100	Observation and Experimental Study of Children (3).....	Loy
Second Term	140	Behavior Problems (3).....	Hansen

Education

First Term	Ed.61A-81A	School and Society (4).....	Palmer
	Ed.61B-81B	Educational Psychology (4).....	Loy
	Ed.Ad.115	Elementary School Organization and Administration (3).....	Wheat
	Ed.C.I.64	Teaching the Language Arts in the Elementary School (5).....	Bryant
	Ed.C.I.105	Audio-Visual Materials in Education (3).....	Wells
	Ed.C.I.113	The Curriculum of the Secondary School (3).....	Plumb
	Ed.C.I.118	The Community School (3-6).....	M. Peterson
	Ed.C.I.119	The Curriculum of the Elementary School (3).....	Johnson
	Ed.C.I.135	Group Procedures in Guidance (3).....	Gum
	Ed.C.I.145	Reading Difficulties (3).....	D. Smith
	Ed.C.I.150	Supervision and Improvement of Instruction (3).....	Johnson
	Ed.C.I.168	Current Developments in the Social Studies (3).....	M. Lindquist
	Ed.C.I.271	Problems in Curriculum Construction (ar.).....	Dettmann, House, Johnson, M. Lindquist, Plumb, A. Smith
	E.Psy.133	Basic Procedures in Student Personnel Work (3).....	Gladstein
	E.Psy.158	Psychology of Adolescence (3).....	Wheat
	E.Psy.159	Personality Development and Mental Hygiene (3).....	Gladstein
	H.Ed.141	Critical Issues in Contemporary Education (3).....	Ehlers
	H.Ed.179	Critical Thinking for Teachers (3).....	Ehlers
	Mu.Ed.51	Teaching Music in the Elementary School (3).....	L. Miller
	Second Term	Ed.61C	Curriculum and Methods in Elementary Education (5).....
Ed.81C		Curriculum and Methods in Secondary Education (5).....	Staple
Ed.Ad.167		Junior High School (3).....	Plumb
Ed.C.I.60		Storytelling (2).....	Green
Ed.C.I.63		Children's Literature (3).....	Green
Ed.C.I.101		Driver Education (2).....	Rickert
Ed.C.I.102		Teaching the Social Studies in the Elementary School (3).....	Staple
Ed.C.I.103		Teaching of Science in the Elementary School (3).....	Verrill
Ed.C.I.132		Teaching the Basic Business Subjects (3).....	Dettmann
Ed.C.I.143		Teaching and Supervision of Reading in the Elementary School (3).....	D. Smith

Ed.C.I.144	The Teaching of Reading in Junior and Senior High Schools (3)	Frogner
Ed.C.I.149	The Teaching and Supervision of Arithmetic in the Elementary School (3)	Johnson
Ed.C.I.169	Extracurricular Activities (3)	Wood
Ed.C.I.271	Problems in Curriculum Construction (ar.)	Dettmann, Frogner, Johnson, Plumb
Ed.C.I.294	Advanced Course in Curriculum and Methods in Secondary School English (3)	Frogner
E.Psy.110	Educational Measurement in the Classroom (3)	Johnson
E.Psy.150	Clinical Practice in Remedial Teaching (6)	D. Smith

Health Education

Second Term	5	First Aid and Safety (1)	L. Peterson
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Home Economics

First Term	80	Housing (3)	Palmer
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Industrial Education

First Term	14	Crafts (2)	Voss
	20	Welding (2)	Voss
	109	Conference Leading for Industry (3)	Voss

Physical Education for Men

First Term	M5C	Gymnastics (1)	Wells
	M16C	Volleyball (1)	Wells
	31B	Golf (1)	Wells
	41	Body Mechanics, Stunts, and Tumbling (1)	Wells
	M55	The Teaching of Physical Education Activities (2)	Wells
	95	Tests and Measurements in Physical Education (3)	Wells
Second Term	M4B	Basketball Fundamentals (1)	L. Peterson
	M4A	Football Fundamentals (1)	L. Peterson
	8C	Tennis and Golf (2)	Rickert
	M30C	Softball (1)	L. Peterson
	31A	Tennis (1)	Rickert
	31B	Golf (1)	Rickert
	32	Badminton (1)	Rickert
	M67	Coaching of Football (2)	L. Peterson
	M68	Coaching of Basketball (2)	L. Peterson
	101	Principles of Physical Education (3)	Rickert

Physical Education for Women

First Term	7A	Elementary and Lead-up Games (1)	Richards
	9B	American Country and Square Dance (1)	Richards
	M17A	Archery (1)	Richards
	W18B	Intermediate Swimming (1)	Richards
	21B	Square Dance (1)	Richards
	40	Elementary and Lead-up Games (1)	Richards
	43	The Teaching of Physical Education in the Elementary School (2)	Richards
	54	Methods and Materials in Physical Education (2)	Richards
Second Term	33A	Life Saving (1)	Van Steinburg

Psychology

First Term	1	General Psychology (3)	Hansen
	80	Child Psychology (3)	Hansen
	94	Systems of Psychology (3)	Hansen
Second Term	2	General Psychology (3)	Gladstein
	73	Elements of Vocational Psychology (3)	Gladstein
	74	Psychology in Personnel Work (3)	Gladstein
	97	Individual Intelligence Testing (5)	Hansen

DIVISION OF HUMANITIES

Art

First Term	23	Lettering and Color (3)	A. Smith
	52	Art in Elementary Education (3)	A. Smith
	77	Workshop in Painting (3)	Kiser
	ArtEd.151	Curriculum Building in Art Education (3)	A. Smith
Second Term	5	Introduction to Art (3)	Kiser
	177	Workshop in Advanced Painting (6)	Ar.

English

First Term	4	Freshman Composition (3)	W. Glick
	22	Introduction to Literature (5)	Rosenthal
	59	Shakespeare (3)	Rosenthal
	73	American Literature (3)	W. Glick
	104	Emerson and Thoreau (3)	W. Glick
	162	Milton (3)	Rosenthal
Second Term	53	World Literature (3)	Tezla
	57	The Interpretation of Poetry (3)	Tezla
	110	Romantic Prose and Poetry (3)	Tezla

Humanities

First Term	4	Appreciation of the Arts (3)	R. D. Miller
Second Term	5	Appreciation of the Arts (3)	R. D. Miller
	6	Arts in the Twentieth Century (3)	R. D. Miller

Music

First Term	11	Voice—Individual Lessons (1)	Putman
	15	Strings—Individual Lessons (1)	J. Smith, House
	17	Woodwinds—Individual Lessons (1)	Beverley
	19	Brass—Individual Lessons (1)	Callahan
	21	Introduction to Music (3)	R. D. Miller
	42	Band (1 or 0)	Callahan
	204	Graduate Applied Music (2)	Beverley, Callahan, House, J. Smith
	Mu.Ed.105	Advanced Topics in Instrumental Music Education (3)	Callahan
	Mu.Ed.150	Organization and Supervision of Vocal-Instrumental Music in the Elementary Schools (3)	House

Philosophy

First Term	1	Problems of Philosophy (3)	Ehlers
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Speech

First Term	1	Fundamentals of Speech (3)	Haakenson
	2	Fundamentals of Speech (3)	Haakenson
	67	Phonetics (3)	Pierce
	106	Discussion (3)	Haakenson
Second Term	119	Introduction to Speech Correction (3)	Pierce
	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)	Ar.
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Chemistry

First Term	3	General Chemistry (5)	Cowles
	6	General Chemistry (5)	Cowles
	61	Organic Chemistry (4)	Passer
Second Term	4	General Chemistry (5)	F. J. Glick
	7	General Chemistry (5)	F. J. Glick
	62	Organic Chemistry (4)	Duval

Mathematics

First Term	A	Basic Mathematics (3)	Ar.
	6	Trigonometry (5)	Hafstrom
	30	Analytic Geometry (5)	Hafstrom
	60	College Geometry (3)	Ar.
	100	Topics in Geometry (3)	Ar.
Second Term	A	Basic Mathematics (3)	McEwen
	1	Higher Algebra (5)	McEwen

Natural Science

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

Physics

First Term	13	General Physics (5)	Ar.
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Zoology

First Term	3M	Human Anatomy (4)	Odlaug
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DIVISION OF SOCIAL SCIENCES

Business and Economics

First Term	1	Principles of Economics (5)	Davidson
	3	Principles of Economics (5)	Roulston
	34	Elementary Accounting (5)	Dettmann
	44	Elementary Statistics (3)	Meyers
	65	Business Organization and Finance (3)	Roulston
	66	Insurance Principles (3)	Meyers
	71	Intermediate Accounting I (3)	Dettmann
	72	Intermediate Accounting II (3)	Dettmann
Second Term	81	Labor Economics (3)	Davidson
	87	Business Cycles (3)	Meyers
	1	Principles of Economics (5)	Friest
	19	Office Management and Machines (3)	Dettmann
	35	Elementary Accounting (5)	Dettmann
	45	Elementary Statistics (3)	Meyers
	58	Foreign Trade (3)	Meyers
	59	Transportation (3)	Friest
82	Social and Labor Legislation (3)	Meyers	
	83	Industrial Relations (3)	Davidson

Geography

First Term	12	Principles of Geography (5)	Belthuis
	112	Western Anglo-America (3)	Belthuis
Second Term	12	Principles of Geography (5)	Witzig
	20	Weather and Climate (3)	Witzig
	110	South America (3)	Chamberlin

History

First Term	20	American History (3)	M. Lindquist
	21	American History (3)	Livingston
	22	American History (3)	Livingston
	93	American Diplomatic History (3)	Livingston
	99	Minnesota and the Northwest (3)	M. Lindquist
	141	American Diplomatic History (3)	Livingston
187	Minnesota and the Northwest (3)	M. Lindquist	
	20	American History (3)	von Glahn

Political Science

First Term	1	American National Government (3)	Wolff
	2	American State Government (3)	von Glahn
	3	American Municipal Government (3)	von Glahn
	67	Political Parties and Public Opinion (3)	Wolff
	160	American Political Thought (3)	Wolff
	165	Development of Political Thought: The Middle Ages (3)	von Glahn
1		American National Government (3)	Davidson
Second Term	2	American State Government (3)	von Glahn
	3	American Municipal Government (3)	Davidson
	162	Recent Political Thought (3)	von Glahn

Social Science

First Term	51	The Lake Superior Region (3)	Sielaff
	52	The Lake Superior Region (3)	Sielaff
	53	The Lake Superior Region (3)	Sielaff
	54	The Lake Superior Region (3)	Sielaff
	55	The American Southwest and Mexico—Field Study (6)	M. Lindquist

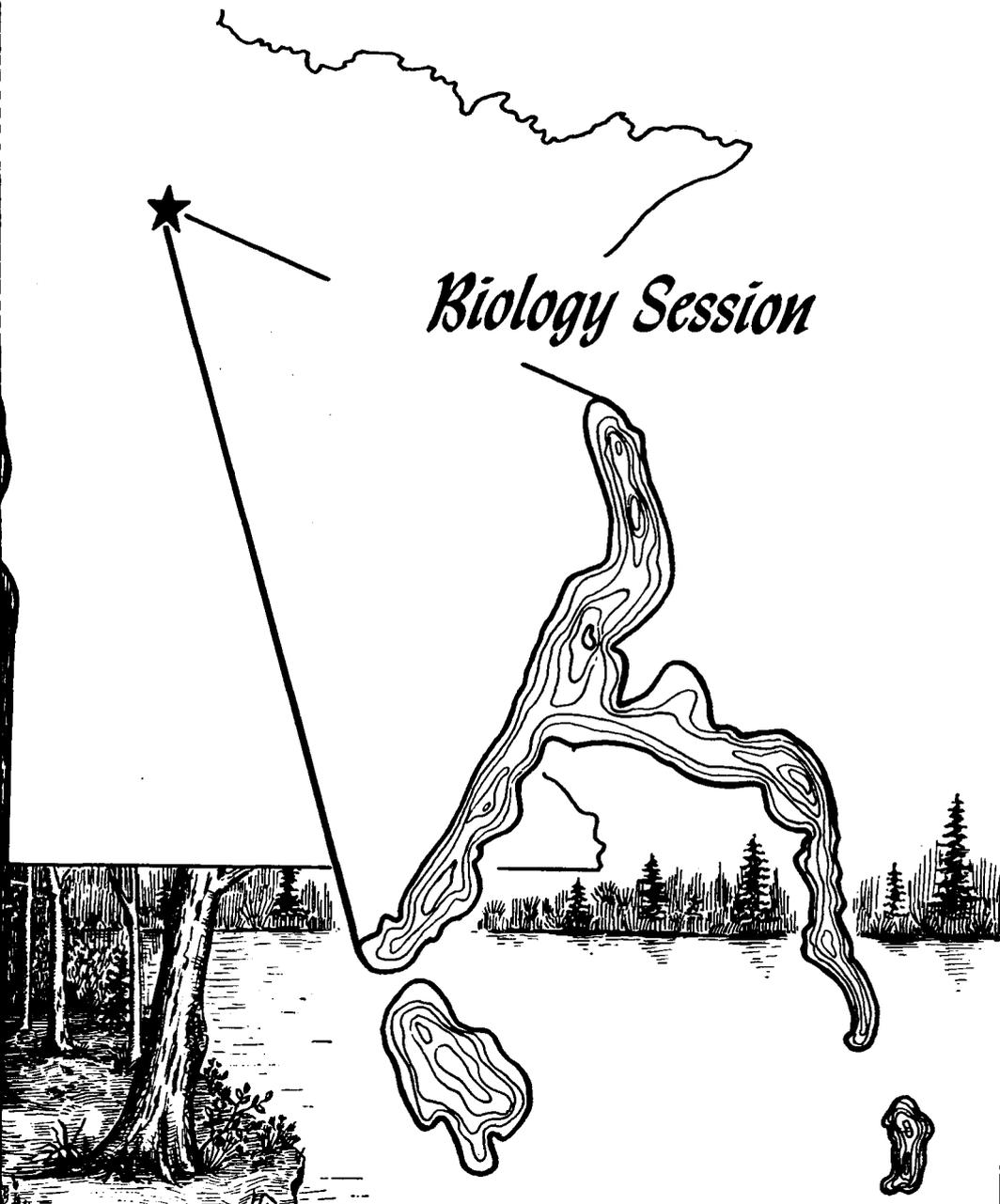
Sociology

First Term	1	Introduction to Sociology (5)	Pearson
	7	Urban Sociology (3)	Schmidt
	49	Social Problems (3)	Pearson
	53	Criminology (3)	Schmidt
	71	Social Mobility (3)	Schmidt
Second Term	2	Intermediate Sociology (5)	Pearson
	70	Minority Group Relations (3)	Schmidt
	81	Marriage and the Family (3)	Pearson

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UNIVERSITY OF MINNESOTA



Biology Session

Lake Itasca Forestry and Biological Station
Summer Session 1957 - June 17 to July 20

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

Volume LX

Number 3

February 1, 1957

Entered at the post office in Minneapolis as semimonthly second-class matter, Minneapolis, Minnesota. Accepted for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized July 12, 1918.

**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
760 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**

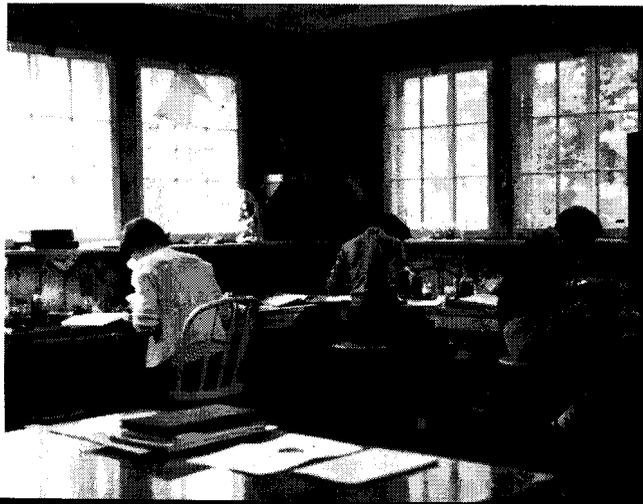
Qualified independent guest investigators may arrange with the director for research in various fields of terrestrial and fresh-water biology. Advanced students and research workers needing laboratory space and special equipment and those wanting to carry on research during the entire field season should make prior arrangements with the 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 completed for the 1957 session.

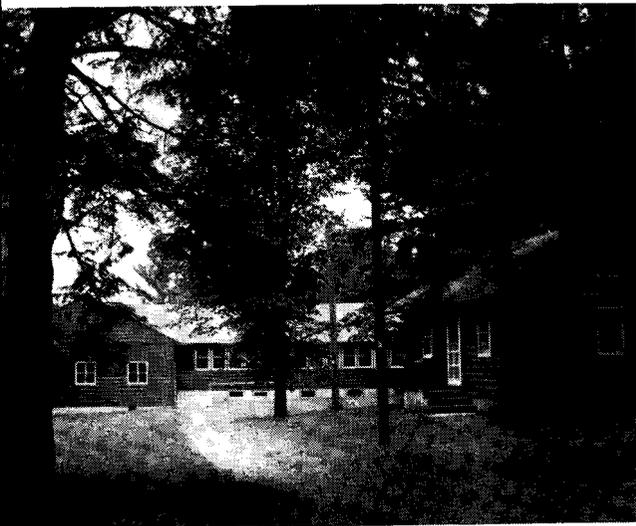
*Laboratories are well lighted
and roomy*



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.



The main walk connecting student cabins and assembly hall

**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.

The modern dining hall is run on a co-operative basis



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.

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.

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.



Laboratory instruction covers many fields

The botany laboratory



**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 20. Graduate students wishing to apply credits toward a degree at Minnesota must complete regular admission procedures. Those wishing to apply credits at another institution may register as *Transient Graduate 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.



Nearby streams are rich
in insect life

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, Minnesota.

RESEARCH AND TRAINING STIPENDS

Stipends for ten college teachers of biology will be available at the Station in 1957 and 1958 under the terms of a grant by the National Science Foundation. Grantees will carry out research on a project of their choosing, enroll in one course, and hold seminars on mutual problems. The stipends include \$375, cost of academic fees, as well as travel and dependency allowances. Address inquiries to the Dean of Summer Session, 760 Johnston Hall, University of Minnesota, Minneapolis 14, Minnesota.

**INSTITUTE FOR
HIGH SCHOOL
TEACHERS**

An Institute for High School Teachers of biology will be held at the Station again this year. The Louis W. and Maud Hill Family Foundation has granted funds to provide for stipends of \$375, cost of academic fees, travel, and dependency allowances for twenty teachers. Teachers should write directly to the Dean of Summer Session, 760 Johnston Hall, University of Minnesota, Minneapolis 14, Minnesota.

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.

NORMAL LOAD

Two courses are considered a normal load, although advanced students (including high school teachers whose employers require ten credits of work in the summer) 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.

Collecting aquatic insects
at the Lake Itasca Station



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 \$65 for board. The kitchen is run on an actual cost 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 regular registrant on or before June 18:

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

Students enrolled in the Graduate School 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.

LATE FEES

Tuition and fees are payable at the time of registration on or before June 18. After June 18 late fees will be charged as follows:

Wednesday, June 19	\$2.00
Thursday, June 20	3.00
Friday, June 21	4.00
Monday, June 24	5.00

No registration will be accepted after Thursday, June 20, without the approval of the director of the Station and the payment of the late fee.

STAFF MEMBERS

Murray F. Buell, professor of botany, Rutgers University, is the author of many articles on ecological subjects, and has done extensive research on forest and prairie communities in the Itasca region.

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.

Richard I. Evans, associate professor of botany, University of Wisconsin, is co-author of a widely used textbook of general botany and is well known for his research, including studies of the botanical composition of sediments in rivers.

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.

Wilbur Mayhew, assistant professor of biology in the Division of Life Sciences, University of California at Riverside, has worked in experimental and systematic ornithology.

Thomas Morley, assistant professor of botany, University of Minnesota, specializes in the classification of flowering plants. He has published a monograph on the taxonomy of woody groups related to the myrtle family.

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) Morley

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*; Tryon, *The Ferns and Fern Allies of Minnesota*. (2-4 cred.; prereq. 10 cred in botany or zoology, or #; TF) Morley

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) Buell

136. Organisms, Microclimate, and Weather. (Not offered in 1957)

138. Analysis of Vegetation. (Not offered in 1957)

155. Fresh-water Algae. A study of the morphology and taxonomy of fresh-water algae with particular attention to the col-

lection and identification of local algae. Field work to be arranged. (4 cred.; prereq. 10 cred. in botany, biology, or zoology, or #; TF) Evans

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

157. **Bryophytes.** Field and laboratory study of the mosses and liverworts of Minnesota. Text: Conard, *How to Know the Mosses*. (4 cred.; prereq. 10 cred. in biology, or #; WS) Evans

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

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

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

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

**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 Dclong, *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 1957)

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. 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, Nat.Sci. 7-8-9, or equiv.; WS) Eddy

107. **Protozoology.** (Not offered in 1957)

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. **Field 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) Mayhew
143. **Animal Parasites.** (Not offered in 1957)
- 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 or Nat.Sci. 7-8-9 and #) Eddy, Mayhew

**CONDENSED
COURSE
SCHEDULE**

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Bot.135	Bot.116	Bot.112	Bot.135	Bot.116	Bot.112
Ent.162	Bot.155	Bot.157	Ent.162	Bot.155	Bot.157
Pl.Pa.56	Ent.59	Ent.124	Pl.Pa.56	Ent.59	Ent.124
Pl.Pa.156	Zool.135	Zool.55	Pl.Pa.156	Zool.135	Zool.55
Zool.119		Zoo'.115	Zoo'.119		Zool.115

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.
- COLE, G. A. An ecological study of the microbenthic fauna of two Minnesota lakes. Ph.D. Thesis. 1949.

- HENDRICKS, H. A. The microfauna of the sandy beaches of three Minnesota lakes. M.A. 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.
- QUINBY, 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.

RECENT RESEARCH PUBLICATIONS

- 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, 35:57. 1949.
- . Notes on the morphology and life cycle of the genus *Monoecocestus* Beddard, 1914 (Cestoda: Anoplocephalidae) from the porcupine. Jour. of Parasitology, 35:605-12. 1949.
- HOOPER, FRANK F. Age analysis of a population of the amciurid fish *Schilbeodes mollis* (Hermann). Copeia, 1949:34-38. 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., 46:462-81. 1951.
- MARSHALL, W. H. Predation on shrews by frogs. Jour. of Mammalogy, 32:219. 1951.
- . Accidental death of a porcupine. Jour. of Mammalogy, 32:221. 1951.
- OWNBEY, C. 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.
- QUINBY, 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 laticola* 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 *Helisoma corpu-lentum*, 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.*, 50:397-401. 1953.
- CHANDLER, A. C. A new nematode, *Chlamydooprocta itascensis* n.gen.,n.sp. (Spiruridac) 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.
- ROWLEY, JOHN R. A study of recent pollen at Lake Itasca Biological Station. *Proc. Minn. Acad. Science*, 23:50-60. 1955.
- 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.
- BUELL, M. F. Spruce-Fir, Maple-Basswood competition in Itasca Park, Minnesota. *Ecology*, 37:606. 1956.
- FREEMAN, R. S. Life history studies on *Taenia mustelae* Gmelin, 1790 and the taxonomy of certain Taenoid cestodes from mustelidae. *Canadian Jour. Zoology*, 34:219-242. 1956.
- KENDEIGH, S. C. A trail census of birds at Itasca State Park, Minnesota. *The Flicker*, 28:90-104. 1956.
- MARSHALL, W. H. Summer weights of raccoons in northern Minnesota. *Jour. of Mammalogy*, 37:445. 1956.

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 _____

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 17, breakfast. Buses will be met at Douglas Lodge.)

Please mail this form to Dean, Summer Session, 760 Johnston Hall, University
of Minnesota, Minneapolis 14, Minnesota



Bulletin of the

UNIVERSITY OF MINNESOTA



Summer Session 1957

First Term - June 17 to July 20

Second Term - July 22 to August 24

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 University Health Service
Frank Bruner, Captain, U.S.N., ROTC Representative
J. William Buchta, Chairman, University College Committee
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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
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William B. Lockhart, Dean of the Law School
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Errett W. McDiarmid, Dean of the College of Science, Literature, and the Arts
Horace T. Morse, Dean of the General College
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William L. Nunn, Director of University Relations
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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
Stanley Wenberg, Assistant to President
Edmund G. Williamson, Dean of Students

Volume LX, Number 7

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How to Use This Bulletin

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 reference should be made to the *Bulletin of General Information* and the regular bulletin of the college concerned.

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

- * Courses through which it is possible for graduate students to prepare required Plan B papers.
- † All quarters of the course preceding the dagger must be completed before credit will be granted for any quarter of the course.
- ‡ Course may be taken out of sequence.
- § Credit will not be given if the equivalent course listed after the section mark has been taken for credit.
- ¶ Means "concurrent registration" in the course which it precedes.
- ‡ Consent of *instructor* must be obtained.
- Δ Consent of the *division, department, or school* involved must be obtained.
- ** A special fee is charged. See section on Course Fees.

Following each course description is a parenthetical statement of credits, prerequisites, class hours, days of the week, and location of the class.

Prerequisites—Before you can enroll in certain courses, you must have completed or be concurrently enrolled in other specified courses or possess some particular qualification or class standing. These requirements are known as prerequisites. If no prerequisites are listed, there are none, except as the course number indicates a class standing requirement.

Class standing requirements, unless otherwise noted, are indicated by the course number:

- 1-49 for freshmen and sophomores
- 50-99 for juniors, seniors, and fifth-year students
- 100-199 for juniors, seniors, fifth-year students, and graduate students
- 200 and over for graduate students only

A minimum of prerequisite information is shown. For example, when courses which must be taken in sequence are prerequisites, only the last course of the sequence is listed.

Example: prereq 2 or 5 and Psy 1 (you must have had Psychology 1 plus either course 2 or 5).

Example: prereq C, or Comp 6 or Comm 3 and 5 addtl cr, or 5 cr in 21-22-23 (you must have had either course C, or 5 credits in the subject matter plus either Composition 6 or Communication 3, or 5 credits from either course 21, course 22, or course 23).

When no departmental abbreviation precedes the course number listed as a prerequisite, that prerequisite course is in the same department as the course being described. Likewise, a prerequisite reading "6 cr" means 6 credits in courses offered by the same department.

Work equivalent to a prerequisite course (having the same content) is ordinarily accepted in lieu of that prerequisite. You will also note that the instructor may, in some instances, waive prerequisites at his discretion.

Hours and Days—Class hours are identified by Roman numerals, and continue for fifty minutes after the beginning time shown below:

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

A class listed I-III TTh meets the first *through* the third hours Tuesdays and Thursdays, the hyphen always indicating "through." A class listed I, III meets first and third hours. Days of the week are abbreviated M, T, W, Th, F, S.

Missing Information—When hours, days, or places of meeting are missing, consult the instructor or department offering the course.

Changes made subsequent to publication of this bulletin are published in the Official Daily Bulletin in the *Minnesota Daily*.

Building name abbreviations—See back cover.

Campus Maps—See inside back cover.

College and Department Abbreviation Code

Aero, Aeronautical Engineering	Law, Law School
AgBi, Agricultural Biochemistry	Lib, Library School
AgEc, Agricultural Economics	Math, Mathematics (SLA)
AgEd, Agricultural Education	ME, Mechanical Engineering
AgEn, Agricultural Engineering	Med, Medicine
Agro, Agronomy and Plant Genetics	MedT, Medical Technology
AmSt, American Studies	MetE, Metallurgical Engineering
Anat, Anatomy	MinE, Mining Engineering
AnCh, Analytical Chemistry	MM, Mechanics and Materials
Anes, Anesthesiology	Mort, Mortuary Science
AnHu, Animal Husbandry	MuEd, Music Education
Anth, Anthropology	Mus, Music
Arch, Architecture	NPsy, Psychiatry and Neurology
ArEd, Art Education	NSci, Natural Science
Art, Art	NuAd, Nursing Administration
Ast, Astronomy	NuEd, Nursing Education
BA, Business Administration	Obst, Obstetrics and Gynecology
Bact, Bacteriology and Immunology	Opth, Ophthalmology
Bot, Botany	OrCh, Organic Chemistry
CE, Civil Engineering	Otol, Otolaryngology
ChEn, Chemical Engineering	Path, Pathology
Clas, Classics	PCh, Physical Chemistry
Comm, Communication	Ped, Pediatrics
Comp, Composition	PE M, Physical Education for Men
CW, Child Welfare	PetE, Petroleum Engineering
Draw, Drawing and Descriptive Geometry	PE W, Physical Education for Women
DyHu, Dairy Husbandry	PhCh, Physiological Chemistry
Econ, Economics	Phcl, Pharmacology
Ed, General Education	Phil, Philosophy
EdAd, Educational Administration	Phsl, Physiology
EdCl, Curriculum and Instruction	Phys, Physics
EdT, Methods and Student Teaching	PIPa, Plant Pathology and Botany
EE, Electrical Engineering	PMed, Physical Medicine and Rehabilitation
Engl, English	PO, Personal Orientation
Ent, Entomology and Economic Zoology	PoHu, Poultry Husbandry
EPsy, Educational Psychology	Pol, Political Science
FL, Family Life	Psy, Psychology
For, Forestry	PubH, Public Health
Fren, French	Rad, Radiology
FS, Foreign Study	Rhet, Rhetoric
GC, General College	Russ, Russian
GE, General Engineering	Scan, Scandinavian
Geog, Geography	Soc, Sociology
Geol, Geology and Mineralogy	Soil, Soils
Ger, German	Span, Spanish
Grk, Greek	Spch, Speech and Theater Arts
HE, Home Economics	SSci, Social Science
HEd, History and Philosophy of Education	Surg, Surgery
HEEd, Home Economics Education	SW, School of Social Work
Hist, History	VAna, Veterinary Anatomy
Hort, Horticulture	VBac, Veterinary Bacteriology and Public Health
Hum, Humanities	VMC, Veterinary Medicine and Clinics
Hydr, Hydromechanics	VObs, Veterinary Obstetrics
IE, Industrial Engineering	VPaP, Veterinary Pathology and Parasitology
InCh, Inorganic Chemistry	VPP, Veterinary Physiology and Pharmacology
Ind, Industrial Education	VSR, Veterinary Surgery and Radiology
Ital, Italian	Zool, Zoology
ITM, Mathematics (Institute of Technology)	
Jour, Journalism	
Lat, Latin	

Calendar

First Term

June	17	Monday	Orientation and registration
June	18	Tuesday	First term classes begin; fees due for students in all colleges
July	4	Thursday	Independence Day, holiday
July	18	Thursday	Commencement, 8 p.m.
July	20	Saturday	First term closes

Second Term

July	22	Monday	Registration and payment of fees
July	23	Tuesday	Second term classes begin
August	22	Thursday	Commencement, 8 p.m.
August	24	Saturday	Second term closes

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 1957 Summer Session only. See section on Admission and Registration for further details.

1957 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 Campus

Graduate and undergraduate study is offered on the Duluth Campus, a 200-acre site overlooking Lake Superior. Dates of terms and tuition are the same as for the Twin Cities campuses. Degrees available include the associate in arts, the bachelor of arts, the bachelor of science, and the master of arts, the latter with majors in education and in curriculum and instruction.

Preprofessional, professional, and liberal arts curriculums are offered. The campus includes divisions of education and psychology, humanities, science and mathematics, and social sciences, as well as an Air Force ROTC program.

The climatic and scenic advantages of cooling Lake Superior and its famous North Shore enhance summer study on this campus.

An institute for secondary school science teachers, first term, is designed to meet the needs of teachers who must teach more than one science. Stipends are available to 70 persons. Another first-term feature is the speech and hearing clinic, which offers opportunity for observation and training. Second-term features include a study tour of Mexico, the ninth annual art workshop, and a course in driver education (for teachers). Special work in the teaching of remedial reading will be available in a series of courses covering both terms.

For bulletin and more detailed information, write to the Office of Student Personnel Services, University of Minnesota, Duluth Branch, Duluth 11.

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, 790 Johnston Hall, University of Minnesota, Minneapolis 14.

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. Directors: for the Deutsches Haus, Herman Ramras; for the Casa Hispánica, Santiago Cúneo; for the Maison Française, Harry Butler. In each house there will be native assistants. (For course information, see Departments of German and Romance Languages, College of Science, Literature, and the Arts.)

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.

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 for the Casa Hispánica, and some may be available for the Deutsches Haus.

Opera Production Workshop

The University Theater and Department of Music will collaborate in presenting courses in Opera Production for music, music education, and speech students, to run through the first term.

Manifold problems will include analysis of different types of opera, assigning roles, coaching singers, conducting, scenery, costuming, lighting, and stage production. Class members will gain first-hand experience by participating as soloists, as members of the ensemble, or as part of the stage crew in the production of a full-length opera to be presented to the general public. The proposed opera is *The Tender Land* by Aaron Copland, one of America's most distinguished composers. Graduate students will have the added experience of staging, directing, or conducting an operatic excerpt as their term paper.

For credits, prerequisites, and other requirements, see courses Mus or Spch 147 and 148 in this bulletin.

Institute for High School Teachers of Physics, Chemistry, and Mathematics

During the 8-week period July 17 to August 10, on the Minneapolis Campus, the University will conduct an Institute for High School Teachers of Physics, Chemistry, and Mathematics. Special courses in mathematics, physics, and chemistry designed explicitly for secondary school teachers will be offered. (See Phys 157c, InCh 157a in the Institute of Technology, and Math 157b, in the College of Science, Literature, and the Arts.) Graduate credit will be given to those in the Graduate School who are majoring in education with specialization in mathematics or the physical sciences. Through grants from the Louis W. and Maud Hill Family Foundation and the National Science Foundation stipends of \$600 plus allowances of \$120 per dependent (maximum of four) will be paid. In addition the usual tuition and fees will be paid for the participants from the Foundation grants and some allowances made for travel expenses. Anyone interested in attending should write to Dean J. W. Buchta, 225 Johnston Hall, University of Minnesota, Minneapolis 14, for application forms.

Institute for High School Teachers of Biology

For further information see section on Biology Session, Lake Itasca Forestry and Biological Station.

Research and Training Stipends for College Teachers of Biology

For further information see section on Biology Session, Lake Itasca Forestry and Biological Station.

Workshop in Public Health Nursing

See section on School of Public Health.

A Summer Travel Course in European Art

The summer travel course in European art again will be conducted by the Department of Art under the auspices of the Summer Session. Five credits will be earned by students completing the course. Cost: \$1,020 including University fees. (See Art 59)

Intensive Russian

An unusual opportunity for intensive study of the Russian language is offered for the second time in the Summer Session. Students with no knowledge of Russian may register for Russian 1a-2a (Slavic and Oriental Languages) in the first term and devote twenty hours weekly to the mastery of this important language.

Russian 1a-2a will present a balanced approach to the language, with the first 2 hours of each morning devoted to reading and composition, while the second 2 hours will be occupied by actual conversation between students and native speakers in small drill sections.

There is a special course fee of \$20 per term in addition to the regular Summer Session fees.

Radio and Television

Two courses in radio and television at the Senior College level, Radio and Television Speech (Spch 65) and Radio and Television Drama (Spch 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 under Spch 181-182-183, Readings in Speech.

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

Other courses in which radio and television students may be interested are the Opera Production courses offered co-operatively by the Department of Speech and Theater Arts (147, 148) and the Department of Music (147, 148); Television in the High School Classroom (EdCI 111), a new course designed for high school teachers of social studies and the language arts, should benefit persons interested in this field; and the Development of Radio and Television Communication (Jour 120).

Journalism and Communications

The School of Journalism program includes 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 on the Senior College-Graduate level in the area of mass communications. Courses that carry senior college and graduate credit are Literary Aspects of Journalism, History of Journalism, International Communications and Foreign Affairs, Development of Radio and Television Communications, the Press in a Dynamic Society, and Special Problems in Mass Communications.

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.

American Studies Program

During the summer of 1957, visiting professors in art, literature, and the social sciences will offer courses in various aspects of American culture, as will members of the University of Minnesota staff in these and other fields (anthropology, economics, education, history, journalism, music, philosophy, and political science).

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.

Speech Pathology and Audiology

The Department of Speech and Theater Arts offers an expanded program in elementary and advanced speech pathology. First-term courses are Introduction to Speech Correction (Spch 119), Anatomy and Physiology of the Voice Mechanism (Spch 141), Speech Pathology (Spch 162), and Clinical Methods and Practice in Speech Pathology (Spch 164, 165, 166); and two graduate seminars, Speech Pathology (Spch 261) and Organic Disorders of Speech (Spch 281). Second-term offerings are Speech Habilitations for Persons with Neuromuscular Disorders (Spch 149), Clinical Methods and Practice in Speech Pathology (Spch 164, 165, 166), and Speech and Language in Human Behavior (Spch 169).

The Department of Speech and Theater Arts, in co-operation with the Audiology Clinic at the University Hospitals, will offer five special courses and an institute for parents of deaf children. The first-term courses are Hearing Disorders (Spch 152), Audiometry and Hearing Aids (Spch 153), and Clinical Practice in Audiology (Spch 157). Second-term courses are Language Training for the Deaf (Spch 127) and Auditory Training (Spch 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.

Scandinavian Studies

The Scandinavian Studies program, held alternate summers at the University of Wisconsin and the University of Minnesota, is scheduled for the summer of 1957 at the University of Wisconsin from June 28 to August 24.

For detailed information consult Professor Einar Haugen, Department of Scandinavian Studies, University of Wisconsin, Madison, Wisconsin, or Professor Alrik Gustafson, Department of Scandinavian, 13 Folwell Hall, University of Minnesota, Minneapolis 14.

Institute on Minnesota Government and Politics

For information regarding this Institute see Pol 114, second term, and a related course, Pol 117, under the College of Science, Literature, and the Arts.

Efficient Reading

Adult reading needs are a matter of real concern. The course Efficient Reading (Rhet 47), College of Agriculture, Forestry, and Home Economics, designed for the average and above-average adult reader, provides a unique combination of activities for improving reading speed, comprehension, and vocabulary.

Design Applied to Crafts

There will be an opportunity for beginners and advanced students to work in various areas of crafts in a concentrated course given in the School of Home Economics (HE 25 and 126). This will interest not only teachers but those wishing to develop some skill in creative leisure time activities.

Cultural Resources of the Twin Cities

For information regarding this course which is being repeated again this summer, see HE 119, under the College of Agriculture, Forestry, and Home Economics.

Farm Shop Management

A new course, AgEn 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.

Seminars on School Psychology

Two seminars in the first term will provide instruction on problems and methods in school psychology: Introduction to School Psychological Services (EPsy 152) and Seminar and Laboratory in School Psychological Services (EPsy 153) for staff members already having some experience in school psychological work. An outstanding school psychologist will direct the seminars with several of the resident graduate faculty co-operating.

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 (Ed 75A, first term, and 75B, second term) have been planned particularly for persons with Bachelor's degrees who wish to prepare themselves for teaching in the elementary schools. Admission to the College of

Education as a regular student is prerequisite for registration in these courses.

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

Special Education

The basic course on Teaching of Exceptional Children (EPsy 182) will be given in both summer terms; and courses on the teaching of mentally retarded children and special problems of working with gifted children will also be available. This work, together with special programs for teachers of the visually handicapped and the auditorially handicapped will provide much needed assistance to the schools in view of the increasing effort to improve all special education services in public education.

Graduate Program for Counselors

Introductory and advanced training for counselors is featured at the University of Minnesota. In both terms, complete offerings of graduate courses for high school counselors will be available, as well as courses for college student personnel workers. A special leaflet describing this work will be sent on request.

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 the Institute to be held at the Center for Continuation Study, June 24 through June 28. The Institute will emphasize sound practices for elementary and secondary school instruction in the language arts.

Driver Education

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

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 (EdAd 167).

Workshops in the College of Education

For information regarding the workshops in Higher Education, for Industrial Arts Teachers, for School Administrators, for Teachers of the Visually Handicapped, and in Home Economics, see the College of Education section in this bulletin.

Marriage and Family Life Education

A recent meeting of the Minnesota Governor's Youth Commission highlighted the need for instruction in the schools on problems of marriage and family life. Many Upper Midwest schools currently are working toward the planning of such instruction. The first term offerings will include a special course to assist public school staff members and workers from co-operating agencies in the planning of materials and the discussion of methods for teaching in the marriage and family life area (EdCI 112). Mrs. Dorothy Dyer, the instructor of this course, is a national leader, at present serving as chairman of the local Advisory Committee for the National Council of Family Relations Office.

Television in Language Arts and Social Studies

Television in the High School Classroom (EdCI 111) is a new course designed for high school teachers of social studies and the language arts. Interest groups within the class will attempt to establish standards of judgment for evaluating materials currently available on television channels. Emphasis will also be given to the production of programs by secondary school students and their instructors. Plans are under way for using the closed-circuit television equipment in University High School to illustrate ways of improving instruction in the language arts and the social studies.

Music Education

Recent Research and Literature (MuEd 170) is for elementary teachers as well as music education majors in the first term.

A new course, Organization and Supervision of Vocal-Instrumental Music in Elementary Schools (MuEd 150), in the second term, will be of interest to teachers and supervisors of both vocal and instrumental music. It will include individual and group projects and is designed to help teachers as well as prospective supervisors keep abreast of the latest methods and materials in presenting music to children of grade school age.

Workshop on Case Material in Nursing

For teachers of nursing and nursing service administrations, a 5-week workshop, running through the first term, will provide assistance in developing and using case material. The workshop (Nurs 182) offers 6 credits. Registrants may take one 3-credit course in addition to the workshop. Professor Lucy H. Beal, of Boston University School of Nursing, will conduct the workshop. Miss Beal is an authority in the writing of cases for use in nursing. She has worked with personnel of the Harvard School of Business Administration and has conducted workshops on the use of the case method in teaching and administration.

Institute on Health Instruction and the Elementary School Child

(June 25-26, 2:00 p.m., Norris Gymnasium for Women)

The Institute, sponsored by the Department of Physical Education for Women, is designed primarily for elementary classroom teachers and super-

visory personnel concerned with health teaching. A discussion of very practical methods of planning and evaluating health units will be given on June 25 by a nationally known leader and author of health textbooks. On June 26, experienced classroom teachers engaged in teaching health will discuss and distribute materials that they have tried out with children.

Center for Continuation Study Programs

The Center for Continuation study has tentatively scheduled the following institutes and workshops. For information please write directly to the Director, Center for Continuation Study, University of Minnesota, Minneapolis 14.

June 24-28	Language Arts Institute
July 8-12	Institute for Organists
July 15-26	Seminar on Philosophy and Religion
July 22-26	Piano Workshop (Minneapolis Campus)
July 29-August 2	Piano Workshop (Duluth Campus)
July 22-August 2	Institute on Minnesota Government and Politics (See section on Special Programs in this bulletin)
August 5-9	Creative Keyboard Methods
August 12-16	Arithmetic Workshop
August 26-30	Institute for Parents of Young Deaf Children
August 26-30	Arts and Crafts for Teachers of Slow Learning Children

Two additional programs in the planning stage are an Institute on Creative Arts and a Course on the Teaching of Science at the Elementary Level.

GENERAL INFORMATION

On its Minneapolis Campus the University of Minnesota places at the disposal of the Summer Session student the facilities of 11 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 all students who are registered for classes on the St. Paul Campus, free transportation on the intercampus bus is provided. Passes for students registered in the College of Agriculture, Forestry, and Home Economics and the School of Veterinary Medicine will be issued at the Office of Admissions and Records, St. Paul Campus.

Undergraduate students registered in other colleges will obtain their passes at the Union Post Office on the ground floor of Coffman Memorial Union. Graduate student passes will be issued in 108 Wesbrook Hall, Minneapolis Campus.

Tickets for persons not eligible for passes may be purchased at the Bursar's windows on either 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 and 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 at 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.*

University Health Service

The University 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 University 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, out-patient calls, drugs, prolonged hospitalization, 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 in private homes may be obtained by addressing the Director of Student Housing, 209 Eddy Hall, University of Minnesota, Minneapolis 14.

Except in the case of reservations at the dormitories, it is generally more satisfactory to engage accommodations after arrival than to make reservations in advance.

There are two residence halls for women on the Minneapolis Campus. *Ada Comstock Hall* situated next to Coffman Memorial Union will offer rooms only for the first and second terms contingent upon the number of applications. Construction of new wings to the building and the installation of two modern cafeteria counters will be in progress. Meals will be available in the adjacent Coffman Memorial Union Cafeteria Monday through Friday. For application and additional information write to Director of Women's Residences, Comstock Hall, University of Minnesota, Minneapolis 14.

Sanford Hall for women will be open for room and board for the first term; also for the second term contingent upon the number of residents. Because of the limited number of reservations available, applications should

be made as early as possible to the Director of Sanford Hall, University of Minnesota, Minneapolis 14.

Winchell Cottages for women, housing on a co-operative basis, will be open both terms. For applications and additional information, write to Director of Winchell Cottages, 212 12th Avenue S.E., University of Minnesota, Minneapolis 14.

For applications and additional information regarding *Centennial Hall*, dormitory for men, write to Director of Centennial Hall, University of Minnesota, Minneapolis 14.

On the St. Paul Campus, contingent upon the number of applications, *Meredith Hall* will be open for women and the *Dining Hall Dormitory* will be open for men. Inquiries should be addressed to Director of Dormitories, School of Agriculture, University of Minnesota, St. Paul 1.

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 must 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 17, 8 a.m. to 4 p.m.

Fee Payment, last day without penalty—Tuesday, June 18

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

Wednesday, June 19.....	\$2.00
Thursday, June 20.....	3.00
Friday, June 21.....	4.00
Monday, June 24.....	5.00

No registrations are allowed for the first term after Thursday, June 20, without the special permission of the dean of the school or college concerned.

Second Term

Registration and Fee Payment—Monday, July 22, 8 a.m. to 4 p.m.

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

Tuesday, July 23.....	\$2.00
Wednesday, July 24.....	3.00
Thursday, July 25.....	4.00
Friday, July 26.....	5.00

No registrations will be accepted for the second term later than Thursday, July 25, 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 17: 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 17, should begin registration at the Office of Admissions and Records, Minneapolis or St. Paul Campus as appropriate.

Second Term

July 22: Information Booth, first floor, 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

105—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

Art

All courses under 200 except 59—JohH 210††

Art Education

17, 18, 19—Bu 206††

Botany

4, 5—JohH 210††

Business Administration

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

Civil Engineering

23—E 136

Classics

24, 124—JohH 210††

Communication

3—JohH 310††

Curriculum and Instruction

100, 109, 111, 119, 125, 135, 179, 180, 270—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, except 160—VH 107†† for BA, and JohH 210†† for other students

Education

75A, 75B—Bu 206††

Educational Administration

234—Bu 206††

Educational Psychology

110, 116A, 134, 153, 216A, 217A—Bu 206††

Electrical Engineering

36, 37—E 136

English (IT)

85, 86—E 136

English Composition

All courses—JohH 210††

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 Education

180—Bu 206††

Home Economics

34—CofH 220 for AFHE, JohH 210†† for others

All other courses—CofH 220

Home Economics Education

196B, 196F, 196G—Bu 206††

Horticulture

All courses under 200—CofH 220

Humanities

All courses—JohH 210††

†† These courses will be tallied in the Main Ballroom, Coffman Memorial Union, on the regular registration day, June 17.

Industrial Engineering

150—E 136

Inorganic Chemistry4, 5—CofH 220 for AFHE, E 136
for IT, JohH 210†† for other stu-
dents11, 26—E 136 for IT, JohH 210††
for other students

All other courses under 200—E 136

Journalism

51, 55—JohH 210††

Mathematics (IT)

All courses—E 136

Mechanical Engineering

All courses—E 136

Mechanics and Materials

26, 127, 128—E 136

Methods and Student Teaching

52—Bu 206††

Mines and Metallurgy

All courses except MetE 159—E 136

Music

11C, 12C—JohH 210††

Natural Science

All courses—JohH 210††

Organic Chemistry61, 62—CofH 220 for AFHE, E 136
for IT, and JohH 210†† for other
students

All courses under 200—E 136

Personal Orientation

All courses—JohH 210††

Physical Chemistry

104, 105, 106—E 136

107, 108—JohH 210††

Physical Education for Men

1A, 1B, 1C, 2A, 2B—Bu 206††

Physical Education for Women

7, 8, 32, 62—Bu 206††

Physics

All courses—E 136

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

All other courses—CofH 220

Social Science

All courses—JohH 210††

Speech and Theater Arts

1, 131—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 17.

‡‡ 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).....	\$47.50

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

Students taking the following courses will pay course fees in addition to tuition as follows:

Civil Engineering

\$35.00—23 (summer camp)

Itasca Biological Station

\$10.00—Laboratory fee

Modern Language Institute (Summer Session)

\$40.00 per term—French (22, 58, 109); or German (22, 66, 107); or Spanish (22, 58, 109)

Music

\$15.00—Class lessons in 11C, 12C

25.00—60B, 61B, 62B

30.00 for two, 60.00 for four half-hour individual lessons per week—A, D (no cr.)

30.00 for two (2 cr.), 60.00 for four (4 cr.) half-hour individual lessons per week—11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27

50.00—13B

60.00—204

Students paying \$30 or more in music fees pay only the special fees indicated for these courses. Such students may take other courses by paying regular summer tuition and incidental fee.

Music Education

225E—Same as Music 11-27 (see above)

Physical Education (men)

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

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

Physical Education (women)

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

†† 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*.

Public Health

\$100.00—169, 190

Russian

\$20.00 per term—Russian 1a-2a

Deposit Cards

Deposit cards may be purchased from the bursar (or from the cashier, Coffey Hall, for Agricultural Biochemistry). Chemistry cards are \$10; Agricultural Biochemistry, 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 ten weeks—\$15.00 for one, \$25.00 for two, \$30.00 for three, \$35.00 for four, \$40.00 for five 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

\$ 2.50 per term—Foreign Student Health fee, required of all non-citizens.
 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 term Thursday, July 18, 8 p.m.

Second term Thursday, August 22, 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:

Duluth Branch \$2.50

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 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 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, June 6, 1957; second term: Thursday, July 11, 1957).

Master's Degree, Plan B

The requirements under this plan in matters of admission, residence, 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 4 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 general home economics and home economics education.

College of Agriculture, Forestry, and Home Economics

AGRICULTURAL BIOCHEMISTRY (AgBi)

First Term and Second Term

203. Research Problems. Work on research problems in various fields of biochemistry. (Page 46 ††) (2-5 cr; prereq grad. #: ar) Staff

AGRICULTURAL ECONOMICS (AgEc)

First Term

105. Advanced Farm Management. Factors affecting a farmer's success, and methods for evaluating a farm business. Analysis of an actual farm operation. Meets for first 3 weeks of term only. (3 cr; prereq 102 or equiv; I-II MTWThF; HH 311) Engene

200. General Seminar in Agricultural Economics. Special problems for individual work by qualified students. (3 cr; 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 1956-58.

AGRICULTURAL ENGINEERING (AgEn)

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 cr; prereq agricultural education majors only. 40, 41, 3 add'l cr, AgEd 91, or *) Henderson

Sec 1, Lect III TTh, En 35
 Lab III MWF, En 20
 IV MTWThF, En 20

Sec 2, Lect VIII TTh, En 35
 Lab VIII MWF, En 20
 IX MTWThF, En 20

AGRONOMY AND PLANT GENETICS (Agro)

First Term and Second Term

AGRONOMY

- 201.* **Research in Farm Crops.** (Page 50 ††) (Cr ar; prereq 121, 123; ar) Dunham, Schmid

PLANT GENETICS

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

ANIMAL HUSBANDRY (AnHu)

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 cr; ar) Cummings, Hanson, Harvey, Meade

DAIRY HUSBANDRY (DyHu)

First Term and Second Term

- 208.* **Research in Dairy Production.** (Page 93 ††) (Cr ar; prereq prelim grad work; ar) Cole, Petersen, Donker, Williams, Clifton, Graham
- 209.* **Research in Dairy Manufacturing.** (Page 93 ††) (Cr ar; prereq prelim grad work; ar) Combs, Coulter, Thomas, Morris
- 215.* **Research in Dairy Bacteriology.** (Page 93 ††) (Cr ar; prereq prelim 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. (Cr ar;

†† For description see *Bulletin of the Graduate School* for 1956-58.

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

prereq 9 hrs entomology and other prescribed work; ar) Mickel, Hodson, Holdaway, Marshall, Richards. Cutkomp, Haydak, Peterson, Smith, Beer, Cook, Brooks, 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. (Cr ar; ar) Mickel, Hodson, Holdaway, Marshall, Richards. Cutkomp, Haydak, Peterson, Smith, Beer, Cook, Brooks, Price

Second Term

13. **Field Zoology.** Offered at Itasca Park. (2 cr) 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, Duncan
 203.* **Research Problems in Forest Management.** (Ar) Schantz-Hansen, 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 29 to September 6

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

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

2. **Important Forest Plants.** (Page 67 ††) (2 cr) Rees
5. **Field Forest Ecology.** (Page 67 ††) (2 cr) Hansen
6. **Field Measurements.** (Page 67 ††) (2 cr) 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 cr) Krogstad
- Soil 3A. Field Forest Soils.** Field and laboratory studies in forest soils. (1 cr) Arne-man

HOME ECONOMICS (HE)

First Term

- FL 15. The Home and Its Furnishings.** 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 cr; II MTWThF; WeH 206) Ludwig
25. **Design Applied to Crafts.** Emphasis upon well-designed and suitable articles for use in dress and in the home which can be made with the equipment available in the typical home, such as leather tooling, weaving, simple metal work, ceramics, etc. (3 cr; prereq 20 and 21 or †; June 17-July 3, all day; HE 433) Everson
28. **Construction and Refinishing of Home Furnishings.** Laboratory problems in refinishing and reupholstering furniture and making of slip covers and draperies. Emphasis on design. Techniques suitable for homemakers, extension workers, and homemaking teachers. Students need to furnish own materials. (3 cr; prereq †; I-II MTWThF; HE 433) Myren
34. **Nutrition Problems.** A consideration of the problems commonly met by adults and children in typical families. (4 cr, \$76, or 170 and 171; prereq 3rd qtr soph, jr, sr, 31, 40, physiology, or human biology; IV MTWThF plus 2 hrs MWF; HE 201) Pilcher
49. **Household Equipment.** Discussion, laboratory experiences, and field trips will be used to illustrate principles that should guide in the selection, operation, care, and arrangement of equipment in the home. (Limited to 16) (3 cr; prereq soph, AgEn 35 or †; June 17-July 3, all day; HE 124, 128) Stulberg
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 cr; open only to students registered in the regular year; prereq jr, sr, 85 or 185... 40, 41 advised) Segolson, Gage
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 selection 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 cr; VII-IX MWF; HE 342) Esteros
126. **Special Problems in Crafts.** Advanced study in area of crafts; weaving, enameling, leatherwork, metalwork, or other. One area may be selected for study, or a combination of two or more. (1-3 cr; prereq 20, 25 or †; June 17-July 3, all day; HE 433) Everson

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

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 cr; prereq 40 or equiv; III MTWThF; HE 125) Trammell
152. **Problems in Consumer Textiles.** Emphasis on contemporary textiles, the evaluation of their physical characteristics in relation to end use performance, the agencies aiding the consumer through development of standards, and individual problems which students have met in the textile field. (3 cr; prereq 50 or equiv; VI MTWThF, V TTh; HE 303) Davison
153. **Recent Developments in Clothing Construction.** Discussion, demonstration, and laboratory work with emphasis on management of time and materials, including newer construction techniques. (3 cr; prereq 53, #; July 5-20, all day; HE 328) Moser
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 cr, \$24 or 57 or GC 16 or FL 15; prereq jr, sr, or #, 27, 49...120 advised; VII-IX MTWThF; HE 360) Ludwig
184. **Home Management Principles.** Managerial aspects of homemaking; work simplification of household activities; financial records and budget-making for the individual and the family. (3 cr; prereq 40...41 advised; III MTWThF; HE 201) Gage
220. **Readings in Related Art.** Independent study and review of books and periodicals in selected areas of related art. Written reports. (1-3 cr; prereq #; ar) Esteros
249. **Seminar in Foods.** Review and interpretation of the literature. (1-2 cr; prereq #; II MTWTh; HE 125) Noble
295. **Home Economics Problems.** (Family Relations, Nutrition, Related Art, Textiles). Independent study and written reports. (1-5 cr; prereq #; ar) Leichsenring, Bellinger, Davison, Esteros

Second Term

86. **Home Management Laboratory.** (See first term) Bellinger, Segolson
295. **Home Economics Problems.** (Family Relations, Nutrition) (See first term) Leichsenring, Bellinger

HOME ECONOMICS EDUCATION

See index

HORTICULTURE (Hort)

First Term and Second Term

- 190-191-192. **Special Problems.** (Page 157 ††) (2-4 cr; prereq #; ar) Staff
- 247.* **Reports on Special Horticultural Topics.** (Page 157 ††) (Cr ar, maximum 9) Staff
- 249.* **Research in Horticultural Crop Breeding.** (Cr ar, maximum 9) Currence, Krantz, Hutchins, Wilcox

†† For description see *Bulletin of the Graduate School* for 1956-58.

PLANT PATHOLOGY AND BOTANY (PlPa)¶¶

First Term and Second Term

- 206.* **Research in Plant Pathology.** (Page 201 ††, description for 203-204-205) (Cr ar; PP) J. J. Christensen, Eide, Hart, C. M. Christensen, Dossdall, King, Landon, Kommedahl, French, DeVay
- 210.* **Special Problems in Mycology.** (Page 201 ††) (Cr ar; prereq 105-106-107; PP) J. J. Christensen, C. M. Christensen, Dossdall
- 257.* **Research Problems in Applied Plant Physiology.** (Page 202 ††) (Cr ar; AgBot) Rowell, DeVay, Landon
- 263.* **Research Problems in Agricultural Botany.** (Page 202 ††) (Cr ar; AgBot) J. J. Christensen, Kommedahl

POULTRY HUSBANDRY (PoHu)

First Term and Second Term

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

RHETORIC (Rhet)

First Term

22. **Public Speaking.** Fundamentals of speech making. Particular emphasis upon organizing the speech and projecting it to the audience. (3 cr; prereq satisfaction of freshman communication requirements; IV MTWThF; En 307) Nichols
47. **Efficient Reading.** For students, teachers, 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. (Limited to 30) (3 cr) Brown, Mondale, Thompson

Sec 1, I MTWThF, ForH 85
 Sec 2, II MTWThF, ForH 85
 Sec 3, III MTWThF, ForH 85

Sec 4, IV MTWThF, ForH 85
 Sec 5, V MTWThF, ForH 85

51. **Exposition.** Essays and articles, technical writing, application letters, review of English usage. (3 cr; prereq satisfaction of freshman communication requirements; III MTWThF; En 307) Nichols

Second Term

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

Sec 1, I MTWThF, ForH 85
 Sec 2, II MTWThF, ForH 85

Sec 3, III MTWThF, ForH 85

†† For descriptions see *Bulletin of the Graduate School* for 1956-58.

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

SOILS (Soil)

First Term and Second Term

- 202.* **Research Problems in Soils.** (Page 232††) (2-5 cr; prereq ‡; ar) Martin, Burson, Caldwell, MacGregor, Schmidt, Blake, Arneman, Rust, Farnham

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 cr; given at Itasca) Arneman

School of Veterinary Medicine‡‡

All classes scheduled by arrangement

First Term and Second Term

DIVISION OF VETERINARY ANATOMY (VAnc)

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

DIVISION OF VETERINARY BACTERIOLOGY AND PUBLIC HEALTH (VBac)

- 128.* **Problems in Veterinary Bacteriology and Public Health.** (Cr ar; prereq 103 or equiv, §) Pomeroy, Roepke, Lindorfer
- 201.* **Advanced Poultry Diseases.** Investigations of specific infectious disease problems of poultry. (Cr ar; prereq 125, §) Pomeroy
- 205.* **Advanced Veterinary Bacteriology.** Special topics, techniques, collateral reading, and conferences. (Cr ar; prereq §) Pomeroy, Fenstermacher

VETERINARY MEDICINE AND CLINICS (VMC)

- 201.* **Advanced Studies in Veterinary Medicine.** Detailed discussions of the diseases of organs or systems in animals. One of the following etiologic groups will be selected for discussion for any quarter: prenatal, metabolic, toxic, infectious, or physical influences. (Cr ar; prereq 104, 131, §) Hoyt, Mather, Sorensen
- 202.* **Advanced Studies in Diagnosis and Therapeutics of Animal Diseases.** Detailed examination, discussions, and treatment of cases of animal diseases. (Cr ar; prereq 104, 131, §) Hoyt, Mather, Sorensen
- 203.* **Seminar in Veterinary Medicine.** (Cr ar; prereq §) Hoyt

VETERINARY OBSTETRICS (VObs)

- 201.* **Special Problems in Animal Reproduction.** (Cr ar; prereq §) Zemjanis

†† For description see *Bulletin of the Graduate School* for 1956-58.

‡‡ 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.

DIVISION OF VETERINARY PATHOLOGY AND PARASITOLOGY (VP&P)

157. **Veterinary Post-mortem Pathology.** (1-3 cr; registration for more than 1 term permitted; prereq 153 or equiv, #) Sautter, Kernkamp
- 158.* **Veterinary Surgical Pathology.** Neoplasms, surgical biopsies, post-mortem material, review of pertinent literature. (1-3 cr; prereq 153, #) Sautter, Kernkamp
- 201.* **Advanced Veterinary and Poultry Pathology.** Clinical material, collateral reading, and conferences. (Cr ar; prereq #) Sautter, Fenstermacher, Kernkamp
- 203.* **Neoplasms of Domestic Animals.** (Cr ar; prereq #) Sautter
- 241.* **Problems in Veterinary Parasitology.** (Cr ar; prereq 102 or equiv, #) Griffiths

DIVISION OF VETERINARY PHYSIOLOGY AND PHARMACOLOGY (VPP)

- 130.* **Problems in Animal Physiology.** (Cr ar; prereq 105, 106 or Phsl 106, 107, #) Sellers, Good
- 171.* **Problems in Veterinary Pharmacology.** (Cr ar; prereq 152 or equiv, #) Stowe, Hammond

DIVISION OF VETERINARY SURGERY AND RADIOLOGY (VSR)

- 210.* **Advanced Veterinary Radiology.** Radiological diagnostic procedures and interpretation as applied to veterinary medicine. (Cr ar; prereq 121 or equiv, #) Spurrell
- 220.* **Advanced Veterinary Surgery.** Pre- and post-operative evaluation and treatment, anesthesia, and surgery of the various systems in small or large animals. (Cr ar; prereq 103 or equiv, #) Arnold

Lake Itasca Forestry and Biological Station

BIOLOGY SESSION

(June 17—July 20)

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 17, ending July 20.

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, 790 Johnston Hall, University of Minnesota, Minneapolis 14.

Research and Training Stipends for College Teachers of Biology

Stipends for 10 college teachers of biology will be available at the Station in 1957 and 1958 under the terms of a grant by the National Science Foundation. Grantees will carry out research on a project of their choosing, enroll in one course, and hold seminars on mutual problems. The stipends include \$375, cost of academic fees, as well as travel and dependency allowances.

Institute for High School Teachers of Biology

An Institute for High School Teachers of biology will be held at the Station again this year. The Louis W. and Maud Hill Family Foundation has granted funds to provide for stipends of \$375, cost of academic fees, travel, and dependency allowances for 20 teachers.

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, Minneapolis 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 14. Off-campus students may register upon arrival at the Biological Station on June 17 if registration before arrival is impossible.

Fees and Expenses

Registrations will be accepted during May and June but not later than June 18.

The following fees are payable by each registrant on or before June 18 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

†† See section on Admission and Registration.

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.

Individuals, holding the Ph.D. degree or its equivalent, pursuing research as independent investigators will pay a Research Table Fee of \$25.

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 \$65 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 \$148 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 18. After that date the late fee will be charged according to the following schedule:

Wednesday, June 19	\$2.00
Thursday, June 20	3.00
Friday, June 21	4.00
Monday, June 24	5.00

No registration will be accepted after Thursday, June 20 without the approval of the director in charge.

Courses of Instruction

First Term

BOTANY (Bot)

- PIPa 56. **Introduction to the Study of Fungi.** See Plant Pathology.
112. **Aquatic Flowering Plants.** (4 cr; prereq 10 cr in botany or zoology, or #; WS) Morley
116. **Summer Flora of Minnesota.** (2-4 cr; prereq 10 cr in botany or zoology, or #; TF) Morley
135. **Ecology of the Itasca Region.** (4 cr; prereq Bot 50 or 130 or For 4; MTh) Buell
136. **Organisms, Microclimate, and Weather.** (Not offered in 1957)
138. **Analysis of Vegetation.** (Not offered in 1957)
155. **Fresh-Water Algae.** (4 cr; prereq 10 cr in botany, biology, or zoology, or #; TF) Evans
- PIPa 156. **Advanced Study of Fungi.** See Plant Pathology.
157. **Bryophytes.** (4 cr; prereq 10 cr in biology or #; WS) Evans
- 196.* **Problems in Ecology, Taxonomy, Bryology, or Algology.** (Cr ar; prereq #) Buell, Evans, Morley
- 208.* **Research Problems in Taxonomy.** (Cr ar; prereq #) Morley
- 224.* **Research Problems in Ecology.** (Cr ar; prereq #) Buell
- 236.* **Research Problems in Cryptogams.** (Cr ar; prereq #) Evans

ENTOMOLOGY AND ECONOMIC ZOOLOGY (Ent)

59. **Field Entomology.** (4 cr; prereq jr, sr, Zool 1-2-3 or equiv; TF) Peterson
68. **Natural History of the Higher Vertebrates.** (Not offered in 1957)

- 124. The Biology of Immature Insects.** (4 cr; prereq 15 cr in zoology and Ent 52 or equiv or Δ ; WS) Peterson
- 162. Ecology of Terrestrial Vertebrates.** (4 cr; prereq 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.** (Cr ar; prereq #) Marshall, Peterson

PLANT PATHOLOGY AND BOTANY (PIP α)

- 56. Introduction to the Study of Fungi.** (4 cr; prereq jr, sr, 9 cr in botany, or #; MTh) C. M. Christensen
- 156. Advanced Study of Fungi.** (4 cr; prereq 9 cr in botany, or #; MTh) C. M. Christensen
- 210.* Special Problems in Mycology.** (Cr ar; prereq Myc 105-106-107) C. M. Christensen

ZOOLOGY (Zool)

- 55. Natural History of Invertebrates and Fishes.** (4 cr; prereq Zool 1-2-3, NSci 7-8-9, or equiv; WS) Eddy
- 107. Protozoology.** (Not offered in 1957)
- 115. Advanced Natural History of Invertebrates and Fishes.** (4 cr; prereq 15 cr in zoology; WS) Eddy
- 119. Limnology.** (4 cr; prereq 15 cr in zoology; MTh) Eddy
- 135. Field Ornithology.** (4 cr; prereq 15 cr in zoology; TF) Mayhew
- 143. Animal Parasites.** (Not offered in 1957)
- 197.* Problems in Ornithology, Ecology, and Limnology.** (Cr ar; prereq Zool 1-2-3 or NSci 7-8-9 and #) Eddy, Mayhew

SCHOOL OF BUSINESS ADMINISTRATION

Admission

For admission to the School of Business Administration a student must have satisfied the requirements as listed in one of the 2-year prebusiness courses in 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 10 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 cr, §BA 57; prereq 2nd qtr fr; I MTWThF; VH 207) Coen

Econ 6. Principles of Economics. Fundamental principles of economics intended to serve as a foundation for advanced courses in business administration and economics. (3 cr)

Sec 1, IV MTWThF, VH 6, Harper Sec 2, V MTWThF, VH 6, Ar.

Econ 24. Principles of Accounting. (1st qtr of 24-25-26) (Students who have had a high school course or experience in bookkeeping may be admitted to Econ 25 by passing a placement test.) Methods of recording, reporting, and interpreting business events. Use of accounting as a tool of business management. (9 cr, §BA 54-55; prereq 3rd qtr fr; III MTWThF; VH 2) Ar.

Econ 26. Principles of Accounting. (3rd qtr, see 24) (3 cr, \$BA 55; prereq 25; II MTWThF; VH 6) Ar.

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; regulation; social insurance. (3 cr, \$107; prereq 7 or equiv)

Sec 1, I MTWThF, VH 1, Strand

Sec 2, III MTWThF, VH 113, Strand

BA 51. Business Law: Contracts. Law of contracts. Case method used. (3 cr; prereq Econ 7 or equiv; I MTWThF; VH 2) Wright

BA 54. Elementary Accounting. (BA 54 and 55 form a combination of Econ 24-25-26) Accounting statements and the recording process; use of accounting data by management. (4 cr, \$Econ 24; to be counted as Junior College course when transferred to the College of Science, Literature, and the Arts; prereq soph [summer only]; IV MTWThF and 2 hrs ar; VH 306) Ar.

BA 58. Elements of Public Finance. Survey of institutions, policy problems, and economic effects of public expenditures, budgeting, taxes, debts, and fiscal policy. Condensed course given especially for School of Business Administration students. (3 cr, \$Econ 189, 191-192; prereq Econ 7 or equiv; IV MTWThF; VH 1) Borak

BA 65. Analysis of Financial Statements. Interpretation and analysis of financial statements for credit, investment, and managerial purposes. (3 cr, \$139, 150C; prereq Econ 26 or equiv; III MTWThF; VH 6) Matthews

Econ 73. Manpower Economics and Labor Problems. Marketing of manpower resources; institutional structure of labor markets; economic and social problems arising out of labor marketing processes; and methods, procedures, and proposals for solving these problems. (3 cr, \$161; prereq 7 or equiv; I MTWThF; VH 4) Lunde

BA 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. (3 cr, \$112; prereq Econ 5 or equiv; III MTWThF; VH 1) Moes

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 cr, \$155; prereq 3 and 7 or equiv; II MTWThF; VH 1) Borak

BA 77. Survey in Marketing. Introductory analysis of (a) marketing institutions and their control; (b) market areas; (c) marketing costs; and (d) the operation of supply and demand in marketing. (3 cr, \$Econ 185; prereq Econ 7 or equiv; II MTWThF; VH 207) Harper

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 cr, \$144; prereq 20 cr in social science incl 7 or equiv)

Sec 1, III MTWThF, VH 207, Kareken

Sec 2, IV MTWThF, VH 2, Kareken

Econ 85. Government Regulation of Business. Economic aspects of public policy affecting the market processes. Topics studied include relation between market structure and economic efficiency and welfare, economic origins of monopoly and other business limitations on free competition, and purposes and effect of anti-trust laws and laws relating to "unfair business practices." (3 cr, \$175; prereq 81 for business or economics majors, suitable background in law or political science for others, or #; IV MTWThF; VH 207) Ar.

BA 89. Production Management. Location and layout of industrial plants; types of operating organizations; shop personnel, standards of operation; purchas-

ing and inventory control; routing, scheduling, and dispatching of product; scientific management; practical problems in production control. (3 cr, \$187; prereq Econ 7 or equiv; V MTWThF; VH 301) Wickesberg

Econ 103. Advanced Price Theory. Theories of choice as applied to firms and resource owners, theories of resource allocation and income distribution. (3 cr; prereq # or grad, 81 or 144 or #; V MTWThF; VH 2) Gorman

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 cr, \$50; prereq # or grad, 7)

Sec 1, I MTWThF, VH 1, Ar.

Sec 2, III MTWThF, VH 113. Ar.

BA 112. Time Series Analysis and Quality Control. (a) Explanation and criticism of statistical techniques applied to time series analysis, (b) acceptance sampling, and (c) statistical control of quality. (3 cr, \$74; prereq # or grad, Econ 5 or equiv; III MTWThF; VH 1) Moes

Econ 121. Introduction to the Theory of Statistics. Designed to acquaint the non-specialist with some of the basic concepts and methods of classical statistics. For those interested in further study, serves as a preparation for the more systematic and intensive treatment in Econ. 122-123. Focused on problems of hypothesis testing and estimation. (3 cr; prereq Math 7 or equiv or #; I MTWThF; VH 113) Neter

Econ 124. Theory of Employment, National Income, and the Price Level I. Determination of equilibrium values for real output, employment, price level and rate of interest under specified assumptions regarding demand for and supply of money, demand for and supply of labor, technical conditions of production, and investment and consumption functions. (3 cr; prereq 80 or 143 or #; II MTWThF; VH 205) Coen

BA 139. Corporate Statements. Preparation of corporate statements and analysis from management, investment, and credit viewpoint. (3 cr, \$65, 150C; prereq # or grad, Econ 26 or equiv; III MTWThF; VH 6) Matthews

Econ 144. Economic Analysis: Firms and Households. Analysis of individual decision-making by firms under conditions of monopoly, competition, and monopolistic competition. (3 cr, \$81; prereq # or grad, 7 or equiv or #)

Sec 1, III MTWThF, VH 207, Kareken

Sec 2, IV MTWThF, VH 2, Kareken

BA 150A. Intermediate Accounting I. Review of accounting processes, measurement of income, accounting treatment of inventories and plant assets. (3 cr; prereq Econ 26 or equiv; I MTWThF; VH 301) Lund

BA 150C. Intermediate Accounting III. Accounting treatment of stockholders' equity, interpretation and analysis of financial statements. (3 cr, \$65, 139; prereq 150A; I MTWThF; VH 6) Matthews

BA 152. Cost Accounting. Basic principles of cost accounting; job order and process cost systems. (3 cr, \$66 or 130; prereq Econ 26 or equiv; II MTWThF; VH 2) Ar.

Econ 155. The Modern Corporation. Incorporation. 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 cr, \$75; prereq # or grad, 3 and 7 or equiv; II MTWThF; VH 1) Borak

BA 159. Advanced Accounting. Consolidated statements, fiduciary and fund accounting, partnership accounting. (3 cr; prereq 150C or 150C; III MTWThF; VH 306) Lund

- BA 160. Readings in Business Administration.** Special readings to cover areas in business administration especially useful to student's individual program and objectives, but not available in regular course offerings. (Cr ar; 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. (Cr ar; prereq consent of adviser and instructor in the field covered) Staff
- Econ 161. General Manpower Economics and Labor Problems.** Covers basic materials of Econ 73 plus advanced discussion and special assignments. (3 cr, \$73; prereq # or grad, 7 or equiv; I MTWThF; VH 4) Ar.
- Econ 162. Labor Movements.** Analysis of development of labor movements in Europe and United States. Examination of origins of labor movements, their growth, problems faced under various forms of governments, and analysis of economic and social consequences of these developments. (3 cr; prereq 73 or 161; V MTWThF; VH 113) Seltzer
- Econ 164. Labor Legislation: Collective Bargaining.** Analysis of employer-employee-union relationships and their social control; emphasis placed upon actions of legislative, executive, and judicial branches of the government; economic and social implications of issues arising in this area. (3 cr; prereq 73 or 161; IV MTWThF; VH 113) Seltzer
- BA 173. Market Analysis and Research.** Survey of techniques used in market research. Selected problems in analysis of sales records, sales forecasting, estimating sales potentials, sampling consumer demand, determining the factors which influence demand for specific goods. (3 cr; prereq 77 and Econ 5 or equiv; II MTWThF; VH 113) Holloway
- Econ 175. Government Regulation of Market Behavior.** Study of administrative and legislative controls in the United States in the following areas: general restraints of trade and monopoly, regulation of standards of fair competition, licensing and regulation of entry into trade and professions, and regulation of public utility rates and services. Emphasis will be on economic and legal analysis of federal regulation, but state and local regulation will be studied. (3 cr, \$85; prereq # or grad, 81 or 144 for majors, suitable background in law or political science for others, or #; IV MTWThF; VH 207) Ar.
- BA 181D. 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 cr; prereq sr, grad, 167; I MTWThF; VH 210) Mahoney
- BA 184. Scientific Management in Industry.** Origin and development of movement to apply methods of science to management of industrial enterprises; effects upon individual plant management, and influence upon "rationalism" in industrial society. (3 cr; prereq sr, grad, 89 or 187; III MTWThF; VH 301) Wickesberg
- Econ 185. Economics of Marketing.** Role of market distribution in our total economy; costs of market distribution; regional specialization and market distribution; public, quasi-public, and corporate control of market distribution; role of consumer in market distribution. (3 cr, \$BA 77; prereq 7 or equiv; II MTWThF; VH 207) Harper
- BA 187. Administration of Production.** Nontechnical course, developing production function of business from general management viewpoint. (3 cr, \$89; prereq # or grad, Econ 7 or equiv; V 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 cr, \$BA 58, Econ 191-192; prereq 7 or equiv; usually offered only in Summer Session; IV MTWThF; VH 1) Borak

Econ 213. General Equilibrium Theory. (3 cr; prereq 104, 142; III MTWThF; VH 210) Gorman

BA 299. Graduate Research in Business Administration. (Cr ar) Staff

Econ 299. Graduate Research in Economics. (Cr ar) Staff

Second Term

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 cr, §5A, 5B, or Soc 45; prereq 3rd qtr fr)

Sec 1, I MTWThF, VH 2, Eaton

Sec 2, IV MTWThF, VH 113, Eaton

Econ 7. Principles of Economics. (Continuation of Econ 6) (3 cr; prereq soph. 6)

Sec 1, II MTWThF, VH 2, Ar.

Sec 2, III MTWThF, VH 2, Ar.

Econ 25. Principles of Accounting. (Continuation of Econ 24) (Students who have had a high school course or experience in bookkeeping may be admitted to Econ 25 by passing a placement test.) (3 cr, §BA 55; prereq soph, 24 or equiv; IV MTWThF; VH 6) Nightingale

BA 55. Elementary Accounting. (Combined course—continuation of BA 54) Accounting valuation of assets, liabilities, and owners' equity; introduction to cost accounting; analysis of financial statements. (4 cr, §Econ 25-26; to be counted as Junior College course when transferred to the College of Science, Literature, and the Arts; prereq soph [summer only], 54; IV MTWThF and 2 hrs ar; VH 2) Ar.

Econ 64. Economics of Money and Banking. Banking policy viewed from social standpoint with primary reference to problems of the Federal Reserve System. Selected problems in monetary policy, monetary theory, and monetary reform. (3 cr, §142; prereq 3 and 80 or equiv; II MTWThF; VH 6) Ar.

BA 66. Managerial Costs. General survey of cost accounting from point of view of the executive who must use cost information in conduct of his business. (3 cr, §130, 152, 153; prereq Econ 26 or equiv; IV MTWThF; VH 207) Jaedicke

BA 71. Transportation I: Principles. Survey and economic aspects of national transportation policy; rail, highway, air, and water transportation facilities, services, rates, regulation, and current transportation problems. (3 cr, §Econ 172; prereq Econ 7 or equiv; III MTWThF; VH 1) Nightingale

Econ 73. Manpower Economics and Labor Problems. (See first term) (V MTWThF; VH 1) Mohr

BA 77. Survey in Marketing. (See first term) (II MTWThF; VH 1) Lewis

Econ 80. Intermediate Economic Analysis: Income and Employment. Determinants of national income, employment, and price level, with particular attention to aggregate consumption and investment. (3 cr, §143; prereq 20 cr in social science incl 7 or equiv or #)

Sec 1, I MTWThF, VH 1, McManus

Sec 2, III MTWThF, VH 6, Smith

Econ 104. Market Structure and Price Theory. Application of price theory to industry behavior. Includes analysis of inter-industry competition; price and output policies under conditions of imperfect competition. (3 cr; prereq # or grad, 103 or #; V MTWThF; VH 2) McManus

BA 113. Sales Management. 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 cr; prereq 77; III MTWThF; VH 207) Lewis

- BA 130. Managerial Cost Accounting.** Cost accounting and analysis from point of view of its use by management in making decisions and setting policies, and in establishing controls over costs. (3 cr, \$66, 152, 153; prereq # or grad, Econ 26 or equiv; IV MTWThF; VH 207) Jaedicke
- BA 133. Advanced Cost Accounting.** Application of cost accounting to problems of cost control, alternative choice, budgeting, and pricing for manufacturing and distribution operations. (3 cr; prereq 66, 130 or 153; I MTWThF; VH 6) Meyers
- Econ 142. Monetary and Banking Policy.** Advanced course in money and banking policy viewed from social standpoint with primary reference to problems of the Federal Reserve System. Selected problems in monetary policy, monetary theory, and monetary reform. (3 cr, \$64; prereq # or grad, 3 and 80 or equiv; II MTWThF; VH 6) Ar.
- Econ 143. Economic Analysis: Income and Employment.** Determinants of national income, employment, and price level, with particular attention to aggregate consumption and investment. (3 cr, \$80; prereq # or grad, 7 or equiv or #)
- Sec 1, I MTWThF, VH 1, McManus Sec 2, III MTWThF, VH 6, Smith
- BA 146. Investments.** General or "cross cut" survey of external and internal factors influencing prices of securities, and of principles of an investment policy for the individual investor. Emphasis is placed upon objective analysis from source materials of factors explaining price differentiation. (3 cr; prereq Econ 75 or 155; I MTWThF; VH 207) Sutton
- BA 150B. Intermediate Accounting II.** Accounting treatment of cash, receivables, investments, intangible assets, and applications of actuarial mathematics. (3 cr; prereq 150A; II MTWThF; VH 301) Jaedicke
- BA 153. Cost Accounting.** (Continuation of BA 152) Introduction to budgetary control, standard costs, and distribution cost accounting. Analysis and interpretation of cost data for specialized uses. (3 cr; prereq 152; III MTWThF; VH 301) Meyers
- BA 156. Finance Management.** Duties of the financial manager of a modern business. Various sources from which capital may be secured, best use of a company's funds, and special financial problems which arise in the typical business. (3 cr; prereq Econ 75 or 155; II MTWThF; VH 207) Sutton
- BA 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) (V MTWThF; VH 1) Ar.
- Econ 166. Settlement of Industrial Disputes.** Major consideration of the economic impact and implications of principal methods of settling labor disputes, including mediation, conciliation, fact-finding, and voluntary and compulsory arbitration. (3 cr; prereq 73 or 161; III MTWThF; VH 113) Weber
- BA 167. Introduction to Industrial Relations.** Survey of policy and practice in manpower management. 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 cr; prereq Econ 73 or 161; IV MTWThF; VH 1) England
- Econ 172. Economics of Transportation.** 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 cr, \$BA 71; prereq 20 cr in social science, incl 7 or equiv; III MTWThF; VH 1) Nightingale
- Econ 176. Introduction to International Economics.** Comparison of alternative methods by which a country may maintain external solvency and full employment; International Monetary Fund. Evaluation of alternative policies—free trade, tariffs and other trade controls, foreign aid and investment—as

means to more effective use of world resources and more equitable income distribution. (3 cr; prereq 7 or equiv; I MTWThF; VH 113) Smith

BA 182D. 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 student for employment in industrial relations at staff level. (3 cr; prereq sr, grad, 167 or equiv; II MTWThF; VH 210) Weber

Econ 185. Economics of Marketing. Role of market distribution in our total economy; costs of market distribution; regional specialization and market distribution; public, quasi-public, and corporate control of market distribution; role of consumer in market distribution. (3 cr, \$BA 77; prereq 7 or equiv; II MTWThF; VH 1) Lewis

BA 299. Graduate Research in Business Administration. (See first term) Staff

Econ 299. Graduate Research in Economics. (See first term) Staff

INSTITUTE OF CHILD WELFARE (CW)

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 18 and closing July 19. 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 midmorning snack. Parents are responsible for the transportation of their children to and from the school.

First Term

- 89. **Child Psychology.** Science of child development and its applications. (3 cr; prereq Psy 2; III MTWThF; CW 218) Johnson
- 131. **Development of Personality and Social Behavior in the Child.** (3 cr; prereq 12 cr in psychology, educational psychology, or equiv; I MTWThF; CW 222) Johnson
- 140. **Behavior Problems.** Types, origin, development, and treatment of behavior problems in children and adolescents. (3 cr; prereq 12 cr in psychology, educational psychology, or sociology; II MTWThF; CW 222) Bassham
- 142. **Psychology of Atypical Children.** Physical, sensory, and mental deviations and handicaps. Personal, social, and vocational adjustment. (3 cr; prereq 12 cr in psychology or equiv; IV MTWThF; CW 222) Bassham
- 150. **Childhood Education.** Survey of early childhood education. (3 cr; prereq 12 cr in education; VI MTWThF; CW 222) Fuller
- 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. (Cr ar; prereq Δ; hrs ar) Fuller

The following courses, EdT 77, Student Teaching in the Nursery School, and EdT 78, Student Teaching in the Kindergarten, listed under Methods and Student Teaching, in the College of Education; EdCI 162, Laboratory in Nursery School and Kindergarten Instructional Practices, and EdCI 164, Play Materials, Rhythms, and Nature Study for Young Children, listed under Curriculum and Instruction, in the College of Education, are also offered by the Institute of Child Welfare.

Second Term

- 130. **Development of Skill, Language, and Thought in the Child.** (3 cr; prereq 12 cr in psychology, educational psychology, or equiv; I MTWThF; CW 222) Holbrook
- 132. **Adolescent Development.** (3 cr; prereq 12 cr in psychology, educational psychology, or equiv; III MTWThF; CW 222) Holbrook

- 140. Behavior Problems.** Types, origin, development, and treatment of behavior problems in children and adolescents. (3 cr; prereq 12 cr in psychology, educational psychology, or sociology; II MTWThF; CW 222) Cummings
- 170. Parent Education.** Programs, materials, methods, organization, and administration. Demonstration of group procedures. (3 cr; prereq 15 cr in psychology, education, home economics, or sociology) IV MTWThF; CW 222) Cummings
- 270.* Readings and Research in Child Development.** (See first term) Staff

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 both terms: Wittich, Hall, Clark, Speidel, Yock, Bartholdi, Gorlin, Jensen, Holland, Serr, Sausen, Chaudhry, Meyer

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. 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*, 1956-58.

Summer Session students who are not candidates for a degree do not need to make application for admission nor present credentials (see section on 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 of this committee will be 206 Burton Hall 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 17 to July 12 for the study of problems in the liberal arts related to teacher education. In the second term, the workshop, scheduled from July 29 to August 23, 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 EdCI 228)

Workshop for Industrial Arts Teachers—Evaluation and replanning of junior high school industrial arts programs will be the subject of a first term workshop in industrial education. Further information may be obtained from that department. (See Ind 106)

Workshops 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, 2 workshops are scheduled in the first term: Improvement of Instruction in the Secondary School (EdCI 270), and Problems in State School Administration (EdAd 234). Either of these 2 workshops will require half-time work from the participants for the full term of 5 weeks. The groups will be limited in size, and the completion of a Master's degree program for school superintendents, or consent of instructor, will be required for enrollment.

Workshop for Teachers of the Visually Handicapped—In the first term, a workshop on Educational Procedures and School Curriculum Adaptation with Blind Children (EdCI 180) will be a part of the special program for teachers of the visually handicapped. Related to the workshop will be courses on visual impairment and teaching Braille. Applicants should write to the Dean of the College of Education, University of Minnesota, Minneapolis 14.

Workshops in Home Economics—Three 2-week workshops for home economics teachers will be offered, 2 in the first term and 1 in the second term: Child Development and Human Relations (June 17-July 3), Home Experiences and Extended Employment (July 5-20), and Future Homemakers of America (July 22-August 7). (See HEED 196B, 196F, and 196G)

Summer Demonstration High School

The University High School, grades 7 to 12, will be in session in Peik Hall during the first term. Instruction will be offered in the language arts, mathematics, modern languages, social studies, science, and typing. Individual and group work in remedial reading and arithmetic will be provided. 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, University of Minnesota, Minneapolis 14.

Students registered in Student Teaching (EdT 52) will be assigned to observation and student teaching in the classes of the high school. The fa-

cilities 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 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 EdCI 186). (I, II, III, IV TWThF; Tuttle School, Talmadge and 18th av se)

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 EPsy 150 and 151. Information may be obtained from the Co-ordinator, 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 section on 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.

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*, 1956-58.

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 section on Graduate School)

AGRICULTURAL EDUCATION (AgEd)

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 Summary Book; assembling and utilizing teaching units. (4 cr; prereq #, Ed 55A or B; VI-VII MTWThF first 3 wks; ar second 2 wks; Hr 302) Kitts
- 121. Enterprise Analysis.** Analyzing the farm business as a basis for identifying problems. Planning learning experiences to improve farm management at the high school, young farmer, and adult levels. (3 cr; prereq sr or #; III-IV MTWThF first 3 wks; ar second 2 wks; Hr 301) Granger
- 125. Teaching Units in Animal and Plant Diseases.** Development of teaching units based on recent research in the sciences of veterinary medicine and plant pathology. Construction of resource units, demonstrations, and materials of instruction for adult, young farmer and high school classes. (3 cr; prereq P1Pa 1, VMC 52, or #; VI-VII MTWThF first 3 wks; ar second 2 wks; Hr 301) Swanson and staff from Veterinary Medicine and Plant Pathology
- 156.* Rural Education Through Extension Methods.** Role of the Agricultural Extension Service in rural education; methods and techniques of instruction in nonschool educational programs. (3 cr; III-IV MTWThF first 3 wks; ar second 2 wks; Hr 302) Swanson
- 221. Field Problems.** The development and study of special problems in the field of the individual student's choice. (3 cr; ar) Kitts, Swanson
- 232.* Research in Agricultural Education.** Investigation in problems of education for farm people. Selecting research problems, preparing bibliographies, analyzing and interpreting data, and preparing manuscripts. (3-9 cr; ar) Kitts and 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 cr; prereq 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 (ArEd)

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 cr; I-II MTWThF; J 109) Hastie
18. **Design Activities for Elementary Education.** (See ArEd 17) Relationships between art and nature. Problems in invention, arrangement and decoration, color, lettering, posters, bulletin board displays, etc. (3 cr; III-IV MTWThF; TSF 256) Bratlee
19. **Functional Arts and Crafts in Elementary Education.** (See ArEd 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 cr; I-II MTWThF; TSF 259) Bratlee
156. **Intercultural Education Through Art.** Approaches to international understanding and co-operation through recognition of aesthetic contributions of diverse peoples to American life. (3 cr; 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 cr; prereq teaching experience or #; IV MTWThF; J 109) Gayne
185. **Improving Art Programs in the Secondary School.** For experienced teachers of art and advanced students; general research and critical examination of art programs. (3 cr; prereq teaching experience or #; V 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. (Cr 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 related departments and from off campus. (1 cr; prereq advanced students in education; VI Th; J 105) Gayne and 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) (II 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) Gayne, Wold

EDUCATIONAL ADMINISTRATION (EdAd)

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 cr; III MTWThF; JohH 106) Archer
124. **Public School Administration.** Organization, administration, and general support of public schools in state and local school districts. (3 cr; prereq sr, 9 cr in education; I MTWThF; WuH 202) Prentis
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 cr; 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 cr; prereq 124; III MTWThF; P 110) Wakefield
226. **School Plant Planning and Management.** Plant program planning and financing, including operation and maintenance of public school buildings. (3 cr; prereq 227; I MTWThF; JohH 313) Domian
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 cr; 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 cr; 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 cr; prereq 225; IV MTWThF; JohH 307) Pond
234. **Problems in State School Administration.** Primarily for school superintendents who have completed the work for a Master's degree with a major in school administration; others by consent of instructor. Identification of administrative functions at local, intermediate, and state levels; co-operative approaches to educational planning and program development. (Limited to 35) (4 cr; I-II MTWThF; JohH 105) Wakefield, Pond
236. **Field Study in Educational Administration.** 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 planning and organization of their field study without credit. (0-10 cr; prereq #; VII-VIII M; JohH 306) Domian, Lane, Prentis, Wakefield

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 cr; prereq 9 cr in education; I MTWThF; FraH 101) 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 cr; prereq 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 cr; prereq sr, grad, 9 cr in education; I MTWThF; JohH 114) Cramer
- 218. Recent Literature in Secondary Education.** (Cr ar; VII-VIII T; JohH 306) R. Keller, Lane, Prentis, Wakefield
- 263. Organization of the Secondary School.** Units, internal organization for administration and supervision. (3 cr; III MTWThF; JohH 122) Lane
- 264. Administration of Instructional Activities in the Secondary School.** (3 cr; II MTWThF; FraH 101) Thompson
- 270.* Special Problems in Secondary Education.** (Cr ar; prereq #; VII-VIII T; JohH 306) Bossing, R. Keller, Lane, Prentis, Wakefield

Second Term

GENERAL COURSES

- 124. Public School Administration.** (See first term) (I MTWThF; P 2) Prentis
- 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) Wakefield
- 226. School Plant Planning and Management.** (See first term) (I MTWThF; P 210) Domian
- 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, Lane, Prentis, Wakefield

ELEMENTARY EDUCATION

- 115. Administration of the Elementary School.** (See first term) (III MTWThF; Pt 202) Curtin

SECONDARY EDUCATION

- 218. Recent Literature in Secondary Education.** (See first term) (VII-VIII T; JohH 309) R. Keller, Lane, Prentis, Wakefield
- 264. Administration of Instructional Activities in the Secondary School.** (See first term) (III MTWThF; PeikH 145) Ar.
- 265. Administration of the Noninstructional Activities in the Secondary School.** (3 cr; II MTWThF; PeikH 175) Lane

270.* **Special Problems in Secondary Education.** (See first term) (VII-VIII T; JohH 309) R. Keller, Lane, Prentis, Wakefield

CURRICULUM AND INSTRUCTION (EdCI)

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. (Limited to 32) (2 cr; VI-IX MTWThF, June 17-28; ForH 20, 30) Neal and ar.
105. **Audio-Visual Materials in Education.** (3 cr; prereq sr, grad; I MTWThF and 2 hrs ar; NH 211) Pearson
109. **Audio-Visual Materials and Equipment Laboratory.** (Limited to 30) (3 cr; prereq 105 or ¶105, or ‡; III-IV MTWThF; WeH 206) Pearson
111. **Television in the High School Classroom.** (See section on Special Programs) For high school teachers of language arts and social studies. Selecting and evaluating television materials for language arts and social studies teaching; problems of producing television programs in the schools. (Limited to 30) (3 cr; language arts and social studies teachers only; prereq sr, grad; IV MTWThF; PeikG 55) Ballet
112. **Materials and Procedures in Marriage and Family Life Education.** (See section on Special Programs) (3 cr; VI MTWThF; TNM 114) Dyer
133. **Consumer Education in the Schools.** (3 cr; III MTWThF; JohH 313) Price
145. **Reading Difficulties.** (3 cr; prereq course in reading or basic training in counseling or school psychological work; IV MTWThF; P 110) Tinker
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 cr; I MTWThF; NH 209) Clymer
171. **Curriculum Laboratory Practice.** Practice course in the analysis and construction of units, courses of study, and curriculums according to needs, interests, level, and specialization. (3 cr; prereq 170A or B, ‡; ar) Bossing
- 174-175-176. **Clinical Methods and Practice in Speech Pathology.** (3 cr each; prereq Spch 61, 67, 119, 162, and 163a, ¶Spch 163; ar) Bryngelson
178. **Educational and Social Implications of Visual Impairment.** 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 cr; I MTWThF; ForH 15) Kantar
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 cr)

Sec 1, VI MTWThF, Tuttle School,
Huddleston (for beginners)

Sec 2, VI MTWThF, Tuttle School,
Huddleston (for those with
working knowledge of the
Braille system)

- 180.§§ 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. (Limited to 25) (3 cr; admission by advance application to College of Education; 9:30 to 12 MTWThF; Tuttle School) Taylor, Olson
- 205.* Problems in Audio-Visual Education.** (Cr ar; prereq #: ar) Pearson
- 227.* Problems in Rural Education.** (Cr ar; prereq EdAd 117; ar) Archer
- 271.* Problems in Curriculum Construction.** (Cr ar; prereq #: ar) Archer, Bossing, Boeck, Goossen, D. Johnson, Curtin, Ruddell
- 273.* Problems in Reading.** (Cr ar; prereq 143 or 144 or #: V T; Bu 103) Tinker, Reynolds, Clymer

ELEMENTARY EDUCATION

- 61. The Teaching of the Social Studies in the Elementary School.** (3 cr; prereq Ed 71C or equiv; III MTWThF; CW 222) LaBlonde
- 62B. The Teaching of Arithmetic in the Intermediate Grades.** (3 cr; prereq Ed 71B or equiv; II MTWThF; P 2) Ruddell
- 102. Teaching the Social Studies in the Elementary School.** (3 cr; prereq Ed 71C or equiv; II MTWThF; P 110) Chase
- 103. Teaching of Science in the Elementary School.** Emphasis on resources and materials, and their application to the elementary grades. (3 cr; prereq sr, grad, Ed 71A-B or teaching experience; III MTWThF; P 210) Boeck
- 119. Elementary School Curriculum.** (3 cr; prereq Ed 71C or equiv)
- | | |
|---|--|
| Sec 1, II MTWThF, PeikH 175,
Goossen | Sec 2, III MTWThF, PeikH 175,
Goossen |
|---|--|
- 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 available books 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 cr; I MTWThF; JohH 122) 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 cr; prereq sr; I MTWThF; FolH 2) Henrikson
- 143. Teaching and Supervision of Reading in the Elementary School.** (3 cr; prereq 9 cr in education; II MTWThF; NH 211) Clymer, Odland
- 149. Teaching and Supervision of Arithmetic in the Elementary School.** (3 cr, \$62A or B; prereq Ed 71C or equiv; III MTWThF; P 2) Ruddell

§§ 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.

150. **Supervision and Improvement of Instruction.** (3 cr; prereq Ed 71C or equiv; IV MTWThF; Pt 202) Curtin
153. **Supervision and Teaching of English in the Elementary Schools.** (3 cr; prereq Ed 71C or equiv; IV MTWThF; JohH 122) Chase
162. **Laboratory in Nursery School and Kindergarten Instructional Practices.** (3 cr; open to experienced teachers [other professional workers admitted by special permission]; IV MWF and hrs ar; CW 218) Fuller
164. **Play Materials, Rhythms, and Nature Study for Young Children.** (3 cr; open to experienced teachers [other professional workers admitted by special permission]; VI MWF and hrs ar; CW 218) Helgerson
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 cr; experienced teachers only; observation 4 hrs weekly ar MTWThF, Tuttle School; lect VI WTh; NH 216) Jensen
- 261.* **Special Problems in the Improvement of Instruction.** (Cr ar; prereq #; ar) Goossen, Curtin, Ruddell

SECONDARY EDUCATION

113. **High School Curriculum.** (3 cr; prereq Ed 55A-B or equiv; II MTWThF; AH 315) Bossing
125. **Occupational Information Laboratory.** (Limited to 25) (3 cr; prereq #; II MTWThF; AH 111) Borow
132. **Teaching the Basic Business Subjects.** Recent trends and developments in teaching junior business training, economic geography, marketing, business law, and consumer education. (3 cr; II MTWThF; CW 218) Bahr
135. **Group Procedures in Guidance.** (Limited to 35) (3 cr; prereq 9 cr in education, EPsy 133, or #; IV MTWThF and V TTh; NH 216) Borow
136. **Organization and Administration of Distributive Education.** (3 cr; I MTWThF; Bu 103) Latterell
140. **Teaching of Speech.** (3 cr; prereq Spch 1-2-3 or 5-6 or equiv or #; II MTWThF; FolH 307) D. K. Smith
141. **Co-operative Part-Time Work Experience Programs.** (3 cr; III MTWThF; Bu 103) Meyer
142. **Business and Distributive Program for Adults.** (3 cr; II MTWThF; Bu 103) Latterell
144. **Teaching of Reading in Secondary Schools.** (3 cr; prereq 9 cr in education; II MTWThF; PeikH 145) Kegler
159. **Materials Laboratory, Secondary School Distributive Education.** For (a) teacher-coordinators of distributive occupational part-time classes, (b) teacher-coordinators of diversified occupational part-time classes, and (c) teachers of pre-employment distributive education classes. Treats new materials and methods with emphasis on directly related vocational instruction. Class divided into interest groups for developing teaching units. (3 cr; prereq 137A, EdT 90A-B-C, or #; 1-2:30 MTWThF; Bu 103) Meyer
161. **Curriculum Construction in Business Education.** (3 cr; prereq 113; IV MTWThF; Bu 103) Price
- 170B. **Curriculum and Course of Study Construction.** (3 cr; prereq 113 or 119, or #; I MTWThF; JohH 126) Bossing
191. **Advanced Course in the Teaching and Supervision of Secondary Mathematics.** (3 cr; IV MTWThF; JohH 114) D. Johnson
- 199E. **Internship.** (Cr ar; available for MEd students in recreation; ar) Fitzgerald

- 201.* **Problems in Teaching the Social Studies.** (Cr ar; prereq 168, 204, or #; ar) McCune
- 225.* **Special Problems in Supervision of Instruction in Secondary Schools.** (Cr ar; prereq #; VII-VIII T; JohH 306) R. Keller, Lane, Prentis, Wakefield
- 238.* **Problems in Distributive Education.** (Cr ar; prereq #; ar) Meyer
- 239.* **Problems in Business Education.** (Cr ar; prereq #; ar) Price
266. **Supervision of High School Instruction.** (3 cr; prereq EPsy 293 or #; IV MTWThF; FoH 209) Thompson
270. **Improvement of Instruction in the Secondary School.** For students who hold the Master's degree in school administration. Current programs and procedures for improving secondary school instruction; current research in instructional methods and materials. (Limited to 35) (4 cr; III-IV MTWThF; JohH 314) Keller, Cramer
- 287.* **Advanced Course in the Teaching of Science.** (3 cr; IV MTWThF; PeikH 375) Boeck
- 294.* **Advanced Course in Curriculum and Methods in Secondary School English.** (3 cr; prereq EdT 75A-B-C or equiv; II MTWThF; JohH 307) D. V. Smith
- 296.* **Special Problems in Teaching English.** (Cr ar; ar) D. V. Smith

HIGHER EDUCATION

- 228.*§§ **Workshop: Problems of Higher Education and Teacher Education.** (6 cr; ar MTWThF. June 17 to July 12; ar) Eckert, McCune, Corcoran, McKeefery, and consultants
250. **Higher Education in the United States.** (3 cr; prereq yr of grad study in any field or 18 cr in education; I MTWThF; JohH 307) Eckert
252. **Effective College Teaching.** (3 cr; prereq yr of grad study in any field or 18 cr in education; I MTWThF; JohH 113) McCune

Second Term

GENERAL COURSES

101. **Driver Education.** (See first term) (Limited to 32) (VI-IX MTWThF July 29 to August 9; ForH 20, 30) Neal and ar.
105. **Audio-Visual Materials in Education.** (See first term) (I MTWTh and 2 hrs ar; NH 211) Pearson
106. **Co-ordinating an Audio-Visual Education Program.** (3 cr; prereq 105 or #; III MTWThF; WeH 206) Pearson
134. **Materials and Methods in Consumer Education.** (3 cr; prereq #; I MTWThF; Bu 103) Price
145. **Reading Difficulties.** (See first term) (IV MTWThF; NH 207) Balow
- 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, Birkmaier, Boeck, D. Johnson, Curtin, Ruddell
- 273.* **Problems in Reading.** (See first term) (V T; Bu 103) Reynolds, Clymer

§§ 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.

ELEMENTARY EDUCATION

102. **Teaching the Social Studies in the Elementary School.** (See first term) (IV MTWThF; AH 111) Curtin
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; WeH 206) Kearney
143. **Teaching and Supervision of Reading in the Elementary School.** (See first term) (III MTWThF; P 210) Clymer, Odland
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) (I MTWThF; Pt 202) Kearney
153. **Supervision and Teaching of English in the Elementary Schools.** (See first term) (II MTWThF; CW 218) Archer
181. **Foundations of Elementary School Methods.** (3 cr; prereq 9 cr in education; III MTWThF; CW 218) Archer
- 261.* **Special Problems in the Improvement of Instruction.** (See first term) Curtin, Ruddell
263. **Research in Arithmetic Instruction.** (3 cr; IV MTWThF; CW 218) Ruddell

SECONDARY EDUCATION

113. **High School Curriculum.** (See first term) (II MTWThF; JohH 110) Birkmaier
122. **Literature for Adolescents.** (3 cr; prereq Ed 55B or junior-senior high school teaching experience; I MTWThF; FraH 101) Kegler
125. **Occupational Information Laboratory.** (See first term) (Limited to 25) (III MTWThF; PeikH 175) White
135. **Group Procedures in Guidance.** (See first term) (Limited to 35) (IV MTWThF and V TTh; NH 209) Borow
- 137A. **Materials and Methods in Co-operative Part-Time Classes.** (3 cr; II MTWThF; Bu 103) Meyer
139. **Co-ordination Techniques.** (3 cr; IV MTWThF; Bu 103) Meyer
144. **Teaching of Reading in Secondary Schools.** (See first term) (II MTWThF; Ph 166) Kegler
155. **Materials Laboratory for Social Studies Teachers.** Seminar in the study of printed and audio-visual materials, with reference to their use in social studies classes. (3 cr; prereq #; I MTWThF; PeikH 145) Gardner
156. **Trends in Business Education.** (3 cr; III MTWThF; Bu 103) Price
- 173B. **Organizing Units of Instruction in the Secondary School.** (3 cr; prereq 113 or #; IV MTWThF; JohH 114) Birkmaier
- 199E. **Internship.** (See first term) Fitzgerald
- 225.* **Special Problems in Supervision of Instruction in Secondary Schools.** (See first term) (VII-VIII T; JohH 309) Lane, Prentis, Wakefield
- 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) Ar.
- 296.* **Special Problems in Teaching English.** (See first term) Kegler

HIGHER EDUCATION

- 228.**§§ Workshop: Problems of Higher Education and Teacher Education.** (See first term) (Ar MTWThF, July 29 to August 23; CenH) Boeck, Mork, Howe, and consultants

EDUCATIONAL PSYCHOLOGY (EPsy)

First Term

GENERAL COURSES

- 60. Introduction to Measurement and Statistics.** (3 cr; prereq 6 cr 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 cr; 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 cr; not open to Master's or Ph.D. degree candidates who will take more than 1 qtr of statistics; prereq ¶116a or §; III MTWThF; NH 213) Collier
- 116a. Introduction to Statistical Methods in Education—Laboratory.** (Limited to 16) (2 cr; prereq ¶116; V-VI MWF; Bu 221) MacEachern
- 117. Basic Principles of Measurement.** (3 cr; prereq 116 or 216 or Psy 70 or equiv; VI MTWThF; JohH 310) Hoyt
- 140. Instruments and Techniques of Measurement.** (3 cr; prereq sr, grad, 110 or 117 or equiv; IV MTWThF and V WTh; JohH 115) Edson
- 142. Individual Mental Testing.** Revised Stanford-Binet and Wechsler Adult Intelligence Scale or Wechsler Intelligence Scale for Children. Student supplies materials for at least one test. (3 cr; prereq sr, 110 or 117 or ¶117 with §; II MTWThF; NH 207) Reynolds
- 148. Clinical Diagnosis of Reading Difficulties.** Psychology of reading difficulties, clinical diagnosis of reading problems, their relationship to psychological factors, and their clinical remedial correction. (3 cr; prereq EdCI 145; III MTWThF; Pt 202) Balow
- 150. Clinical Practice in Remedial Teaching.** Practice in remedial tutoring of individual children who have experienced difficulty in school learning. (3 cr; prereq EdCI 145 or 151 and §; II-III MTWThF and 1 hr ar; Pt 108) Tinker, Balow
- 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 cr; prereq 142 or EdCI 145 and §; VI-VIII MTWThF; Pt 108) Tinker, 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. Problems of normal children including diagnosis and treatment of educational and psychological disabilities. (3 cr; I MTWThF; P 2) Gamelin

§§ 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.

153. **Seminar and Laboratory in School Psychological Services.** For advanced students in school psychology. Research, case studies, field visits, discussion of problems. (Limited to 30) (3 cr; prereq #; IV MTWThF; P 2) Gamelin
159. **Personality Development and Mental Hygiene.** (3 cr; IV MTWThF; WuH 202) 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 cr; prereq Ed 55B or 71C or equiv; IV MTWThF; PeikH 175) Reynolds
184. **Education of the Slow-learning Child.** (3 cr; prereq 182; I MTWThF; NH 207) Geary
193. **Psychology of Human Learning.** (3 cr; prereq sr, grad; VI MTWThF; P 2) Mork, Kellogg
- 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 cr; II MTWThF; Pt 202) P. O. Johnson
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 cr; I MTWThF; Pt 202) P. O. Johnson.
- 216a. **Statistical Methods in Education—Laboratory.** (Limited to 16) (2 cr; VII-VIII MWF; Bu 221) MacEachern
225. **Diagnosis as a Phase of Counseling.** Personality concepts involved in diagnosis, principles of diagnosis, and practice in essential diagnostic skills and in recognition of common diagnostic errors. (3 cr; prereq 140 or ¶140, and one of the following: 133, 250, or Psy 130; III MTWThF; JohH 310) Wrenn
- 233.* **Problems in Guidance and Personnel Work.** (Cr ar; ar) Dugan, Borow, Wrenn
- 253.* **Research Problems.** (Cr ar; prereq #; ar) Dugan, P. O. Johnson, Edson, Wrenn, Hoyt, Mork, Collier, Reynolds
- 293.* **Psychology of Learning.** (3 cr; prereq 12 cr in psychology and educational psychology; II MTWThF; Ph 170) Mork, Kellogg

SECONDARY EDUCATION

133. **Basic Procedures in Student Personnel Work.** (3 cr; prereq 9 cr in education; I MTWThF; AH 111) Lundgren
134. **School Counseling Procedures.** (Limited to 30) (3 cr; prereq 110 or 117 or equiv, 133 and #; I MTWThF; JohH 310) Dugan
282. **Practice in High School Personnel Work.** (3 cr; prereq #; III MTWThF; JohH 310) Dugan, Jones

Second Term

GENERAL COURSES

110. **Educational Measurement in the Classroom.** (See first term)
 Sec 1, I MTWThF, NH 209, D. Johnson Sec 2, II MTWThF, NH 209, 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) (V-VI MWF; Bu 221) MacEachern

117. **Basic Principles of Measurement.** (3 cr; prereq 116 or 216 or Psy 70 or equiv; III MTWThF; JohH 115) Collier
150. **Clinical Practice in Remedial Teaching.** (See first term) (II-III MTWThF and 1 hr ar; Pt 108) Clymer, Balow
151. **Clinical Practice in Educational Diagnosis.** (See first term) (VI-VIII MTWThF; Pt 108) Clymer, Balow
159. **Personality Development and Mental Hygiene.** (See first term) (I MTWThF; JohH 114) Borow
182. **Education of Exceptional Children.** (See first term) (II MTWThF; Pt 202) Reynolds
183. **Education of Gifted Children.** Abilities, characteristics, and education of intellectually gifted children and adults. (3 cr; prereq Ed 55B or 75B 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 cr; 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 cr; I MTWThF; JohH 122) Collier
- 217a. **Statistical Methods in Education—Laboratory.** (Limited to 16) (2 cr; VII-VIII MWF; Bu 221) MacEachern
- 226.* **Interviewing Procedures in Counseling.** Various approaches in counseling, practice in interviewing skills, concepts of therapy, analysis of student and counselor attitudes in counseling. (3 cr; prereq 225 or equiv; III MTWThF; JohH 122) Wrenn
- 233.* **Problems in Guidance and Personnel Work.** (See first term) Dugan, Borow, Wrenn
- 253.* **Research Problems.** (See first term) Dugan, Wrenn, Mork, Reynolds, Collier

SECONDARY EDUCATION

133. **Basic Procedures in Student Personnel Work.** (See first term) (II MTWThF; JohH 122) White
134. **School Counseling Procedures.** (See first term) (Limited to 30) (II MTWThF; NH 107) Dugan

GENERAL EDUCATION (Ed)

First Term

- 75A. **Introduction to Elementary School Teaching.** Limited to students entering the major in elementary education in the College of Education, with College approval required. (Limited to 50) (5 cr; prereq Psy 2; II-III MTWThF; FolH 9) Odland
81. **Introduction to Education for Public Health Nurses.** Principles, methods, and materials in education as applied to public health nursing situations. Group work emphasized. (3 cr; not open to candidates for degree in College of Education; prereq PubH 62, 100, and 133; VI-VII TTh, VII W; Mayo 1210) B. Bond

Second Term

- 75B. **Introduction to Elementary School Teaching.** (See first term) (Limited to 50) (5 cr; prereq 75A; I-II MTWThF; AH 111) Odland

HISTORY AND PHILOSOPHY OF EDUCATION (HEd)

First Term

- 131. Comparative Education.** Compares European, Asiatic, and American systems and philosophies of education. Emphasis on exploring the possibilities of international education. (3 cr; III MTWThF; C 225) Beck
- 141. Critical Issues in Contemporary Education.** (3 cr; II MTWThF; C 225) Beck
- 180. The School and Society.** (Limited to 60 in each section) (3 cr; prereq sr, Ed 55A-B or 75A-B)
 Sec 1, IV MTWThF, NH 213, Vikner Sec 2, VI MTWThF, JohH 122, Vikner
- 241.* Problems in the History and Philosophy of Education.** (Cr ar; prereq #; ar) Beck

Second Term

- 141. Critical Issues in Contemporary Education.** (See first term) (II MTWThF; Ph 170) Beck
- 180. The School and Society.** (See first term) (Limited to 60 in each section)
 Sec 1, II MTWThF, EE 237, Vikner Sec 2, IV MTWThF, JohH 115, Vikner
- 182. Comparative Philosophies of Education.** (3 cr; prereq 141; III MTWThF; Ph 170) Beck
- 241.* Problems in the History and Philosophy of Education.** (See first term) Beck

HOME ECONOMICS EDUCATION (HEEd)

First Term

- 193B. Home Economics Curriculum (College Level).** The place of home economics in higher education and problems which are acute today; curriculum offerings; teaching schedules and load; appropriate reference materials. (3 cr; prereq #; V MTWThF; HE 129) Holmblade
- 194A. Adult Education in Home Economics.** Objectives of adult education in homemaking; problems affecting community and family life; methods of helping adults and out-of-school youth in solving problems in home living. (3 cr; prereq 91, 93 or equiv; IV MTWThF; HE 110) R. R. Ford
- 196B. Child Development and Human Relations: Workshop.** Teaching child development and human relationships; recent emphasis on growth and guidance of individuals; materials and techniques which might be used at high school and adult levels resulting in better understanding of child development and human relationships. (Limited to 25) (3 cr; prereq grad; June 17-July 3, all day; HE 103) Holmblade, Bellinger
- 196F. Home Experiences and Extended Employment: Workshop.** Methods of using the extended period of employment effectively; techniques for the selection, execution, and evaluation of home experiences; group or individual problems to meet special interests and needs of experienced teachers. (Limited to 25) (3 cr; prereq grad; July 5-20, all day; HE 103) J. Ford
- 293.* Problems in Home Economics Education.** Independent study of current educational problems. (1-9 cr; prereq 294 recommended, #; ar) R. R. Ford
- 294. Research Methods.** Methods used in collection, treatment, and interpretation of data in areas of home economics; writing of a technical report. (3-6 cr; prereq 192, #; II MTWThF; HE 110) R. R. Ford

Second Term

- 190. Readings in Home Economics Education.** Independent study under tutorial guidance. (1-3 cr; prereq #; ar) Holmblade
- 196G. Future Homemakers of America: Workshop.** National, state, and local levels; procedures in formation of local chapters; relation of chapter to the high school homemaking program; activities contributing to goals; the adviser and her responsibilities. (3 cr; prereq #; July 22-Aug 7, all day; HE 103) Coe
- 293.* Problems in Home Economics Education.** (See first term) R. R. Ford
- 295. Seminar in Home Economics Education.** Recent research. (1 cr; ar) Holmblade

INDUSTRIAL EDUCATION (Ind)

First Term

- 100. Industrial Instruction.** Concepts and techniques of instruction in industrial arts, trade and industrial schools and classes, and training-within-industry programs. (3 cr, \$70; prereq 42, Ed 55B or #; IV MTWThF; TNCW 113) Nelson
- 106. Industrial Education Workshop—Electricity and Electronics for Secondary Schools.** Laboratory course for experienced teachers who wish to prepare or upgrade themselves for teaching electricity and elementary electronics in an industrial arts or vocational program. Workshop members will work on individual problems and will also pool their efforts in producing a kit of instructional materials for each participant. (3-6 cr; prereq teaching experience or #; III-IV and VI-VII MTWThF; TNCW 15) Kavanaugh
- 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 cr; prereq #; III MTWThF; TNCW 116) Widdowson
- 125. Philosophy and Practice of Industrial Education.** History, objectives, development, and current practices of the field. (3 cr, \$60 or 61; I MTWThF; TNCW 116) Widdowson
- 200.* Research Problems.** (3-6-9 cr; prereq approval of candidacy for Master's degree; individual conferences with advisers) Micheels, 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 cr; 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 cr; 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 cr; prereq Ed 55B or #; II MTWThF; TNCW 113) Nelson
- 135. Industrial Course Construction.** Principles and techniques of course construction and unit development; experience in planning, organizing, and building a course of study. (3 cr; prereq grad or #; I MTWThF; TNCW 116) Kavanaugh
- 200.* Research Problems.** (See first term) Nelson, Kavanaugh

METHODS AND STUDENT TEACHING (EdT)

First Term

NURSING EDUCATION

- 51A. The Teaching of Nursing.** (2 cr; open only to students who will also be registered for 2 cr in this course in second term; prereq Ed 55B or 55N; VI MWF; ForH 345) Dunning, Weise

ELEMENTARY EDUCATION

- 53A. The Teaching of Handicapped Children.** Observing work with special classes; teaching under direction. Conducted in co-operation with the public schools of Minneapolis and St. Paul. (6 cr; prereq #; ar) Ar.
- 77.†† Student Teaching in the Nursery School.** Five half-days each week spent in classroom participation under supervision. (3 cr; prereq sr, 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 cr; prereq sr, 55, 57, 58, and 59 plus #; ar) Fuller

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. (Limited to 40) (Cr ar; ar; PeikH) Ar.
- 84A-B-C. Practice and Field Work in Recreation Leadership.** (2 cr; prereq recreation major; ar) Fitzgerald
- 85A-B-C. Practice and Field Work in Recreation.** (2 cr for majors, 1 cr 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) Dunning, Weise

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 (MuEd)

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 cr; prereq Mus 1; II MTWThF; Sch 104) Peck
- 52. Teaching of Music.** For nonmusic majors. Appreciation, music history, methods, materials. (3 cr; prereq 51, #; I MTWThF; Sch 104) Peck

†† Students registering for this course must make out the application required for methods courses and student teaching. Forms are available in the student teaching office, 210C Burton Hall.

- 60††-61-62. Supervision and Teaching of Music.** For teachers of instrumental music only. (3 cr each; prereq sr, 50B, 53, Ed 55B, †; VIII W; ScH 103) Ivory
- 124. Selection and Conducting of Choral Materials.** Review of fundamentals of choral conducting; student conducting with class serving as performing ensemble; criteria for selection of choral and combined choral and instrumental materials; rehearsal techniques. (3 cr; prereq sr; III MTWThF; ScH 4) Caswell
- 125. Selection of Instrumental Music Materials.** Sources of instrumental materials, criteria for their selection; orchestra, band, and ensemble music, choral accompaniment; class teaching methods books; individual projects, group activities. (3 cr; prereq sr; II MTWThF; ScH 3) 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 cr; prereq sr; I MTWThF; ScH 3) Caswell, Ivory
- 194. Advanced Selection and Conducting of Choral Materials.** Discussion, evaluation, and implementation of the departmental set of criteria for selecting choral music for school groups. Selections of varying degrees of difficulty used for analysis; practical application of advanced rehearsal and conducting techniques using the class as a performing choral group for student directors. (3 cr; prereq 124; III MTWThF; ScH 4) Caswell
- 224.* Research Problems.** (3-9 cr; prereq knowledge of elementary statistics; VII T; ScH 3) Caswell, Ivory
- 225E.** Advanced Applied Music.** Individual lessons. (2 or 4 cr; prereq entr exam; hrs 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) (II MTWThF; ScH 103) Ivory
- 150. Organization and Supervision of Vocal-Instrumental Music in Elementary Schools.** (See section on Special Programs) (3 cr; prereq 6 cr in music education, 9 cr in music, and 6 cr in general education; I MTWThF; ScH 104) Caswell, Ivory
- 224.* Research Problems.** (See first term) (VII T; ScH 103) Caswell, Ivory
- 225E.** Advanced Applied Music.** (See first term) Ar.

PHYSICAL EDUCATION FOR MEN (PE M)

First Term

- 1A. Beginning Golf.** (1 cr; V-VI MWF; Golf Course) Bolstad
- 1B. Intermediate Golf.** (1 cr; V-VI TThF; Golf Course) Bolstad
- 1C. Beginning Swimming.** (1 cr; VI MTWThF; CH) Piper
- 5B. Gymnastics—Apparatus and Tumbling.** (1 cr; II MTWThF; CH) Shawbold
- 5C. Stunts, Contests, Softball.** (1 cr; III MTWThF; CH) Shawbold
- 7A. Games and Relays.** Low organized games for gymnasiums, playgrounds, camps, etc.; social games; progressive game parties; relays. (1 cr; I MTWThF; CH) Shawbold
- 9B. Square and Ballroom Dance.** (1 cr; VII MTWThF; ar) Piper

†† Students registering for this course must make out the application required for methods courses and student teaching. Forms are available in the student teaching office, 210C Burton Hall.

- 51. Mechanics of Movement.** Structure of the body and the principles and mechanics of bodily movements. (3 cr; prereq 50 or Anat 57; IV MTWThF; CH 206) Osell
- 73††-74-75. Directed Teaching.** Actual practice in teaching physical education activities. (2 cr each; prereq 55, Ed 55B; 10-12 hrs per wk ar; CH 220) Piper
- 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 cr; prereq 32, 55, and 9 cr of activity courses; I MTWThF; CH 206) L. 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. (Cr ar; prereq #; CH) L. Keller, Piper, Donnelly, Fitzgerald
- 234. The Curriculum in Physical Education.** Theory and principles of curriculum construction applied to physical education; practical application in construction of a curriculum. (3 cr; II MTWThF; CH 204) 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 cr; IV MTWThF; CH 204) Donnelly
- 238. Administration of Physical Education in Colleges and Universities.** Administering programs and facilities in physical education and athletics; field trips and surveys of neighboring colleges. (3 cr; prereq 63 or #; III MTWThF; CH 206) L. Keller
- 241. The Administration and Supervision of Public Recreation.** Organization for recreation; policies and procedures relating to finance, program, facilities, office management, legislation, and public relations. (3 cr; I MTWThF; CH 214) Fitzgerald

Second Term

- 2A. Intermediate Golf.** (1 cr; prereq playing exper; III-IV MWF; Golf Course) Bolstad
- 2B. Beginning and Intermediate Swimming.** (1 cr; V MTWThF; CH) Piper
- 8. Tennis and Golf.** (1 cr; VI-VII TWTh; CH 215) Piper, Bolstad
- 65. Adapted Physical Education.** Philosophy, principles, and techniques of adapting the physical education program to meet the needs of handicapped pupils. (3 cr; prereq 50 or equiv, 51; III MTWThF; CH 206) Osell
- 67. Football Coaching.** Theory, strategy, generalship, styles of offense and defense, methods of organizing practices, and handling of men. (2 cr; prereq 4A or 1 yr's exper on squad; IV MTWThF; CH 214) Warmath and staff
- 73††-74-75. Directed Teaching.** (See first term) Piper
- 110. Recreation Surveys.** Methods and techniques of conducting recreation surveys. (3 cr; prereq sr, grad; II MTWThF; CH 206) Fitzgerald
- 155. Instructional Aids in Health, Physical Education, and Recreation.** Evaluation, construction, and use of instructional materials stressing audio-visual aids. (3 cr; III-IV MTWThF first 4 wks; CH 215) Piper
- 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 student teaching office, 210C Burton Hall.

- 233. The Administration of Physical Education in Schools.** Staff, organization, and supervision required in programs of physical education; intramural and inter-scholastic athletic problems; legal aspects; professional and public relations. (3 cr; prereq 63, 101 or equiv; II MTWThF; CH 206) Donnelly
- 261A. Seminar in Contemporary Problems in Physical Education.** Presentation of problems by class members; readings, discussions, problems selected for individual study. (3 cr; I MTWThF; CH 206) Donnelly

PHYSICAL EDUCATION FOR WOMEN (PE W)

Physical Examination

It is recommended that every woman student avail herself of the opportunity offered by the University 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 Health Instruction and the Elementary School Child

See section on Special Features

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: PE W 5, 13, 18, 25, 32, 37, 62, 102, 114.
2. Courses applying this summer to the undergraduate major in physical education are: PE W 5, 13, 18, 25, 37, 81, 102, 114.
3. Courses applying to advanced and graduate degrees with a major in physical education are: PE W 102, 113, 114, 118, 130, 224.

Required Physical Education

Those interested in meeting a college requirement in physical education may register for PE W 7, 8, 12, 32.

First Term

- 5.†† Methods of Conducting Organized Games for Junior and Senior High Schools.** Special techniques for team games such as speedball, soccer, volleyball, basketball, and softball. Organization of tournaments suited to various games, play days, methods of teaching. (2 cr; I MTWThF; NGW 151) Hauptfuehrer
- 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 cr) Eibner
- Sec 1, IV MTWTh, NGW 151 Sec 2, V MTWTh, NGW 151
- 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 cr) Reiter
- Sec 1, I MTWTh, NGW 60 Sec 2, II MTWTh, NGW 60
- 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 cr; VII MTWTh; NGW 151) Ar.
- 13. Tumbling, Stunts, and Methods.** Instruction and practice in technique of individual, companion, and group tumbling and stunts with progression from elementary through high school level. Discussion and application of principles underlying pyramid building. Teaching methods appropriate to this activity area will be discussed and experienced. (2 cr; practical work II MWF, lect II TTh; NGW 153) Hauptfuehrer
- 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 cr; practical work V MWF, lect V TTh; NGW 151) Lampe
- 25. American Red Cross First Aid Standard.** Lectures, demonstrations, and practice in emergencies and first aid treatment. American Red Cross Standard Certificate in First Aid received upon successful completion of course. (2 cr; II MTWThF; NGW 3) Jaeger
- 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 cr; VI MTWTh; NGW 58) Eibner
- 62. The Teaching of Physical Education Activities.** For students minoring in physical education. Methods in team and individual sports, rhythms, and self-testing in the junior-senior high school program. (3 cr; prereq #, physical education minors and recreation majors; III MTWThF; NGW 153) Hauptfuehrer
- 102. The Physical Education Program for the Elementary and Secondary School.** Deals with the philosophy, objectives, trends, content, and evaluation in relation to the physical education curriculum at both the elementary and secondary levels. Provision made for the study of curricular problems of special interest to the individual. (3 cr; V MTWThF; NGW 201) Jaeger
- 113. Physical Education in the Elementary School.** The elementary school child, curriculum, adaptations of instructional procedures, classification, evaluation, and the influence of modern educational thinking upon problems commonly met at this level. (3 cr; III MTWThF; NGW 3) Baker
- 114. Administration of the School Health Education Program.** Co-ordination of total program; health supervision and guidance; relationships between the public schools and governmental health organizations and agencies; and

†† Health Service approval must be secured for participation in this course.

evaluation. Guidance in the solution of individual professional problems. Students enrolled in this course may attend without fee the *Institute on Health Instruction and the Elementary School Child*. See section on Special Features. (3 cr; I MTWThF; NGW 201) Slocum

117A. Instruction in School Health Education for Elementary Schools. Designed to aid elementary classroom teachers and supervisors in the selection of content, materials, methods, and evaluation procedures for school health education, grades 1-6. Application of course to individual problems. Students enrolled in this course may attend without fee the *Institute on Health Instruction and the Elementary School Child*. See section on Special Features. (3 cr; II MTWThF; NGW 201) Slocum

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 cr; prereq consent of grad advisers) Staff

125. Curriculum Trends in the Professional Preparation of Teachers of Physical Education. Current needs and issues, philosophy and objectives, present trends, characteristic curricular patterns and standards for the professional education curriculum. (3 cr; prereq sr, grad, teaching experience or †; IV MTWThF; NGW 3) Jaeger

224.* Research Problems in School Health Education, Physical Education, and Recreation. Individual problems and conferences. (Cr ar; prereq consent of grad advisers) Staff

Second Term

7.†† Tennis for Beginners. (See first term) (1 cr) Hauptfuehrer

Sec 1, II MTWTh, NGW 151

Sec 2, III MTWTh, NGW 151

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 cr; I MTWThF; NGW 153) Hauptfuehrer

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. (2 cr; practical work III MWF, lect III TTh; NGW 153) Wilson

118E.§§ Problems in Teacher Education in Health, Physical Education, and Recreation. (See first term) Staff

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 cr; IV MTWThF; NGW 3) Wilson

224.* Research Problems in School Health Education, Physical Education, and Recreation. (See first term) Staff

†† 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 (GC)

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 adjustments 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

- 7D. Physical Science: Elements of Geology.** Origin and interpretation of the surface features of the land. A consideration of Minnesota's 10,000 lakes leads to the study of the work of glaciers, water, and wind. Mountain-making, the common rock types and their origin, the age of the earth, and significance of fossils are briefly treated. (3 cr; IV MTWThF, P 218; field trips VI-VII M) M. Harris
- 8A. Applied Mathematics.** 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. Problems provide a broad acquaintance with the language and nature of many fields. (3 cr; III MTWThF and 1 hr lab ar; NH 207) Rassweiler
- 10A. Human Biology: The Fundamental Similarities in the Living World.** 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 cr; II MTWThF and dem lab hrs ar; NH 213) Jefferson
- 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 cr; III-IV MTWThF; NH 102) Safer
- 29B. Fundamentals of Usage and Style.** Intensive drill in usage, punctuation, and spelling is used, along with emphasis on such matters of style as subordination, parallel construction, tense consistency, and placement of modifiers. (3 cr; I MTWThF; NH 216) Finnberg

- 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 cr; II MTWThF; NH 216) Burrows
- 37. Social Trends and Problems.** 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 cr; II MTWThF; JohH 314) Stovall
- 38. General Geography.** Geography of man and the earth. Emphasis is placed upon population and its distribution, culture, and economics, and their relationships to the physical world. Study of the regional variations, both physical and human, will provide greater understanding of both national and international problems. (3 cr; I MTWThF; NH 213) Phelps
- 40B. The Logic of Straight Thinking.** Analysis of common errors and fallacies in thinking and study of valid methods for drawing conclusions from evidence. (3 cr; I MTWThF; JohH 314) Benson

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 cr; II MTWThF; JohH 307) W. J. Anderson
- 10B. Human Biology: How the Living Machinery in Man Works.** Body functions of man. Activities of cells, organs, and systems are considered from the point of view of both normal and abnormal physiology. (3 cr; 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 cr; III MTWThF; NH 207) McCutcheon
- 29A. Reading Development.** Drill exercises, films, slides, and reading assignments help students improve reading speed and comprehension. It is not for those with decided disabilities who need remedial reading but for students who read with *average* ability. (3 cr; I-II MTWTh; NH 216) Kivits
- 31D. Writing Laboratory: Business Writing.** Student is given practice in writing the kinds of letters necessary for ordinary business transactions: letters of inquiry, order, complaint or adjustment, and application. *Final drafts of letters must be typed.* (3 cr; III-IV MTWTh; NH 216) Kurak
- 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, student is shown the close relationship between personality and speech behavior. (3 cr; I MTWThF; NH 107) Hansen
- 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 student's alertness to the news and ability to judge current events in proper perspective are intensified. (3 cr; IV MTWThF; NH 213) F. Harris

LAW SCHOOL

First Term and Second Term

The following first-year courses may be taken by any student who fulfills the regular admission requirements of the University of Minnesota Law School. Full information thereon will be found in the *Bulletin of the Law School*. By beginning his law course in this Summer Session and continuing to attend Summer Sessions thereafter until graduation, a student may accelerate his program so as to complete the 4-year program in 3 years, or the 3½-year program in 2½ years.

The following advanced courses may be taken by any student who has completed at least 1 year of Law School work in this School or in another accredited law school.

All courses will require attendance through both terms except *Creditors' Remedies A* and *Creditors' Remedies B*, which will require attendance for 5 weeks on the dates indicated below. Arrangements may be made to attend only one or more of these courses.

FIRST YEAR COURSES

- 100. **Agency.** (3 cr; I MWF; FraH 20) McCoid
- 101. **Contracts.** (9 cr; II MTWThF and III MTWTh; FraH 20) Hogg
- 104. **Introduction to Public Law.** (3 cr; IV MTTh; FraH 20) Cound

ADVANCED COURSES

- 143A. **Creditors' Remedies (State Remedies).** (3 cr; 11-12 MTWThF, June 18 to July 20; FraH 120) Sovern
- 143B. **Creditors' Remedies (Bankruptcy).** (3 cr; 11-12 MTWThF, July 22 to August 24; FraH 120) Sovern
- 149. **Income Taxation.** (6 cr; 7:50-8:50 MTWThF; FraH 120) Waterbury
- 161. **Modern Social Legislation.** (3 cr; III TThF; FraH 120) McCoid
- 165. **Trade Regulation.** (3 cr; II MWF; FraH 120) Cound

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.

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 1957. 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 1 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 1957 will begin on June 18.

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 nonresidents 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. (Cr ar; prereq #; ar) Campbell, Sundberg, Williams
204. **Research in Anatomy.** Gross anatomy, histology, hematology, or neurology. (Cr 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

REQUIRED COURSES

101. **Principles of Anesthesia.** (1 cr; prereq registration in Medical School) Van Bergen and staff

First Term and Second Term

ELECTIVE COURSES

169. **Research in Anesthesia.** Anesthesia problems in experimental laboratory or in hospital. (Cr and hrs ar) Staff

REQUIRED COURSES FOR GRADUATE MEDICAL STUDENTS

265. **General Anesthesia.** Instruction and experience in general anesthesia. (12 cr) Staff
266. **Regional Anesthesia.** Observation, instruction, and administration of all types of local, regional, and spinal anesthesia. (4 cr) Staff
267. **Pre- and Postanesthetic Evaluation.** Selection of proper anesthetic agent and technique, premedication, and observation of recovery from anesthesia. (2 cr) Staff
268. **Seminar in Anesthesiology.** Review of literature, report of case problems, and discussion of research work in progress within the Department. (2 cr) Staff
269. **Research in Anesthesia.** Anesthesia problems in experimental laboratory or in hospital. (Cr and hrs ar) Staff

BACTERIOLOGY AND IMMUNOLOGY (Bact)

First Term

- 53.5§ **General Bacteriology.** Lectures, demonstrations, and laboratory exercises are employed for instruction in the morphology, physiology, taxonomy, and ecology of bacteria. Practical applications of these fundamental principles in other phases of science and industry are emphasized. (5 cr; prereq soph with a C average in prereq courses, jr, sr, 10 cr in chemistry and 4 cr in biological sciences or #; lect II MTWThF, MMA 100; lab III-IV MTWThF, MMB A205) Johansson
201. **Research.** (Cr and hrs ar) Johansson

§§ Microscope required. Students may obtain use of microscope by purchasing \$3 microscope card from the bursar.

Second Term

- 102. §§ Medical Bacteriology.** Pathogenic bacteria, especially in their relationship to disease; principles of infection and immunity; microbiological techniques for laboratory diagnosis and antibiotic determinations. (4 cr for students other than med students; prereq 116; lect II MTWThF, MMA 100; laboratory III-IV MTWTh, MMB A205) Watson
- 201. Research.** (Cr and hrs ar) Watson

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

- 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 the University and the Minneapolis General Hospitals, and 24 to serve as senior clerks in the Medical Clinic at the 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.** (Cr 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
- 206. Clinical Conference.** Presentation of problem cases. Discussion of diagnosis and treatment and consideration of pertinent literature. (1 cr; 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 cr; 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 cr; 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 cr; hrs ar) Frantz, Tobian, Winchell, and others

§§ Microscope required. Students may obtain use of microscope by purchasing \$3 microscope card from the bursar.

DIVISION OF DERMATOLOGY

First Term and Second Term

ELECTIVE COURSES

- 157. **Ward Clinics in Dermatology.** (Cr and hrs ar; prereq #) Michelson and staff
- 158. **Clinics in Dermatology.** (Cr and hrs ar; prereq #) Michelson and staff
- 159. **Assistantship, Dermatology and Syphilis.** (Limited to 1) (Prereq jr med clerkship, #; Minneapolis General Hospital) Laymon and staff
- 160. **Assistantship and Conference in Dermatology.** (Limited to 1) (Prereq jr med clerkship, #; University Hospitals) Michelson and staff
- 162. **Assistantship in Dermatology.** (Limited to 2) (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) (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

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.** (Limited to 10) 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 cr) 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 cr; hrs ar) McKelvey and staff

OPHTHALMOLOGY (Oph)

First Term and Second Term

COURSES FOR GRADUATE STUDENTS

201. **Clinical Ophthalmology.** (6 cr; 9-12 MTWThF; Out-Patient Clinic) Hansen, Hoffman, and staff
204. **Surgery of the Eye.** (3 cr; 1-4 TTh, 8-10 W; Operating Room) Staff

OTOLARYNGOLOGY (Otol)

First Term and Second Term

COURSES FOR GRADUATE STUDENTS

230. **Clinical Otology.** (3 cr; 9-12 MTWThF; Out-Patient Clinic and Operating Room) Boies and staff
231. **Clinical Rhinology and Laryngology.** (3 cr; 9-12 MTWThF; Out-Patient Clinic and Operating Room) Boies and staff
232. **Surgery of the Ear, Nose, and Throat.** (3 cr; 9-12 MTWThF; Out-Patient Clinic and Operating Room) Boies and staff

PATHOLOGY (Path)

First Term

104. **Autopsies.** (Cr ar; prereq 102; hrs ar) Dawson, McCartney
106. **Diseases of the Heart.** (2½ cr; prereq 102; VII-VIII TTh; JacH 104) McCartney
111. **Conference on Autopsies.** (1 cr; prereq 102; 12:30-1:30 T; JacH 104) Dawson
- 112.†† **Diagnosis of Tumors.** (2½ cr; prereq 102; hrs ar) McCartney
- 113.†† **Surgical Pathology.** (Cr ar; prereq 102; hrs ar) McCartney
201. **Research.** Students with the necessary preliminary training may elect research either as a major or minor in pathology. (Cr ar; prereq †; hrs ar) Dawson, McCartney

†† Second term 112 and 113 are not repetitions of the first term but rather continuations.

Second Term

104. **Autopsies.** (See first term) (Cr and hrs ar) Dawson, Hebbel
 111. **Conference on Autopsies.** (See first term) (1 cr; 12:30-1:30 T; JacH 104) Dawson
 112.†† **Diagnosis of Tumors.** (See first term) (2½ cr; hrs ar) Hebbel
 113.†† **Surgical Pathology.** (See first term) (Cr and hrs ar) Hebbel
 120. **Diseases of the Lungs.** (1 cr; prereq 102; hrs ar) Dawson
 121. **Diseases of the Alimentary Tract.** (1 cr; prereq 102; hrs ar) Hebbel
 201. **Research.** (See first term) (Cr and hrs ar) Dawson, Hebbel

PEDIATRICS (Ped)

First Term

REQUIRED COURSES

Courses 122 (1 cr) and 124 (8 cr), 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 cr; hrs ar; Mayo 1460) J. Anderson, Ziegler, Raile
 154.## **Endocrinology as Applied to Pediatrics.** Seminar course. (1 cr; hrs ar; Mayo 1460) J. Anderson, Raile
 162.## **Common Behavior Disturbances in Childhood.** Their recognition and management. (1 cr; hrs ar; Hosp W600) Jensen and staff
 170. **Rheumatic Infection and Heart Diseases in Childhood.** (1 cr; 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. (Limited to 10) (4 cr; II-IV and VI-VII MTWThF; University Hospitals and Minneapolis General Hospital) J. Anderson, Jensen, Good, Platou, Stoesser, Raile, and other senior staff members
 174B. **In-Patient Externship in Pediatrics.** Patients in the pediatric wards at the University Hospitals and Minneapolis General Hospital are assigned 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 cr; II-IV and VI-IX MTWThF, I-IV S) J. Anderson, Jensen, Good, Raile, and junior staff members

COURSES FOR GRADUATE STUDENTS

200. **Graduate Seminar in Pediatrics.** (1½ cr; IX T; Mayo 1450) J. Anderson, Ziegler, and senior staff
 202. **Pediatric Clinic.** (5 cr; II-IV MTWThF; Out-Patient Departments of Minneapolis General and University Hospitals) J. Anderson, Jensen, and junior staff

†† Second term 112 and 113 are not repetitions of the first term but rather continuations.

†† Not offered to fewer than 10 students.

- 204. Residency in Pediatrics.** Three months residency in pediatrics at University Hospitals, Minneapolis General Hospital, Northwestern Hospital, Sister Elizabeth Kenny Hospital, or Ancker Hospital. (7 cr; I-X MTWThF) J. Anderson and staff
- 208. Pediatric Research.** Special problems. Students may collaborate with members of the staff or with other students. (Cr and hrs ar; Ped Labs) J. Anderson, Good, Jensen, Raile, Ziegler
- 210. Special Clinics in Pediatrics.** (1 cr; Out-Patient Departments of Minneapolis General and University Hospitals) Jensen, Dwan, Stoesser

PHARMACOLOGY (Phcl)

First Term

REQUIRED COURSES

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

- 110. Toxicology.** Systemic qualitative toxicological analysis. Lecture and laboratory. Lecture only may be taken if desired. (2 or 5 cr; hrs ar) Wright

First Term and Second Term

- 9. Pharmacology for Nursing Students.** (2 cr; lect 22 hrs, VI TTh; Owre 111) Cranston
- 109. Pharmacological Problems.** (Cr and hrs ar) Bieter, Wright, Cranston
- 203. Research in Pharmacology.** (Cr and hrs ar) Wright, Bieter

PHYSICAL MEDICINE AND REHABILITATION (PMed)

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. (Cr and hrs ar) Kottke, Kubicek
- 200. Physical Medicine and Rehabilitation Service.** (Cr and hrs ar) Kottke, Kubicek, Gullickson
- 203. Poliomyelitis Clinic.** Evaluation of problems and treatment of acute and residual anterior poliomyelitis. (1 cr; II-IV Th) Kottke, Knapp, Gullickson
- 210. Research in Physical Medicine.** (Cr and hrs ar) Kottke, Kubicek

PHYSIOLOGICAL CHEMISTRY (PhCh)

First Term

REQUIRED COURSES

- 100. Physiological Chemistry.** (7 cr; prereq organic and physical chemistry and physics; lect IV, VI MTWThF, MH 214; lab I-III MTThF, MH 310) Barnum, Carr, Van Pilsum

ELECTIVE COURSES

153. **Problems in Physiological Chemistry.** Special work arranged with qualified students. May be taken one or both terms. (Cr and hrs ar; prereq 100, 101) Barnum, Carr, Van Pilsum
205. **Research in Physiological Chemistry.** (Cr and hrs ar) Armstrong, Barnum, Carr

Second Term

REQUIRED COURSES

101. **Physiological Chemistry.** (6 cr; prereq 100; lect IV, VI MTWTh, MH 214; lab I-III MTWTh, MH 310) Barnum, Carr, Van Pilsum

ELECTIVE COURSES

153. **Problems in Physiological Chemistry.** (See first term) Barnum, Carr, Van Pilsum
205. **Research in Physiological Chemistry.** (See first term) Barnum, Carr, 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.

4. **Human Physiology.** An elementary course consisting of lectures and demonstrations for students desiring an introduction to the subject. (4 cr; prereq 1 qtr zoology and 1 qtr chemistry; lect or dem II-III TWThF; MH 214) McClintock, Love

ELECTIVE COURSES

203. **Research in Physiology.** (Cr and hrs ar) Visscher and others

Second Term

REQUIRED COURSES

51. **Human Physiology.** (6 cr; prereq zoology and 1 yr college chemistry; primarily for 5-yr nursing and physical therapy students; lect VI MWF, VII TThF, VIII TTh, Owre 12; conf IV TTh, Owre 12; lab VII-IX MW, MH 301) Ar.

ELECTIVE COURSES

203. **Research in Physiology.** (Cr and hrs ar) Ar.

PSYCHIATRY AND NEUROLOGY (NPsy)

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. (Cr ar) Staff
 145x. **Reading in Neurology.** Supervised reading. (Cr ar) Staff
 152. **Externship in Psychiatry.** Practice in clinical psychiatric work. (Limited to 10) (6 cr) Staff
 153. **Externship in Neurology.** Practice in clinical neurologic work. (Limited to 10) (6 cr) Staff
 155. **Therapeutics in Neurology.** Supervised training in out-patient care of the chronic neurologic patient. (2 cr) Staff

COURSES FOR GRADUATE MEDICAL STUDENTS

208. **Clinical Neurology.** Supervised practice, in-patient and out-patient services. (Cr ar) Staff
 208x. **Clinical Psychiatry.** Supervised practice, in-patient and out-patient services. (Cr ar) Staff
 208y. **Clinical Child Psychiatry.** Supervised practice, in-patient and out-patient services. (Cr ar) Staff
 209. **Research in Neurology and Psychiatry.** (Cr ar) Staff
 212. **Survey of Neuropathology.** (Cr ar; prereq 210) Staff
 221. **Psychometric Clerkship.** (Cr ar; prereq #) Hathaway, Schofield
 226. **Neurological-Neurosurgical Conference.** Review of X-rays, case histories, and neuropathological material on neurological and neurosurgical cases. (1 cr; §Surg 318) Baker
 228. **Research in Neuropathology.** (Cr ar) Staff
 231. **Applied Electroencephalography and Myography.** (Cr ar) Torres
 233. **Applied Neuropathology.** (Cr ar) Staff
 243. **Prolonged Psychotherapy.** (1 cr) Staff
 245. **Case Conference for Clinical Psychologists.** (Cr ar; prereq #) 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.** (Limited to 6) (1 cr; prereq jr; 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) Westley

Second Term

ELECTIVE COURSES (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. (Limited to 8) (4 cr; prereq sr medical students) Nice, Mosser

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 cr; 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 cr; II T; Eustis) Feinberg, Lester
- 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 cr; 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 cr; VI F; Todd) H. Peterson
200. **Research in Roentgenology.** Problems in roentgen diagnosis. (Cr and hrs ar) Nice and staff
204. **Research Related to Radiation Therapy.** (Cr and hrs ar) Mosser, Vermund
206. **Roentgenoscopy.** Theory and practical application of roentgenoscopy, particularly to diseases of the gastrointestinal tract, lungs, and heart. (3 cr; 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. (Cr and hrs ar) Mosser, Vermund
209. **Roentgen Diagnosis.** Theory and practical application of roentgen diagnostic methods to medical cases in general. (3 cr; hrs ar) Nice and staff
210. **Roentgen Technique.** 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 cr; 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 cr; 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 cr; IX W; University Hospitals C239) Mosser, Vermund

SURGERY (Surg)*First Term***REQUIRED COURSES FOR 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. (Cr and hrs ar) Wangenstein and staff
- 152. Problems in Clinical Investigations.** Special case records correlated with literature study. (Cr 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. (Cr and hrs ar) Wangenstein and staff

Second Term

- 135abcdek. Junior Clinical Clerkship.** (Externs) Wangenstein and staff
- 139. Operative Surgery.** (Externs) Wangenstein and staff
- 152. Problems in Clinical Investigation.** (Externs) Wangenstein and staff
- 167. Problems in Experimental Surgery.** (Externs) Wangenstein and staff
- 200. Out-Patient Clinic in Surgery.** Wangenstein and staff
- 204. Tumor Clinic.** (Externs) Wangenstein and staff
- 214. Surgical Ward Conference.** (Externs) Wangenstein and staff
- 215. Roentgenological Conference.** (Externs) Wangenstein and staff
- 218. Medical and Surgical Pathology Conference.** (Externs) Wangenstein and staff

*First Term and Second Term***DIVISION OF GENERAL SURGERY****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. Wangenstein and staff
- 203. Proctoscopy and Sigmoidoscopy.** Diagnosis and treatment of lesions of the lower bowel. University Hospitals surgical staff
- 204. Tumor Clinic.** Combined clinical and pathological consideration of tumors as seen by general surgeon. Staffs of Departments of Surgery and Biophysics. Wangenstein 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. Wangenstein and staff
- 208. Surgical Service.** Surgical fellow acts as house surgeon at University Hospitals. Wangenstein and staff
- 211. Operative Surgery.** Surgical fellow acts as first assistant at operations in University Hospitals, and later may be permitted to operate. Wangenstein 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
219. **Surgical Literature Conference.** The leading surgical journals are assigned to the fellows who read and report on important articles at weekly conference. (1 cr) Wangenstein and staff
220. **Peripheral-Vascular Surgical Clinic-Conference.** Vascular clinic with conference following. (1 cr) Wangenstein and staff
221. **Surgery-Physiology Conference.** Weekly conference on problems relating to both surgery and physiology. (1 cr) Surgery and Physiology staffs

DIVISION OF NEUROSURGERY

REQUIRED COURSES FOR 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 cr; 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

Medical Technology (MedT)

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

- 70A. **Laboratory Methods in Clinical Chemistry A.** Basic methods and techniques used in clinical chemistry and urinalysis. (10 cr) Hammer
 70B. **Laboratory Methods in Clinical Chemistry B.** Laboratory methods and additional experience in special procedures used in clinical chemistry. (5 cr) Freier
 73. **Electrocardiography and Basal Metabolism Testing.** Principles and practice in the use of electrocardiographs and metabolors. (2 cr) Halsted
 75. **Clinical Hematology.** Application and use of laboratory methods in hematology. Practice in venapunctures. Morphology of blood cells. (8 cr) Hanauer
 80. **Clinical Microbiology.** Identification of bacteria by microbiologic techniques. Correlation with clinical cases. Practice in serologic methods. Identification of parasites. (8 cr.) Ness
 82. **Blood Bank Techniques.** Application of technical methods in procurement of blood and blood grouping and crossmatching for transfusions. (4 cr) Ruspino
 85. **Histologic Techniques.** Preparation of tissue specimens for microscopic study. (4 cr) Duerr

School of Nursing††

Courses and Fees

The program of courses in the 1957 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. 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.

Curriculums for Graduate Nurses Leading to the Degrees of Master of Education in Nursing Education and Master of Nursing Administration

Elective courses in these programs are available during the Summer Session. Students registering for these programs 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

†† For courses in Public Health Nursing, see index.

to register for the academic year 1957-58 should consult the major adviser early, preferably during the first term. Students in education register in the College of Education. Students in administration register in the School of Nursing. Students 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, 1957, 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, 1956-58*, pages 16-17.

First Term

Nurs 182. Workshop on Case Material in Nursing. (See section on Special Programs) Observation of potential case situations; individual and group conferences; development and use of case material; practice in case teaching and administration. (6 cr; prereq grad, Δ ; advance regis requested; VII-VIII MTWThF and ar; ForH 180) Beal

NuAd 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 cr; prereq sr, grad nurse; III-IV MTWThF; Owre 113) Grainger

NuAd 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 cr; open only to majors in nursing administration; prereq 170; I-II MTWThF; MH 116) Miller

NuAd 176. Elements of Administration in Nursing. Communication within hospital organization; hospital economics; legal aspects of nursing practice; human relations. (5 cr; prereq 177; III-IV MTWThF; ForH 345) Walseth

NuAd 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 cr; open only to fourth qtr students in the master of nursing administration program; prereq 192; III-IV MW and IV F; MH 116) Miller

NuEd 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 cr; prereq sr, grad, or grad nurse; I MTWThF; ForH 75) Johnston

NuEd 190. The Survey in Nursing Education. Survey techniques in making an educational field study. (3 cr; prereq sr, grad, §; III-IV TTh and III F and ar; MH 116) Harrington

Note—See also EdT 51A, The Teaching of Nursing, College of Education, Methods and Student Teaching.

Second Term

NuAd 170. Foundations of Nursing Service Administration. Principles of administration with application to nursing; current practice in nursing administration. (3 cr, cannot be taken for credit by students in master of nursing administration program; prereq jr, sr, grad, or grad nurse; I MTWThF; MH 116) Walseth

NuAd 193. Principles of Administration Applied to Nursing Service Administration. (Continuation of 193, first term) (3 cr; III-IV MW and IV F; MH 116) Miller

Note—See also EdT 51A, The Teaching of Nursing, College of Education, Methods and Student Teaching.

Occupational Therapy

Consult Occupational Therapy office, 860 Mayo Memorial, University of Minnesota, Minneapolis 14.

School of Public Health (PubH)

First Term

50.55 Personal and Community Health. Fundamental principles of health conservation and disease prevention. (3 cr, §3a, 3b, 4, 51, 52, 100 or GC 10C; III MTWThF; Owre 15) Bates

§§ No credit is granted for this course in the major sequence in public health nursing.

62. **Public Health Nursing I.** Nurse-family relationships; interviewing techniques; family health needs with emphasis on problems from birth until school age; home, clinic, and community. (5 cr; prereq public health nurses [others by permission], 100 or 1100, §; II-III MTWThF; Owre 12) Sanburn
- 63a. **Public Health Nursing II.** Continuing analysis of public health nursing service; home, school, clinic, industry, community as operational areas; organization and administration of services. (3 cr; limited to students registered in winter and spring quarters; prereq public health nurses, 62a, 65; VI MWF, VII MF; Mayo 100) Murphy
65. **Field Practice in Public Health Nursing.** Practical experience in selected public health agencies; relationship of theory to practice. (Cr ar; prereq 62, 63 or 62a, 100, 133, Soc 50, C average) Sanburn
95. **Human Nutrition.** Particular reference to public health. Nutritional values of foods, food utilization and requirements, food management, nutrition education. (3 cr; prereq courses in chemistry and biology, or §; IV MTWThF; Mayo 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 cr; med students only; ar) Thomson
133. **Mental Health.** Emotional factors underlying wholesome family relations or interfering with successful adjustment in family and community. (3 cr; prereq 62 or experience in public health nursing or §; I MTWThF; Owre 12) Cline
175. **Workshop on Principles of Human Relations in Public Health Nursing Supervision.** (July 1-12) Application of mental hygiene attitudes, relationships, communication skills; use of these by supervisor, administrator, consultant. (Limited to 25) (3 cr; prereq public health nurse; Mayo 1250) Von Bergen, Williams, Cline

BIOSTATISTICS

110. **Biostatistics I.** Introduction to role of statistics in research; simple tests of hypotheses, power; estimation; regression; correlation; other measures of association; standard distributions including normal, t , χ^2 , F , binomial, Poisson; special distributions arising from nonparametric procedures. (3 cr; prereq college algebra or §, ¶ 111; IV MTWThF; C 111) Bearman
111. **Biostatistics Laboratory I.** Presentation of data; descriptive statistics; practice in practical application of principles and methods covered in PubH 110. (2 cr; prereq ¶110; 12 hrs per wk ar during morning, afternoon hrs by special ar only; C 455) Weckwerth

Second Term

- 59.§§ **Health of the School Child.** Disease control; health appraisal; emotional problems; school environment; accident prevention and emergency care. (3 cr; prereq 3a and 4, or 3a and 51, or GC 10C and 4, or GC 10C and 51, or 50, or 52, or 100; exemption from 3a or 3b on basis of military service not acceptable as substitute for personal health course; III MTWThF; MH 214) Eichenlaub
63. **Public Health Nursing II.** (Continuation of 62) Family health needs from the school period through old age; home, clinic, school, industry, and community; organization and administration of public health nursing services. (4 cr; prereq public health nurses [others by permission], 62 and 100; VI-VII MTWTh; Mayo 100) Murphy

§§ No credit is granted for this course in the major sequence in public health nursing.

65. **Field Practice in Public Health Nursing.** Practical experience in selected public health agencies; relationship of theory to practice. (Cr ar; prereq 62, 63 or 62a, 100, 133, Soc 50, C average) Sanburn
69. **The Nurse in the School.** Organization and administration of school health programs; health in school curriculum; nursing functions. (3 cr; prereq 62, 63 or 62a-63a, or ¶100, 133 or ‡; IV MTWThF; Mayo 100) Murphy
75. **Introduction to Environmental Sanitation.** Principles of urban and rural sanitation relating to water, food, wastes, housing, air, insects, rodents. (3 cr; prereq 3 cr in public health; III MTWThF; Mayo 100) Bosch
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 cr; prereq 3a or 50, and course in bacteriology; I-II MTWThF; Mayo 125) Anderson
148. **Workshop on Rehabilitation and Public Health Nursing.** (July 22-August 2) Rehabilitation as a part of total nursing care and its application to general public health nursing practice. (Limited to 25) (3 cr; Mayo 1250) Anderson
230. **Field Practice in Environmental Sanitation.** (Cr ar; prereq ‡) Bosch

BIOSTATISTICS

120. **Biostatistics II.** Continuation of 110. (3 cr; prereq 110-111, ¶121; IV MTWThF; C 111) Johnson
121. **Biostatistics Laboratory II.** Practice in practical application of principles and methods covered in 120. (2 cr; prereq ¶120; 12 hrs per wk ar during morning, afternoon hrs by special ar only; C 455) Weckwerth

Note—For courses in nursing, nursing education, and nursing administration, see index.

MORTUARY SCIENCE (Mort)

The admission requirements for the Department of Mortuary Science are described in the departmental bulletin. The Summer Session courses offered by the department are primarily for those students who will be matriculating fall quarter, 1957, for their final year in either Plan A or Plan B program for the associate degree in mortuary science. The inclusion of these courses in the final year of either program makes an extremely heavy class schedule and it is recommended that in every possible instance they be completed prior to the last year's matriculation. The offerings are those courses not obtainable in other colleges of the University or at other institutions of higher learning.

First Term

3. **Introduction to Restorative Art.** Aspects of general art as they apply to funeral service. (2 cr; I MTWTh; NH 100) Gates
11. **Introduction to Mortuary Management.** Funeral service as a business profession. Current statistics and studies. (2 cr; prereq 10 or #; III MWF; NH 107) Slater
12. **Introduction to Embalming.** Techniques, history, licensure, and legal requirements. (3 cr; prereq 10 or #; IV MTWThF; NH 107) Slater

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 section on 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 (AmSt)

(See section on Special Programs)

First 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 cr; I MTWThF; FolH 6) Sclarencio
- 200.* Introduction to American Studies.** Exposition of interdisciplinary methods and of the concept of American Studies. (3 cr; limited to candidates for the M.A. in American Studies; IV MTWThF; TSF 109) McDowell
- 250. Readings in American Civilization.** Independent study of interdisciplinary aspects of American civilization under guidance of members of various departments. (Cr ar; prereq consent of department chairman; ar) Ar.

Second Term

- Hum 23. American Life III.** Growth and interrelation of nationalism, regionalism, and internationalism in American culture and thought. (3 cr; I MTWThF; WeH 206) Kwiat
- 251. Readings in American Civilization.** Independent study of interdisciplinary aspects of American civilization under guidance of members of various departments. (Cr ar; prereq consent of department chairman; ar) Ar.

Note—See also approved courses in participating departments as listed in the separate brochure, *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 cr, §old 2 [such students should register for 2A]; I MTWThF; ForH 115) Reining
- 140. Field Trip in Archaeology.** Excavations of prehistoric village and mound sites in the state of Minnesota. Training in archaeological methods. (1-6 cr; prereq male students only, §; ar) Wilford
- 157. Afro-American Music.** Cultural factors contributing to the distinctive aspects of music in contemporary American society; African and West Indian influences; jazz, "blues," spirituals, etc. (3 cr; II MTWThF; ForH 160) Merriam
- 158. Music in Primitive Cultures.** Form and functions of music among nonliterate peoples; analysis of styles, content, instrumentation, and their distributions. Relations of music to other aspects of culture, such as religion, society, folklore, etc. (3 cr; IV MTWThF; ForH 160) Merriam
- 161. Primitive Religion.** Beliefs and practices in primitive religious systems; the roles of the sacred, the supernatural, and beliefs in continuance of life after death; and the role of the dead in the life-ways of primitive peoples. (3 cr; prereq 2A; III MTWThF; ForH 160) Reining
- 190. Directed Research.** (Formerly Anth 122) (Cr ar; prereq sr, grad, Δ; ar) Staff

Second Term

- 2A. Introduction to Anthropology: Cultural Anthropology.** Varieties and range of human behavior as revealed through study of primitive societies in all parts of the world. Scientific analysis of the ways in which primitive men organized their lives, directed toward a deeper and broader understanding of human capacities and purposes. (3 cr, §old 1 [such students should register for 1A]; II MTWThF; ForH 115) Hoebel
- 80. The American Indian.** A survey of the native peoples and cultures of North and South America. (3 cr; I MTWThF; ForH 150) Weingrod
- 140. Field Trip in Archaeology.** (See first term) (1-6 cr; prereq male students only, §; ar) Wilford
- 150. The Contact of Cultures.** (Formerly Anth 119) Processes of acculturation. Impact of civilizations on native cultures. (3 cr; prereq 1A and 2A; III MTWThF; ForH 160) Weingrod
- 165. Personality and Culture.** Role of cultures in the formation of personality. Problems of individual adjustment to the demands of various cultures. Integration of anthropology and psychology. (3 cr; prereq sr, grad; IV MTWThF; ForH 150) Hoebel
- 191. Directed Research.** (Formerly Anth 123) (Cr ar; prereq sr, grad, Δ; ar) Staff

ART (Art)

See also Art Education

First Term

HISTORY OF ART

- 1. Principles of Art.** Lecture course on basic problems of art. Examples from the painting, sculpture, and architecture of various periods will be used to illus-

trate general cultural factors that influence the production of art as well as basic problems of design and of technique. This course, together with Mus 10, Spch 8, and Phil 4, forms a sequence in the Arts. (3 cr; I MTWThF; J 207b) Tselos

- 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, Holland, and England, visiting Paris, Chartres, Avignon, Arles, Nimes, Nice; Genoa, Pisa, Rome, Florence, Siena, Ravenna, Venice; Vienna, Innsbruck, Salzburg; Munich, Rothenberg, Heidelberg; Amsterdam, Haarlem; London, Oxford. Surveys ancient, Medieval, Renaissance, and Baroque art and will conclude in an intensive examination of contemporary postwar 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 cr; prereq jr, sr, grad.; steamer from Quebec July 6 and return Quebec September 4, or fly from New York July 13 and return by air August 26) Torbert, Eitner
- 106. Art in Egypt, Mesopotamia, and Greece.** Architecture, sculpture, and painting of the pre-Hellenic civilizations in Egypt, Mesopotamia, and the Aegean. Development of Greek art from its beginnings to the Periclean age. (3 cr; prereq 9 cr in history of art, or 9 cr in literature or history with Δ ; III MTWThF; J 207b) Tselos
- 236-237-238. Problems in Art History and Criticism.** (Cr ar; prereq #) Tselos

STUDIO COURSES

- 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.** Source material in nature, and problems in descriptive and imaginative drawing. Investigation of design principles through drawing and elementary perspective. (3 cr; prereq 1 or 11)
- Sec 1, I-II MTWThF, J 104, Arnest Sec. 2, V-VI MTWThF, J 104, Liebling
- 24. 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 cr; prereq 23)
- Sec 1, I-II MTWThF, J 104, Arnest Sec. 2, V-VI MTWThF, J 104, Liebling
- 25. 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 cr; prereq 24)
- Sec 1, I-II MTWThF, J 104, Arnest Sec. 2, V-VI MTWThF, J 104, Liebling
- 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 cr; I-II MTWThF; J 203) Myers
- 40-41-42. Sculpture I.**
- 40. Beginning course.** An 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 cr; prereq 1 or 11; I-II MTWThF; Ho1B 140) Morton

41. Integrates basic principles examined in Art 40. Natural form is studied for its sculptural possibilities. A more imaginative approach to the study of nature is encouraged. In addition to clay, direct plaster construction is the principal medium. Drawing from life precedes each problem. (3 cr; prereq 40; I-II MTWThF; HoLB 140) Morton
42. **Design Workshop.** Free exploration of wood, metal, and ceramics. Emphasis is placed on abstract application of structural principles. Fundamental hand and machine tools are introduced. (3 cr; prereq 1; I-II MTWThF; HoLB 140) Morton
- 70-71-72. **Oil Painting.** Introduction to medium of oil; individual projects and instruction. (3 cr each; prereq 54; III-IV MTWThF; J 200a) Arnest
- 80A-81A-82A. Metal Sculpture.**
- 80A. **Direct Metal Sculpture and Construction.** Work with direct metal sculpture, constructions, and mobiles, with attention given to sculptural form. (3 cr; prereq jr, sr, 42 or equiv; I-II MTWThF; HoLB 140) Morton
- 81A. **Metal Sculpture in Relief and Repoussé.** Construction and repoussé methods of sculpture. Problems of sculptural expression and space organization in relation to interiors and architecture. (3 cr; prereq jr, sr, 80A; I-II MTWThF; HoLB 140) Morton
- 82A. **Bronze Casting and Wax Modeling.** Aesthetic and technical problems of modeling in clay and wax with reference to bronze metal forms and the technical problems of lost-wax casting are introduced. (3 cr; prereq jr, sr, 81A; I-II MTWThF; HoLB 140) Morton
- 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 cr each; III-IV MTWThF; J 203) Myers
113. **Design in Jewelry.** Problems of design as applied to jewelry. Basic techniques of soldering, forming, and forging. Lectures correlate the contemporary craft movement with modern art. (3 cr; prereq 25 and Δ; III-IV MTWThF; HoLB 140) Morton
- 150-151-152. **Problems in Painting.** (Cr ar; prereq 72 and Δ; III-IV MTWThF; J 200a) Arnest
- 190-191-192. **Problems in Printmaking.** For advanced students. Work in black and white and color in metal, lithographs, and wood blocks. (Cr ar; prereq 92 or Δ; III-IV MTWThF; J 203) Myers
- 200-201-202. **Advanced Problems in Studio Work.** (Cr ar; prereq Δ; ar) Arnest, Morton, Myers

FILM AND PHOTOGRAPHY

10. **Photography.** (Same as Jour 10) Fundamental principles of photography. Use of cameras, developing, printing, and other elementary techniques. (3 cr; III-IV MTWThF; MurH 20) Liebling
86. **The Art of the Film.** Critical study and analysis of the motion picture as an art form. Emphasis is on the finished product, demonstrated in a select program of films of exceptional merit or specific interest. Lectures, demonstration, and discussions. Analysis of films of various categories, such as narrative, poetic, documentary, experimental, etc. (3 cr; prereq 9 cr art or 9 cr literature or 6 cr speech including Spch 31; III MTWThF; J 207a) Amberg
186. **The Art of the Film.** Aesthetics of the film medium. Evaluation and analysis of the motion picture as an art form. Discussions of editing, montage, sound, and the use of the camera, etc. Will be illustrated with feature-length films and short subjects. (3 cr; prereq 87 or Δ; III MTWThF; J 207a) Amberg

Second Term

HISTORY OF ART

1. **Principles of Art.** (See first term) (III MTWThF; J 207b) Elsen
138. **Art in the United States.** The contemporary movements. The Armory Show and development of modern realism, expressionism, and abstraction. Frank Lloyd Wright and modern American architecture. (3 cr; prereq 9 cr in history of art or 9 cr in literature or history with Δ ; V MTWThF; J 207b) Elsen
- 206-207-208. **Seminar in European and American Painting.** (3 cr each; prereq $\#$; ar) Elsen

STUDIO COURSES

20. **Elements of Drawing.** Basic problems in drawing. No previous experience required. Work in various drawing media. Subject matter: still life, figure, landscape, and nature study. (3 cr; III-IV MTWThF; J 10) Quirt
- 23-24-25. **Drawing and Design I.** (See first term) (I-II MTWThF; J 104) Downs
- 70B-71B-72B. **Oil Painting.** For general students. (2 cr each, $\$70-71-72$, no cr for art majors; prereq 20 or 23 or equiv, with $\#$; V-VI MTWThF; J 10) Quirt
- 150-151-152. **Problems in Painting.** (Cr ar; prereq 72 and Δ ; V-VI MTWThF; J 10) Quirt
- 200-201-202. **Advanced Problems in Studio Work.** (Cr ar; prereq Δ ; ar) Quirt

PHOTOGRAPHY

10. **Photography.** (Same as Jour 10) (See first term) (III-IV MTWThF; MurH 20) Downs

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 nonmathematical. (3 cr; III MTWThF and 1 clear evening per wk for observations with the telescope; Ph 133) Luyten
13. **Stellar and Practical Astronomy.** Description of the constellations and of the properties and motions of 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 cr; IV MTWF and 2 clear evenings per wk for observation; Ph 133) Luyten

BOTANY (Bot) $\dagger\dagger$ *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. (Limited to 35) (5 cr; lect I MTWThF, Bo B6; lab II-III MTWThF, Bo 4, 5) Ar.
- 194.* **Problems.** Advanced work in some specialized field of botany. (1-5 cr; prereq $\#$; ar) Staff

$\dagger\dagger$ For additional courses in the first term see index, Lake Itasca Forestry and Biological Station.

Second Term

5. **General Botany.** (See 4, first term) (Limited to 35) (5 cr; 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 cr; ar) Staff

CLASSICS (Clas)¶¶

First Term

24. **Technical Terms of Science, Medicine, and the Humanities.** Presentation in English contexts of Greek and Latin prefixes, suffixes, and root words basic in modern technical vocabularies. (3 cr; prereq soph, jr, sr; II MTWThF; FolH 110) McDonald
124. **Technical Terminology.** Semantics and derivation of modern technical vocabularies, with presentation in English of Greek and Latin prefixes, suffixes, and root words. (3 cr, §24; II MTWThF; FolH 110) McDonald
- Lat 171. **Roman Epigraphy.** Reading will be assigned in the inscriptions, from the earliest written in Latin down to the period of the Empire. Discussion of related problems in the fields of archaeology, linguistics, history, sociology. (3 cr; prereq 53 or #; III MTWThF; FolH 103) McDonald

COMMUNICATION

See Index

ECONOMICS

See School of Business Administration and Agricultural Economics

EFFICIENT READING

See Index

ENGLISH ¶¶

First Term

LITERATURE (Engl)

23. **Introduction to Literature.** The Romantic Movement and the Victorians. Wordsworth, Byron, Shelley, Keats, Lamb, Carlyle, Browning, and Arnold. (6 cr; prereq ¶¶; I-II MTWThF; FolH 206) Buckley
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 cr; prereq §§; II 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 cr; prereq §§; III MTWThF; FolH 303) Christie

¶¶ 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 21-22-23.

¶¶ Credit will be allowed in English for Clas 24.

73. **American Literature.** Notable authors from Edwards to Holmes. (3 cr; prereq §§; II MTWThF; FolH 204) Turpie
75. **Chaucer.** The reading of selections from *The Canterbury Tales* with introduction dealing with the grammar and literary forms of 14th-century English. (3 cr; prereq §§; I MTWThF; FolH 303) Allen
100. **Old English (Anglo-Saxon).** Sounds and grammar with some prose reading. Relation to modern English stressed. (6 cr; prereq ††; I-II MTWThF; FolH 305) Clark
- 112a.* **Modern American and British Poetry: A Cultural Comparison.** (3 cr; prereq ††; I MTWThF; FolH 207) Whittemore
- 113.* **American Short Story.** A historical examination from the 18th century to the present. (3 cr; prereq ††; III MTWThF; FolH 204) Turpie
- 143.* **Twentieth-Century Literature (American).** Pound, Cummings, Moore, Wharton, Cather, Hemingway. (3 cr; prereq ††; IV MTWThF; FolH 204) O'Connor
- 156.* **American Drama.** (3 cr; prereq ††; III MTWThF; FolH 206) Hornberger
- 162.* **Milton.** The minor poems, *Areopagitica*, *Paradise Lost*, and *Samson Agonistes*. (3 cr; prereq ††; IV MTWThF; FolH 207) Koller
165. **Introduction to Modern English.** A 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 cr; prereq ††; II MTWThF; FolH 303) Allen
- 181a.* **Recent Trends in American Literary Criticism.** (3 cr; prereq ††; II MTWThF; FolH 207) Whittemore
- 199.* **Seventeenth-Century Literature.** Poetry and prose of the late 17th century. (3 cr; prereq ††; II MTWThF; FolH 205) Koller
213. **Bibliography and Methods of Literary Research.** 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 cr; 9-11 TTh; FolH 108) O'Connor
298. **Independent Reading.** (3 cr; prereq M.A. degree or equiv) Ar.

COMPOSITION (Comp)

4. **Freshman Composition.** Practical training in reading and writing. (3 cr; prereq placement test; I MTWThF; FolH 205) Christie
5. **Freshman Composition. Continuation of Comp 4.** (3 cr; prereq 4 or Comm 1; III MTWThF; FolH 205) Ar.
27. **Advanced Writing.** Formal exposition, stressing adequate content, logical development, and organization of material. (Not to be confused with Comp 7) (3 cr; prereq ††; III MTWThF; FolH 107) del Plaine

Second Term

LITERATURE (Engl)

22. **Introduction to Literature.** The Restoration and the 18th century. Pope, Swift, Addison and Steele, Johnson, Boswell, Fielding, and Sheridan. (6 cr; prereq ††; I-II MTWThF; NH 207) Montgomery

†† Six credits in English literature, exclusive of 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 21-22-23.

39. **Modern Literature.** The novel since Thomas Hardy. (3 cr; prereq ††; I MTWThF; PeikH 175) Steinmann
55. **Shakespeare.** (See first term) (II MTWThF; P218) Stange
- 56.† **Shakespeare.** (See first term) (III MTWThF; NH 209) Blum
- 74.† **American Literature.** Notable authors from Whitman to Hemingway. (3 cr; prereq §§; IV MTWThF; P 2) Levenson
- 106.* **Whitman and Mark Twain.** (3 cr; prereq ††; III MTWThF; JohH 114) Kwiat
- 110.* **Romantic Poets of the Early 19th Century.** Byron, Shelley, Keats, etc. (3 cr; prereq ††; IV MTWThF; JohH 313) Jackson
- 126.* **Drama, 1660-1730.** History of English drama from the opening of the theaters in 1660. The Restoration and early 18th century. The heroic play, tragedy, comedy of manners, beginnings of sentimental comedy. (3 cr; prereq ††; III MTWThF; JohH 313) Ar.
- 137.* **Nineteenth-Century Literature.** Poetry and prose of the early Victorian period. (3 cr; prereq ††; IV MTWThF; JohH 122) Stange
- 142.* **Twentieth-Century Literature (British).** British literature from 1890 to 1957, studied for theme and technique and as part of literary and intellectual history. (3 cr; prereq ††; IV MTWThF; JohH 309) Howarth
- 143a.* **Frost and Faulkner.** (3 cr; prereq ††; III MTWThF; JohH 314) Levenson
- 155.* **American Novel.** The American novel from Henry James to the present. (3 cr; prereq ††; II MTWThF; JohH 114) Bowron
- 189a.* **Dominant Ideas in 18th-Century Literature.** How they are embodied in a representative selection of poetry and prose. (3 cr; prereq ††; II MTWThF; AH 108) Steinmann
- 197.* **Seventeenth-Century Literature.** Prose and poetry of the early 17th century. (3 cr; prereq ††; II MTWThF; JohH 314) Howarth
299. **Independent Reading.** (3 cr; prereq M.A. degree or equiv) Ar.

COMPOSITION (Comp)

6. **Freshman Composition.** Continuation of Comp 5. (3 cr; prereq 5 or Comm 2; I MTWThF; JohH 309) Ar.

FAMILY LIFE

See Interdisciplinary Studies

FOREIGN STUDY SEMINAR

See Interdisciplinary Studies

GENERAL STUDIES

See Interdisciplinary Studies

†† Six credits in English literature, exclusive of 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 21-22-23.

GEOGRAPHY (Geog)*First Term*

41. **Geography of Commercial Production.** Economic geography with special emphasis on commodities of commercial significance. Particular attention is given to the world patterns of raw material occurrence and production, as well as to the associated centers of industrial fabrication. (5 cr; II-III MTWThF; ForH 285) Webb
90. **Readings.** (Cr ar; prereq 12 cr and #) Webb
113. **Eastern Anglo-America.** Regional examination of the physical and human geographic patterns of southeastern Canada and the eastern, southeastern, and middlewestern United States. (3 cr, §old 71; prereq 5 cr or #; IV MTWThF; ForH 285) Lukermann
114. **Historical Geography of North America.** A sequential analysis of settlement and economy in the changing environment and resource patterns of North America. (3 cr, §old 53; prereq 1 and 4 or #; I MTWThF; ForH 285) Lukermann

Second Term

1. **Geography of Natural Resources.** Physical characteristics and geographic distribution of the world's natural resources; major regional differences in the problems of physical resource development. (5 cr, §old 11; II, IV MTWThF; ForH 285) Mather
90. **Readings.** (Cr ar; prereq 12 cr and #) Gosling
120. **South Asia.** Physical and human geography of India, Pakistan, and Ceylon; geographic aspects of the problems of population pressure, development of resources, and international relations. (3 cr, §old 121; prereq 5 cr or #; I MTWThF; ForH 285) Gosling
122. **East Asia.** Physiographic features of China, Korea, and Japan, together with the forms of resource utilization in their regional diversity. Geographic aspects of the problems of population pressure, development of resources, and international relations. (3 cr, §old 120; prereq 5 cr in geography or #; III MTWThF; ForH 285) Gosling
301. **Research Problems.** (Cr ar) Mather

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. Several field excursions. (5 cr; I-II MTWThF; P 210) Thiel
100. **Field Work in Northern Minnesota.** (July 16 to 27) Geologic field methods and study of selected areas on the iron ranges and other parts of northern Minnesota. Comprehensive report is required for Graduate School credit. (3 cr; prereq 25) Wright
150. **Field Geology.** (June 16 to July 14) Detailed systematic field work. Preparation of geologic maps, structure sections, reports; genesis of ores and their relations to geologic structures. Field: Black Hills, South Dakota. (6 cr, prereq 125) Craddock, Sloan.
170. **Geologic Problems.** (3 cr; prereq #; 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 cr; 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 cr; I-II MTWThF; FolH 209½) Prottengeier
- 3. Beginning German.** (5 cr; prereq 2 or 2 yrs of high school German; I-II MTWThF; FolH 209) Pfeiffer
- 4. Intermediate German.** (5 cr; prereq 3 or 3a or 3b or 3 yrs of high school German; I-II MTWThF; FolH 209) Pfeiffer
- 92. German Civilization and Culture: Luther to Lessing.** (3 cr; prereq #; IV MTWThF; FolH 208) Prottengeier
- 185.* Studies in the Literature of the 20th Century: Expressionism.** (3 cr; prereq sr, grad, 14 cr above 69 or equiv; VI-VII MTh; FolH 208) Wood
- 188.* Lyric Poetry: Heine.** (3 cr; prereq sr, grad, 14 cr above 69 or equiv; VI-VII TF; FolH 208) Pfeiffer

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 cr; prereq 2 or equiv) Staff
- 66. 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 cr; prereq 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. Aims to strengthen the background and broaden the range of the American teacher of German. (4 cr; prereq #) Staff

Second Term

- 2. Beginning German.** (5 cr; prereq 1 or 1 yr of high school German; I-II MTWThF; Ph 236a) Menze

¶¶ See Modern Language Institute in section on Special Programs.

- 159.* **Directed Readings.** (3 cr; prereq sr, grad, or #; 1st meeting V T, July 23; ForH 214; thereafter only individual consultations) Menze

HISTORY (Hist)

First Term

1. **Civilization of the Modern World, Part I.** (3 cr; I MTWThF; ForH 130) McGrew
2. **Civilization of the Modern World, Part II.** (3 cr; II MTWThF; ForH 180) Deutsch
16. **Ancient Civilization, Part III.** (3 cr; III MTWThF; ForH 180) Jones
20. **American History, Part I.** (3 cr; I MTWThF; ForH 55) Chambers
21. **American History, Part II.** (3 cr; II MTWThF; ForH 120) Loehr
52. **Ancient Civilization, Part III.** (3 cr; III MTWThF; ForH 180) Jones
- 63a. **Cultural History of Japan.** (3 cr; IV MTWThF; ForH 170) Shea
80. **United States in the 20th Century.** (3 cr; II MTWThF; ForH 55) Chambers
88. **American Colonies.** (3 cr; II MTWThF; ForH 115) Tyler
99. **Minnesota and the Northwest.** (3 cr; I MTWThF; ForH 155) Jordan
111. **Europe in the 20th Century.** (3 cr; I MTWThF; ForH 120) Deutsch
126. **Russian History.** (3 cr; III MTWThF; ForH 120) McGrew
- 138a. **American History.** (3 cr; IV MTWThF; ForH 130) Loehr
151. **Social and Intellectual History of the United States.** (3 cr; III MTWThF; ForH 170) Tyler
- 187d. **Readings in 19th-Century United States History.** (3 cr; III MTWThF; ForH 256) Jordan
200. **Historical Bibliography and Criticism.** (3 cr; I MTWThF; ForH 175) Jones

Second Term

2. **Civilization of the Modern World, Part II.** (3 cr; I MTWThF; ForH 185) Bowditch
3. **Civilization of the Modern World, Part III.** (3 cr; II MTWThF; ForH 120) Waite
22. **American History, Part III.** (3 cr; I MTWThF; ForH 120) Noble
94. **American Diplomatic History.** (3 cr; II MTWThF; ForH 130) Beatty
106. **Continental Europe.** (3 cr; III MTWThF; ForH 115) Wolf
110. **Europe in the 20th Century.** (3 cr; IV MTWThF; ForH 115) Wolf
127. **History of Russia.** (3 cr; IV MTWThF; ForH 160) Waite
- 146a. **History of the South.** (3 cr; III MTWThF; ForH 170) Noble
157. **Latin-American History.** (3 cr; IV MTWThF; ForH 170) Beatty
- 176d. **Readings in 19th-Century European History.** (3 cr; II MTWThF; ForH 175) Bowditch

HOW TO STUDY

See Interdisciplinary Studies

HUMANITIES

See Interdisciplinary Studies

INTERDISCIPLINARY STUDIES

First Term

COMMUNICATION (Comm)

3. **Communication.** Continuation of 1-2. (3 cr; prereq 2; I MTWThF; TNM 107) O'Hara

FAMILY LIFE (FL)

1. **Preparation for Marriage.** 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 cr) Luckey

Sec 1, 'II MTWThF, JohH 306

Sec 2, III MTWThF, JohH 306

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 cr, but cr added to SLA grad requirement; II MTWThF; WeH 206) Ludwig

FOREIGN STUDY (FS)

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 will study the country carefully before embarking and write a comprehensive report of his findings upon returning. (6 cr; prereq approval before December by a faculty selection committee, grad students must also have approval of faculty adviser) Block, Colwell, Marburg, Ranta

HUMANITIES (Hum)

1. **Humanities in the Modern World I.** The old regime, the revolution, neoclassicism, 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 cr; II MTWThF; JohH 114) Amberg
2. **Humanities in the Modern World II.** Industrial revolution; liberalism and socialism; psychology of the individual. Period from about 1776 to 1890. Authors: Carlyle, Mill, Marx, Smith, Malthus, Ibsen, Zola, and Dostoyevsky. (3 cr; III MTWThF; JohH 113) Berryman
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 cr; II MTWThF; JohH 113) Berryman
22. **American Life II.** Place in American civilization of the land, the city, and the good life; their implications and interrelations. (See section on American Studies) (3 cr; I MTWThF; FolH 6) Sclarenco
52. **Humanities in the Modern World.** (See description of Hum 2) (3 cr, \$2; III MTWThF; JohH 115) Ross
63. **The Renaissance and Reformation.** Florentine Renaissance. 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 16-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 cr, \$13; III MTWThF; JohH 114) Ames

132. **Humanities Proseminar.** Topic for course: Religion, art, and society. (3 cr; prereq sr. grad; IV MTWThF; JohH 126) Ross

NATURAL SCIENCE (NSci)

165. **Science in World Affairs.** Social and intellectual problems raised by the advances of contemporary science with attention to proposed solutions. Discussions on subjects such as atomic energy, eugenics, nutrition, behaviorism, and treatment of science in totalitarian countries. (3 cr; prereq 1 yr of biological and of physical science in high school or college, or †; II MTWThF; Ph 236a) Graubard
175. **Survey of Science History.** 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. (3 cr, §171, 172, or 173; prereq 1 yr of biological and of physical science in high school or college, or †; III MTWThF; Ph 236a) Graubard

PERSONAL ORIENTATION (PO)

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. (Limited to 30) (2 cr, but cr added to SLA grad requirement; III MTWThF; JohH 307) Walz

SOCIAL SCIENCE (SSci)

1. **Introduction to Social Science.** Historical, political, economic, social, psychological, and cultural factors that influence man's behavior. 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 cr; II MTWThF; JohH 115) Cooperman
3. **Introduction to Social Science.** (Continuation of 1-2) The integrating theme is the quest for community in modern society. (3 cr; I MTWThF; JohH 115) Cooperman
13. **International Relations.** (Continuation of 11-12) The World's critical areas; international forces in war and peace. Offers a basis for informed evaluation of future as well as present international situations. (3 cr; II MTWThF; JohH 122) Holt

Second Term

FAMILY LIFE (FL)

- 1A. **Preparation for Marriage.** Designed for Senior College, older, or married students. (See FL 1, first term) (3 cr, §1; IV MTWThF; TNM 115) Dyer

FOREIGN STUDY (FS)

162. **Seminar for Foreign Study II.** (Continuation of 161, see first term) (6 cr) Block, Colwell, Marburg, Ranta

HUMANITIES (Hum)

3. **Humanities in the Modern World III.** From about 1840 to about 1914. Authors: Chekhov, Darwin (Evolution and Its Influence), Nietzsche, Kierkegaard, and Mann. (3 cr; II MTWThF; JohH 113) Bryan
4. **Humanities in the Modern World IV.** (See first term) (I MTWThF; JohH 113) Blum

pretative article, and commentary. (3 cr; prereq sr, grad, 51 and 15 cr 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 cr; prereq #; ar) Staff

Second Term

10. **Photography.** (Same as Art 10) Fundamental principles of photography. Use of cameras, developing, printing, and other elementary techniques. (3 cr; III-IV MTWThF; MurH 20) Downs
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 cr; prereq 15 or #; I MTWThF; MurH 308) Hage
- 103.* **Literary Aspects of Journalism.** The literary, creative aspects of journalism as exemplified in the works of English and American fiction writers, poets, critics, essayists, and humorists. Lectures, discussions, and weekly papers. (3 cr; prereq #; III MTWThF; MurH 302) Hage
- 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 cr; II MTWThF; MurH 302) Emery
- 111.* **International Communications and Foreign Affairs.** The channels of international communication and the news gathering agencies. Factors affecting flow of news throughout the world. Role of the foreign correspondent. Relation of communications to foreign affairs and international understanding. (3 cr; prereq 15 cr in the social sciences...inclusion of a Senior College history or political science course in international relations recommended; IV MTWThF; MurH 302) Price
- 290.* **Special Problems in Mass Communications.** Individual problems course for graduate students with major or minor programs in journalism. (3 cr; prereq #; ar) Staff

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 1957 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

50. **History of Libraries and Librarianship.** Social trends affecting libraries and their functions in society; librarianship as a profession. (3 cr; II MTWThF; Lib 4A) Shove
53. **School Library Management.** Primarily for students without previous experience in a school library. (3 cr; I MTWThF; Lib 4A) Callahan
83. **Cataloguing and Classification.** (3 cr; IV MTWThF; Lib 4A) Simonton

153. **History of Books and Printing.** (3 cr; IV MTWThF; Lib 4B) Shove
166. **Reference Work.** (3 cr; prereq 62; I MTWThF; Lib 4B) Wezeman
168. **Research Methods in Librarianship.** General research methods and library research techniques, analysis, and interpretation of data. (3 cr; II MTWThF; Lib 4B) Simonton
171. **Reading Guidance for Children.** (3 cr; III MTWThF; Lib 4B) Callahan
173. **Reading Guidance for Adults.** (3 cr; prereq 70; III MTWThF; Lib 4A) Wezeman

Second Term

62. **Reference I.** General reference tools and other sources of information; theory and practice of reference work. (3 cr; II MTWThF; Lib 4A) Simonton
70. **Selection of Library Materials.** (3 cr; I MTWThF; Lib 4B) Callahan
74. **Library Materials in the Classroom.** (2 cr; IV MTWTh; Lib 4B) Ar.
172. **Reading Guidance for Adolescents.** (3 cr; III MTWThF; Lib 4A) Callahan
184. **Cataloguing and Classification II.** (3 cr; IV MTWThF; Lib 4A) Simonton
258. **Problems in College and University Librarianship.** (3 cr; II MTWThF; Lib 4B) Berninghausen
259. **Problems in Public Librarianship.** (3 cr; II MTWThF; Lib 4B) Berninghausen
272. **Children's and Young People's Work.** (3 cr; II MTWThF; Lib 4B) Berninghausen

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 cr; prereq 1 yr elementary algebra in high school; I-II MTWThF; FolH 105 and FolH 109) Collins, Lindberg
6. **Trigonometry.** Plane trigonometry and logarithms. (5 cr; prereq plane geometry and either 1 or high school higher algebra; I-II MTWThF; FolH 104) 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 cr, \$7 or 8; prereq plane geometry and either 1 or high school higher algebra; III-IV MTWThF; FolH 105) Harper
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 cr; prereq 30; III-IV MTWThF; FolH 104) Lewis

¶¶ See statement concerning Institute for High School Teachers of Mathematics in section on Special Programs.

- 62. Introduction to the Theory of Equations.** Complex numbers, solution of algebraic equations, properties of polynomials; isolation of the real zeros of a real polynomial; determinants and linear equations. (3 cr; prereq 50 or 150 and 2; III MTWThF; FolH 102) Gibbens
- 136.* Solid Analytic Geometry.** Algebraic treatment of planes and lines; direction cosines; systems of planes. Cylinders; surfaces of revolution. Quadric surfaces; tangent planes; ruled surfaces. Co-ordinate transformations, invariants. General equation of the second degree. Reading course. (3 cr; prereq 50 or 150; ar) Gibbens
- 157b. Summer Institute for High School Teachers.** (See section on Special Programs) (June 17-August 9) Basic concepts of algebra, geometry, and calculus. Decimal systems and those with base other than ten; Euclid's fifth (or parallel) postulate, postulate systems in general; the trisection problem, applications of mathematics to music and to computing machines, and mathematical reasoning in general. (4 cr [8-wk term], grad cr toward M.A. in education; prereq admission to Summer Institute or 2, 2 yrs college mathematics: IV MTWThF, VII TTh; Chem 100) Hatfield
- 178.* Probability.** Elementary principles of probability, total and compound probability, expectation, repeated trials, Stirling's formula, the probability integral, probability of causes, Bayes' theorem. (3 cr; prereq 51; II MTWThF; FolH 102) Shapiro
- 188.* Topics in Topology.** Elementary and intuitive concepts associated with typical curves and surfaces. Construction of models. Some aspects of four-dimensional space and its relation to "everyday" space. (3 cr; prereq 51; IV MTWThF; FolH 102) Shapiro

Second Term

- 6. Trigonometry.** (See first term) (I-II MTWThF; Ph 143) Collins
- 7. College Algebra.** Selected topics in algebra commencing with quadratic equations and extending through the theory of equations, probability, and determinants, omitting logarithms. (5 cr; prereq 1 or high school higher algebra: III-IV MTWThF; Ph 143) Varberg
- 16. Elementary Mathematical Analysis II.** (See 15, first term) (5 cr; prereq 15; III-IV MTWThF; Ph 236a) Harper
- 109.* Theory of Numbers.** Elementary properties of integers; prime and composite numbers; Euclid's algorithm; congruences; the theorems of Fermat and Wilson; primitive roots; indices; Galois imaginaries; finite algebras; Pythagorean and Heronian triangles; Diophantine equations. (3 cr; prereq 51; II MTWThF; Ph 145) Munro
- 125A.* Introduction to Theory of Functions.** A careful examination of the notions of limit, sequence, series, function, derivative and integral, designed to give the students a more mature understanding of these concepts. Technique of developing accurate proofs, and the roles of both intuition and logic in connection with these techniques. (3 cr; prereq 51; III MTWThF; Ph 145) Olmsted
- 126.* Calculus of Finite Differences.** Basic definitions and formulas with applications to the summation of series; interpolation; numerical integration; solution of simple difference equations; analogy between the calculus of finite differences and infinitesimal calculus; introduction to the Euler-Maclaurin summation formula. (3 cr; prereq 51; IV MTWThF; Ph 145) Munro
- 131.* Advanced Algebraic Theory.** Linear dependence and independence of vectors of n -tuples with real or complex entries; dimension; matrices; systems of linear equations; special (orthogonal, symmetric, unitary, hermitian, normal) matrices; bilinear, quadratic, hermitian forms; characteristic values and vectors; diagonalization of symmetric, hermitian, normal matrices and quadratic and hermitian forms. Reading course. (3 cr; prereq 51; ar) Olmsted

MUSIC (Mus)

See also Music Education

First Term

- A.** **Piano.** (No cr; for students without entrance requirements in piano; hrs ar; ScH 107) Rymer, Duckworth, Weiser
- D.** **Voice.** (No cr; for students without entrance requirements in voice; hrs ar; ScH 107) Schuessler, Paige
1. **Fundamentals of Music.** (2 cr; nonmusic majors—primarily child welfare students and elementary teachers; III MTWThF; MusEd 103) Duckworth
- 7B. **Ear Training.** Résumé of aural work included in Mus 4T-6T, with concentration on its application. (3 cr [no cr allowed if comparable course taken in regular academic yr]; 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 cr [no cr allowed if comparable course taken in regular academic yr]; prereq #; II, VI MTWThF; ScH 103) Fetler
- 11.** **Piano.** Individual lessons. (2 or 4 cr; prereq entr exam; hrs ar; ScH 107) Rymer, Duckworth, 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. (Limited to 10) (2 cr; prereq #) Duckworth
 Sec 1, II MTWThF, MusEd 103 Sec 2, IV MTWThF, MusEd 103
- 12.** **Voice.** Individual lessons. (2 or 4 cr; prereq entr exam; hrs ar; ScH 107) Schuessler, Paige
- 12C.** **Class Voice.** Group approach to vocal literature; fundamentals of breath control, voice production. (Limited to 14) (2 cr) Paige
 Sec 1, I MTWThF, MusEd 4 Sec 3, III MTWThF, MusEd 4
 2, II MTWThF, MusEd 4
- 13.** **Violin.** Individual lessons. (2 or 4 cr; prereq entr exam; hrs ar; ScH 107) Ar.
- 13B.** **Violin.** Individual lessons. (2 or 4 cr; prereq entr exam; hrs ar; ScH 107) Draian
- 14.** **Viola.** Individual lessons. (2 or 4 cr; prereq entr exam; hrs ar; ScH 107) Ar.
- 15.** **Violoncello.** Individual lessons. (2 or 4 cr; prereq entr exam; hrs ar; ScH 107) Jamieson
- 16.** **Double Bass.** Individual lessons. (2 or 4 cr; prereq entr exam; hrs ar; ScH 107) Fitch
- 17.** **Flute.** Individual lessons. (2 or 4 cr; prereq entr exam; hrs ar; ScH 107) Arnegard
- 18.** **Oboe.** Individual lessons. (2 or 4 cr; prereq entr exam; hrs ar; ScH 107) Angelucci
- 19.** **Clarinet, Saxophone.** Individual lessons. (2 or 4 cr; prereq entr exam; hrs ar; ScH 107) Fitch, Handlon, Williams
- 20.** **Bassoon.** Individual lessons. (2 or 4 cr; prereq entr exam; hrs ar; ScH 107) Santucci
- 21.** **Trumpet.** Individual lessons. (2 or 4 cr; prereq entr exam; hrs ar; ScH 107) Adelstein

- 22.** **French Horn.** Individual lessons. (2 or 4 cr; prereq entr exam; hrs ar; ScH 107) Speyer
- 23.** **Trombone.** Individual lessons. (2 or 4 cr; prereq entr exam; hrs ar; ScH 107) Stamm
- 24.** **Tuba.** Individual lessons. (2 or 4 cr; prereq entr exam; hrs ar; ScH 107) Walton
- 25.** **Percussion.** Individual lessons. (2 or 4 cr; prereq entr exam; hrs ar; ScH 107) Dahlgren
- 26.** **Harp.** Individual lessons. (2 or 4 cr; prereq entr exam; hrs ar; ScH 107) Miller
- 27.** **Organ.** Individual lessons. (2 or 4 cr; prereq entr exam; hrs ar; ScH 107) Berryman
- 60B-61B-62B.** **Instrumental Ensemble.** (2 cr each; prereq †; hrs ar; ScH 107) Druian
- 106A. **American Music.** From colonial times to the present through reading and record listening. American Indian music, European folk music on this continent, the origin and development of jazz and contemporary American music. (3 cr; prereq 36, or 9 cr in American history or American studies; I MTWThF; ScH 4) Riedel
109. **Lasso and Palestrina.** The Council of Trent and its influence on the writing and performance of sacred music in the 16th century. Madrigal, mass, and motet writing as exemplified in works of Lasso and Palestrina; Lasso's cosmopolitan and Palestrina's "a cappella" styles of writing; "Palestrina style" of the 17th-18th centuries; "Caecilianism" of the 19th-20th centuries. (3 cr; for majors in music, arts, history; prereq 6 cr in History of Music or Renaissance and Baroque Art, or Political History to 1700, or General History of Western Philosophy, or †; II MTWThF; ScH 4) Riedel
- 127-128-129. **Composition.** (2 cr each; prereq 99 and 123; VII MTWThF; ScH 103) Fetler
132. **Symphonies of the Romantic Era.** Schubert, Schumann, Mendelssohn, Berlioz, Liszt, Brahms, Franck, Dvorak, Tchaikowsky, Bruckner, Richard Strauss; their relation to the dominant romantic trends of the 19th century. (3 cr; prereq 6 cr in music history or art history or political history since 1750 or English or German literature since 1750, or †; IV MTWThF; ScH 104) Oberg
- 147.†† **Opera Production (Music).** (See section on Special Programs) History of opera, analysis of different types of opera, appraisal of the cultural—esthetic and experimental values of opera participation at high school and college levels. Exercise and practice in problems of opera production including assigning singers to operatic roles, training and coaching singers and conducting opera. Requirements: (a) to take 148, Opera Production (Theater); (b) to participate in the Summer Session opera production either as soloist, member of the ensemble, or as part of the stage crew; and for graduate students (c) to stage and direct an excerpt as a term paper. All students must plan to be free evenings in order to participate in the Summer Session opera production. (3 cr; prereq 9 cr in music, music education, or speech, or †; VIII MTWThF; ScH 4) Aliferis, Schuessler, and staff
- 148.†† **Opera Production (Theater).** (See section on Special Programs) Same requirements as 147. (a) Acting theory and practice as it applies to opera; (b) visual elements: costumes, scenery, and lighting; (c) art of stage direction: planning the action, conducting rehearsals, integrating the parts into an organic whole. (3 cr; prereq 9 cr in speech, music, or music education, or †; IX MTWThF; ScH 19) Whiting and staff

†† Credit will be granted in either speech or music.

175. **Training in Advanced Musicianship.** Sight singing and dictation of melodic, harmonic, rhythmic, two- and three-part contrapuntal materials; score reading, both vocal and instrumental; training in tonal memory; aspects of conducting. (3 cr; prereq 6T; III MTWThF; ScH 103) Fetler
- 204.** **Graduate Applied Music.** Individual lessons. (9 cr, †3 qtrs; prereq entr exam; hrs ar; ScH 107) Ar.
- 212.* **Special Problems.** (3-9 cr; prereq 202 or 211; VII W; ScH 104) Riedel
- 227-228-229. **Seminar in Composition and Orchestration.** (3 cr 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) Paige
- 11.** **Piano.** (See first term) Rymer, Weiser
- 12.** **Voice.** (See first term) Schuessler, Paige
- 12C.** **Class Voice.** (See first term) Paige
 Sec 1, II MTWThF, MusEd 4 Sec 2, III MTWThF, MusEd 4
- 13 through 26.** (See first term)
- 27.** **Organ.** (See first term) Westenburg
- 31A. **Music Literature.** Various styles, forms, and types of music. (3 cr; primarily for students not majoring in music; IV MTWThF; ScH 104) Oberg
- 60B-61B-62B.** **Instrumental Ensemble.** (See first term) Druian
- 63A. **Vocal Literature.** Preparation and performance of representative solo vocal works from the major and minor composers. (3 cr; prereq 6 cr in 12 or 12C; IV MTWThF; ScH 4) Schuessler
- 104A. **American Music.** (See 106A, first term) (III MTWThF; ScH 4) Riedel
110. **Music Bibliography.** General reference sources. Music bibliographical materials in English, other languages; bibliographical drills in music history, theory and composition, music education, applied music. (3 cr; prereq one of the following: 36, 62, 65, 72, 79, 99, or #; VI MTWThF; ScH 4) Riedel
130. **Symphonies of the Classical Era.** Through Mozart and Haydn: evolution of form and style in relation to contemporary thought and art through the French revolution. (3 cr; prereq 6 cr in music history or art history or political history since 1750 or English or German literature since 1750, or #; II MTWThF; ScH 104) Oberg
- 204.** **Graduate Applied Music.** Individual lessons. (9 cr, †3 qtrs; prereq entr exam; hrs ar; ScH 107) Ar.
- 212.* **Special Problems.** (3-9 cr; prereq 202 or 211; VII W; ScH 104) Oberg

NATURAL SCIENCE

See Interdisciplinary Studies

PERSONAL ORIENTATION

See Interdisciplinary Studies

PHILOSOPHY (Phil)

First Term

1. **Problems of Philosophy.** Introduction; main fields of investigation; permanent problems; principal methods and schools of philosophy: historical and contemporary views. (3 cr; prereq soph, jr, sr; II MTWThF; WeH 202) Donagan
2. **Logic.** Difference between logical and fallacious reasoning; functions and uses of language; rules of good definition and sound argument. (3 cr; prereq soph, jr, sr; I MTWThF; WeH 202) Dykstra
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 cr; prereq soph, jr, sr; III MTWThF; WeH 202) Raab
50. **History of Philosophy** (Ancient and Medieval). Greek philosophy from Thales to (and including) Aristotle. (3 cr; prereq soph, jr, sr; II MTWThF; JohH 106) Dykstra
106. **American Philosophy from William James to the Present.** Major trends in American philosophy since the close of the 19th century. (3 cr; IV MTWThF; WeH 202) Raab
182. **Philosophy of Religion.** Discussion of the ground and sanctions of religion, according to various philosophies. (3 cr; prereq 6 cr; III MTWThF; JohH 309) Donagan
190. **Seminar in Philosophy.** Topics to be arranged according to students' interests. (3 cr; prereq sr, grad, 9 cr or #; ar) Staff

Second Term

1. **Problems of Philosophy.** (See first term) (I MTWThF; WeH 202) Sellars
2. **Logic.** (See first term) (III MTWThF; WeH 202) Potter
3. **Ethics.** (See first term) (II MTWThF; WeH 202) Terrell
52. **History of Philosophy (Modern).** (3 cr; II MTWThF; JohH 313) Sellars
107. **Philosophy in Modern Literature.** Basic philosophical ideas in modern civilization as they are expressed in major works of literature. (3 cr; III MTWThF; JohH 309) Terrell
160. **Philosophy of Science.** 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 cr; prereq 2 or #; I MTWThF; JohH 115) Feigl
170. **Philosophies of India.** Problems of systematic philosophy in India, with special attention to Buddhist logic and epistemology, Vaisesika metaphysics, the ethics of the Bhagavadgita, and Advaita Vedanta monism. (3 cr; prereq 5 cr or #; IV MTWThF; WeH 202) Potter
191. **Seminar in Philosophy.** Topics to be arranged according to students' interest. (3 cr; prereq sr., grad, 9 cr or #; ar) Staff

PHYSICAL EDUCATION FOR WOMEN (PE W)

The following courses may be taken for elective credit in the College of Science, Literature, and the Arts:

First term: PE W 7, 8, 12, 32

Second term: PE W 7

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 cr; IV MTWThF; ForH 180) Holt
- 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 cr; I MTWThF; ForH 185) Christensen
- 25. World Politics.** Contemporary international relations, the policies of the great powers today, nationalism, internationalism, Europe, and the postwar settlement. (3 cr; III MTWThF; ForH 155) Mills
- 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 cr; prereq 6 cr, or #; III MTWThF; ForH 115) Christensen
- 163. The Political Theory of Utopia.** Selected great utopias from the viewpoint of the political theorist; the idea of planning in ideal states; the achievement of utopia; stability and change in the great utopias; the problem of authority and law; anarchist, socialist, and conservative utopias; utopia and totalitarian ideology; utopia and democratic ideology. (3 cr; prereq 6 cr or #; II MTWThF; ForH 170) Sibley
- 184. International Organization I.** Development and conditions of success. United Nations and regional organizations. (3 cr; prereq 6 cr or #; I MTWThF; ForH 150) Levi
- 187. Problems of European Politics.** Contemporary development of intra-European relations and organization; changing role of key-European States; Europe's position in world politics. (3 cr; prereq 6 or #; III MTWThF; ForH 150) Levi
- 197. The Mediterranean Area in World Affairs.** Economic, political, and strategic conditions; policies of the European and Asiatic states; postwar conflict of interests between the Western powers and Russia. (3 cr; prereq 25 or #; II MTWThF; ForH 150) Mills

Second Term

- B. The State in the Modern World.** (Part B of A-B-C) (See A, first term) (3 cr; IV MTWThF; ForH 185) McEnroe
- 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 cr; I MTWThF; ForH 180) McLaughlin
- 114. Institute on Minnesota Government and Politics.** Local Government in Minnesota will be the theme of this year's Institute, which will be held the first 2 weeks of the second term. Designed for the civic minded citizen as well as the student, teacher, and practitioner of government, the Institute will bring together as panel members faculty, research workers, officeholders, and administrators to discuss local government under Minnesota's Constitution, county organization, home rule charters and optional forms of government, the role of the township in rural government, the school district in relation to other local governments, annexation and incorporation of urban areas, the courts and local law enforcement, local government finance, community planning; and the citizen and local government. In addition, the Institute will feature group discussions on the various topics and a dinner meeting. (3 cr; III-IV, VI MTWThF, July 22-August 2 only; MMA 200) Ludwig, Flom, and others

Note—A related course on Local Government (Pol 117) may be taken during the last 3 weeks of the second term for 3 additional credits.

117. **Local Government.** Organization and politics of urban and rural units of local government. (3 cr; prereq 6 cr or #; III-IV MTWThF, August 5-23 only; ForH 180) Warp
142. **Comparative European Government.** Government and politics of France and Germany. Emphasis is on political customs, party system, elections, problems of administration, and crisis government. (3 cr; prereq 6 cr; IV MTWThF; ForH 120) Turner
153. **Japanese Government and Politics.** Constitutional and political development in Japan; political ideas, government, political parties, and problems. (3 cr; prereq 6 cr or #; II MTWThF; ForH 185) Turner
167. **Political Behavior.** Analysis of the various aspects of political behavior, with attention to such topics as: the role of personality and leadership; the functions of myth, ideology, and interests; group behavior and public opinion; factors in voting and elections; the consequences of organization; attitudes and the psychology of political preference; quantitative techniques and the measurement of political behavior. (3 cr; prereq 6 cr or #; II MTWThF; ForH 345) Kubanis
178. **Conduct of American Foreign Relations.** The Department of State and the Foreign Service; diplomatic and consular functions and problems; agencies for economic and military assistance; relations with international organizations; treaties and executive agreements; formulation of policy. (3 cr; prereq 9 cr or #; III 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 cr; prereq soph, jr. sr; I-II MTWThF; FraH 102) Mecherikoff
- 4-5.† **Introductory Laboratory Psychology.** Simple experiments illustrating subject matter of contemporary psychology. Included are human and 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 cr; prereq soph, jr, sr; II-IV MTWThF; Psy 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 cr; prereq sr, grad, 1-2, 4-5, or 5 cr in statistics; II-III MTWThF; WuH 201) Vernon
- 144-145.† **Abnormal Psychology.** Normal and abnormal behavior contrasted. Emphasis on the dynamics, and particularly the social determinants, of personality maladjustments. (6 cr; prereq 9 cr in psychology, or 6 cr in psychology and either Zool 1-2-3 or 12 cr in social science; II-III MTWThF; WuH 202) Schofield

Second Term

- 1-2.† **General Psychology.** (See first term) (I-II MTWThF; WuH 202) Rosenberg
- 4-5.† **Introductory Laboratory Psychology.** (See first term) (II-IV MTWThF; Psy 211) Wrightsman

¶¶ 126 may not be taken until after completion of 125.

111. **Frontiers of Psychology.** Topics which are not often discussed in academic psychology because they are on the borderline between science and superstition but which are of great interest especially in times of severe emotional stress. They will include: spiritualism and mediumship, telepathy, clairvoyance, suggestion, and hypnosis. (3 cr; prereq 1-2; I MTWThF; WuH 201) Heron
128. **Psychology of Learning.** Review and comparison of the modern theories of learning; connectionism, associationism, conditioning, and field theories. Application of the theories to practical situations will be indicated as the occasion demands. (3 cr; prereq 1-2; IV MTWThF; Psy 115) Heron
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 cr; 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 cr; prereq 1-2, 4-5, or 3 cr in statistics, and principles of economics or ‡; III MTWThF; Psy 115) Longstaff

ROMANCE LANGUAGES

First Term

FRENCH (Fren)

1. **Beginning French.** (5 cr; I-II MTWThF; FolH 201) Ar.
3. **Beginning French.** (5 cr; prereq 2, or 2 yrs of high school French; I-II MTWThF; FolH 202) Ar.
4. **Intermediate French.** (5 cr; prereq 3, or 3 yrs of high school French; I-II MTWThF; FolH 202) Ar.
- 125.* **The Classical Drama: Corneille and the Origins of the Classical Drama.** (2 cr; prereq Survey of French Literature or equiv; III TWThF; FolH 203) Creore
- 165.* **Poetry in the 20th Century: Apollinaire, Valéry, Eluard.** (2 cr; prereq Survey of French Literature or equiv; II TWThF; FolH 208) Blinoff
- 259.* **Directed Readings in French.** (Cr ar; prereq ‡; ar) Staff

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 small drill sections under the guidance of native instructors. (5 cr; prereq 1-2 or equiv) Staff
58. **Advanced Practical French Conversation.** Fluency acquired by presenting short oral reports and participating in debates. Class will be divided into small groups under the guidance of native instructors. (5 cr; prereq 3-4 or equiv) Staff
- 109a. **Oral Diction.** Enables 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 cr; prereq ‡) Staff

†† See Modern Language Institute in section on Special Programs.

SPANISH (Span)

1. **Beginning Spanish.** (5 cr; III-IV MTWThF; FolH 201) Pattison
3. **Beginning Spanish.** (5 cr; prereq 2, or 2 yrs of high school Spanish; III-IV MTWThF; FolH 202) Grismer
20. **Intermediate Spanish.** (5 cr; prereq 3, or 3 yrs of high school Spanish; III-IV MTWThF; FolH 202) Grismer
21. **Introduction to Spanish and Spanish-American Literature and Culture.** (5 cr; prereq 3, 3A, 3B, or 3 yrs high school Spanish; I-II MTWThF; FolH 101) Rundorff
84. **La Novela Hispano-Americana y los Problemas Sociales.** (2 cr; prereq 20 or 53 or #; IV TWThF; FolH 203) Cúneo
- 130.* **Cervantes: Don Quijote.** (2 cr; prereq 65-66-67 or 68-69; II TWThF; FolH 203) Pattison
- 133.* **History of Spanish Drama.** (2 cr; prereq Survey of the Literature of Spain; I TWThF; FolH 203) Grismer
- 184.* **La Novela Hispano-Americana y los Problemas Sociales.** (2 cr; prereq grad; IV TWThF; FolH 203) Cúneo
- 259.* **Directed Readings in Spanish.** (Cr 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 cr; prereq 1-2 or equiv) Cúneo and staff
58. **Advanced Practical Spanish Conversation.** Develops self-confidence in expressing ideas in Spanish. 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 cr; prereq 3-4 or equiv) Cúneo 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 cr; prereq #) Cúneo and staff

Second Term

FRENCH (Fren)

2. **Beginning French.** (5 cr; prereq 1, or 1 yr of high school French; I-II MTWThF; TSF 109) Pallister

SPANISH (Span)

2. **Beginning Spanish.** (5 cr; prereq 1, or 1 yr of high school Spanish; III-IV MTWThF; P 218) Ar.

SCANDINAVIAN AREA STUDIES

See Index

¶¶ See Modern Language Institute in section on Special Programs.

SLAVIC AND ORIENTAL LANGUAGES

First Term

RUSSIAN (Russ)

- 1A-2A.** **Intensive Beginning Russian.** (See section on Special Programs) Concentrated language-learning with small sections and native speakers. (10 cr; I-V MTWThF; ForH 301, 302, 304) Magner and assistants

SCHOOL OF SOCIAL WORK (SW)

First Term

- Soc 50. **Introduction to the Theory and Practice of Social Work.** (See Sociology) Compton
- Soc 91. **Case Method Applied to the Study of Human Problems.** (See Sociology) Compton
- CW 140. **Behavior Problems.** (See Institute of Child Welfare) Bassham
201. **Use of Group Method in Social Casework Practice.** Application of generic social work principles to the process of working with clients and concomitantly with such groups as family units, groups of relatives, clients or patients, as well as mental hygiene or family life education groups. Emphasis upon certain social group work principles appropriate to the helping process. (3 cr; prereq caseworkers currently employed in a social agency, preferably with professional social work training, or †; I MTWThFS; ForH 345) Saloshin
- 285.* **Special Studies in Social Work.** Supervised experience in research on an independent project to be offered for fulfillment of degree project requirements for the MSW degree. (1-9 cr; prereq 45 grad cr in social work) Saloshin

Second Term

- CW 140. **Behavior Problems.** (See Institute of Child Welfare) Cummings
271. **Community Organization.** Process by which groups and individuals within a community work together to equate social services to community need and establish social policy for the planning and co-ordination of social services. (3 cr; I MTWThFS; ForH 345) Kidneigh
- 285.* **Special Studies in Social Work.** (See first term) Kidneigh

SOCIAL SCIENCE

See Interdisciplinary Studies

SOCIOLOGY (Soc)

First Term

1. **Introduction to Sociology: Man in Modern Society.** Characteristics of human group life. Factors associated with development of human group life and man's social environment; structure of the social environment and its influence upon the individual's behavior. (3 cr; II MTWThF; ForH 155) Donohue
50. **Introduction to the Theory and Practice of Social Work.** 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 cr; prereq 3; III MTWThF; ForH 185) Compton

- 53. Elements of Criminology.** A general survey of the field of criminology. (3 cr; prereq 1 or 1A or #; IV MTWThF; ForH 120) Vold
- 91. Case Method Applied to the Study of Human Problems.** Interviewing method for students who plan to work in fields involving interpersonal relationships. (3 cr; prereq 3 or #; VI MTWThF; ForH 175) Compton
- 101. Criminological Theories: Historical and Contemporary.** Consideration and evaluation of the major historical and contemporary theories of criminal behavior. (3 cr; prereq 1, 53 or #; II MTWThF; ForH 130) Vold
- 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 cr; prereq 1 or #; I MTWThF; ForH 180) Stone
- 145. Urban Sociology.** Introduction to the study of cities; urban ecology; urban institutions and the urban way of life. (3 cr; prereq 1 or #; III MTWThF; ForH 130) Stone
- 160. Rural Community Organization.** Historical evolution, ecological characteristics, and demography of the rural community; the social processes, stratification, assimilation, conflict and co-operation as manifested in rural society. (3 cr; prereq 1 or #; IV MTWThF; ForH 185) Donohue

Second Term

- 1. Introduction to Sociology: Man in Modern Society.** (See first term) (I MTWThF; ForH 155) Johnson
- 3. Social Problems.** Contemporary social problems with especial emphasis on personal demoralization and social disorganization. (3 cr; III MTWThF; ForH 155) Johnson
- 14. Rural Sociology.** Factual data necessary to an understanding of the problems of rural social life. (3 cr; II MTWThF; ForH 155) Nelson
- 111. Population Trends.** Emphasizes cultural and social phases of population change, with particular reference to birth rates, death rates, and migration. Implications of population change are also discussed. (3 cr; prereq 1 or #; IV MTWThF; ForH 130) Nelson
- 118. Delinquent Behavior.** 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 cr; prereq 53, or teaching experience, or #; III MTWThF; ForH 185) Monachesi
- 172. Backgrounds of Modern Social Thought.** Major trends of social thought from the Renaissance to the 19th century, with special attention to those factors contributing to the origin of sociology. (3 cr; prereq 1 or #; II MTWThF; ForH 150) Francis

SPEECH AND THEATER ARTS (Spch)

See Opera Production Workshop, Program in Pathology and Audiology, and Radio and Television 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 cr) Gilkinson, Smith, and staff
- Sec 1, I MTWThF, FolH 204
2, II MTWThF, FolH 11
- Sec 3, IV MTWThF, FolH 305
2. **Fundamentals of Speech.** Second quarter of 1-2. (3 cr; prereq 1; III MTWThF; FolH 306) Gilkinson, Smith, and staff
3. **Fundamentals of Speech.** Continuation of 1-2. (3 cr; prereq 1-2 or 5; III MTWThF; FolH 306) Gilkinson, Smith, and staff
31. **Introduction to the Theater.** History and theory of plays and playwrights as well as the various arts and crafts of the theater. Special projects in theater crafts. (3 cr; III MTWThF; ShH 115) Ballet
33. **Beginning Acting: Stage Technique.** Fundamentals of body movement, rhythm, and stage technique. Individual and group performances. (3 cr; prereq 32; II MTWThF; ShH 19) Moulton
51. **Advanced Public Speaking.** Preparation and delivery of speeches on current public issues. (3 cr; 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 cr; 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 cr; prereq 1-2 or 5; IV MTWThF; MurH 302) Schinske
- 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 cr; prereq 1-2 or 5; I MTWThF; FolH 306) Smith
- 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 cr; 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 cr; prereq sr, grad, 1-2 or 5, Psy 1-2; II MTWThF; FolH 306) Gilkinson
- 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 cr; prereq 1-2 or 5, 31 or elementary education major, or ‡...EdCI 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 cr; prereq 1-2 or 5; 31 or ‡; II MTWThF; NH 209) Graham
- 141.* **Anatomy and Physiology of the Voice Mechanism.** Respiration, articulation, and phonation; practical applications to speech improvement. (3 cr; prereq 1-2 or 5, 67, 140, or ‡, Psy 4-5) Fletcher
- 147.†† **Opera Production. Music.** (See section on Special Programs) Survey of the history of opera, analysis of different types of opera, appraisal of the cultural-

‡‡ Credit will be granted in either speech or music.

‡‡ Credit for Spch 1 without Spch 2 by petition only.

aesthetic and experiential values of opera participation at high school and college levels. Exercise and practice in the problems of opera production including assigning singers to operatic roles, training and coaching singers and conducting opera. Requirements: (a) to take 148 Opera Production, Theater; (b) to participate in the Summer Session opera production either as soloist, member of the ensemble, or as part of the stage crew; and for graduate students (c) to stage and direct an excerpt as a term paper. All students must plan to be free evenings in order to participate in the Summer Session opera production. (3 cr; prereq 9 cr in music, music education, or speech, or #; VIII MTWThF; ScH 2, 3, 4) Aliferis, Schuessler, and staff

- 148.†† Opera Production, Theater.** (See section on Special Programs) Same requirements as 147. (a) acting theory and practice as it applies to opera; (b) the visual elements: costumes, scenery, and lighting; (c) the art of stage direction: planning the action, conducting rehearsals, integrating the parts into an organic whole. (3 cr; prereq 9 cr in speech, music education, or music, or #; IX MTWThF; ScH 19) Whiting and staff
- 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 cr; prereq 1-2 or 5, 61, 67, Psy 1-2, or #; IV MTWThF; Mayo A-675) Lassman
- 153.* Audiometry and Hearing Aids.** Theory and practice of clinical and group audiometry; screening and diagnostic techniques, pure tone and speech audiometry; hearing conservation programs. Characteristics of modern hearing aids; selection and usage problems. (3 cr; prereq 1-2 or 5, 61, 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 cr; prereq 152, 153, 155, or #; ar; Hosp D-311) Lassman
- 162.* Speech Pathology.** Pathologies of speech: causes, characteristics, and therapy. (3 cr; prereq 1-2 or 5, 61, 67, 119; III MTWThF; FoIH 307) Bryngelson
- 164-165-166.* Clinical Methods and Practice in Speech Pathology.** (9 cr; prereq sr, grad, 1-2 or 5, 61, 67, 119, 162, 163; ar) Bryngelson, Henrikson, Ptacek
- 181.* Readings in Speech.** Directed reading and preparation of reports on selected subjects. (Cr ar; prereq 1-2 or 5 and 6 addtl cr and #; ar) Staff
- 261.* Seminar in Speech Pathology.** (3 cr; prereq 122, 163, or #; ar) Bryngelson, Henrikson
- 281.* Seminar in Organic Disorders of Speech.** Anatomical, physiological, and neurological abnormalities that are characterized by disorders of speech or voice. Pertinent literature; medical sources. (2 cr; may be repeated with #; prereq 161, 162, 163, #; ar) Henrikson
- 291-292-293.* Research in Special Problems.** (9 cr; prereq 1-2 or 5 and #; ar) Staff

First term speech courses listed under the College of Education:

EdCI 123. Speech in the Elementary School. Henrikson

EdCI 140. Teaching of Speech. Smith

EdCI 174-175-176. Clinical Methods and Practice in Speech Pathology. Bryngelson

†† Credit will be granted in either speech or music.

Second Term

1. **Fundamentals of Speech.** (See first term) (I MTWThF; AH 108) Howell and staff
2. **Fundamentals of Speech.** (See first term) (II MTWThF; ME 110) Howell and staff
3. **Fundamentals of Speech.** (See first term) (II MTWThF; ME 110) Howell and staff
32. **Beginning Acting: Creative Approach.** Creation and presentation of original scenes and skits. Ability to respond to the imaginative situation with individuality and effectiveness is stressed. (3 cr; prereq soph, 31; II MTWThF; SCH 115) Moulton
66. **Radio and Television Drama.** Historical development of radio and television drama, with an analysis of the various types of drama including production, direction, and acting techniques. (3 cr; 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 (fiction). (3 cr; prereq 1-2 or 5; III MTWThF; WeH 302) Thompson
- 101.* **Argumentation and Persuasion.** Theories of modern motivational rhetoric. Analysis of persuasive speaking; practice in preparation and delivery of oral argument. (3 cr; prereq 1-2 or 5, Psy 1-2, 10 cr in social science; IV MTWThF; JohH 307) 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 cr; prereq 81, 82, 83 with a grade of B in 83; II MTWThF; WeH 302) Thompson
- 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 cr; prereq 152 or #; IV MTWThF; WeH 302) Simmons
149. **Speech Habilitation for Persons with Neuromuscular Disorders.** Physiological, neurological, and psychological characteristics of persons with cerebral palsy and other types of neuromuscular disorders and a study of methods used in their speech habilitation. (2 cr; prereq 119, 162, 163, or #; VI MTWTh; ShH 125) Starr
- 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 cr; prereq 152 or #; I 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 cr; prereq #; II MTWThF; ME 106) Ptacek
- 182.* **Readings in Speech.** Directed reading and preparation of reports on selected subject. (Cr ar; prereq 1-2 or 5 and 6 addtl cr and #; ar) Staff
- 207.* **Seminar in Persuasion.** Contemporary public address. Literature of persuasion, methods in study of persuasion. (3 cr; prereq 1-2 or 5, 101, 102, 103, Psy 1-2, 140, 10 cr in social science; ar) Howell
- 291-292-293.* **Research in Special Problems.** (See first term) (Ar) Staff

ZOOLOGY (Zool)

First Term ††

- 1.† **General Zoology.** Structure, physiology, embryology, classification, and evolution of animals. (5 cr; lect V MTWTh, V-VI F; Bo B6; lab VI-VIII MTWTh, Z 101 ABCD) Olson
- 197.* **Problems.** Advanced work in some special line. (3 cr or more; prereq 1-2-3 or NSci 7-8-9 and ‡; ar) Ar.

Second Term

- 2.† **General Zoology.** (Continuation of 1) (See first term) (5 cr; prereq 1 or equiv; lect V MTWTh, V-VI F, Bo B6; lab VI-VIII MTWTh, Z 101 ABCD) Anderson
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 cr; prereq 1-2-3 or NSci 7-8-9 or equiv or 10 cr in botany; II MTWThF; Bo B6) Anderson
101. **Zoological Techniques.** (Grad students only) (Cr and hrs ar) Staff
- 198.* **Problems.** Advanced work in some special line. (3 cr or more; prereq 1-2-3 or NSci 7-8-9 and ‡; ar) Ar.

†† For additional courses in the first term see index, Lake Itasca Forestry and Biological Station.

INSTITUTE OF TECHNOLOGY

College of Engineering††

CIVIL ENGINEERING (CE)

First Term

- 23.** **Surveying Camp.** (Page 80) (9 cr; prereq 20; ar) Kersten, Fant, Johnson, Pederson

DRAWING AND DESCRIPTIVE GEOMETRY (Draw)

First Term

4. **Engineering Drawing.** (Page 84) (3 cr; prereq 10; VI-VIII MWThF, VI-IX T; E 18) Bullen
6. **Engineering Drawing.** (Page 85) (3 cr; prereq 5; VI-VIII MWThF, VI-IX T; E 201) Clausen

Second Term

5. **Descriptive Geometry.** (Page 85) (3 cr; prereq 4; VI-VIII MWThF, VI-IX T; E 18) Quaid
6. **Engineering Drawing.** (Page 85) (3 cr; prereq 5; VI-VIII MWThF, VI-IX T; E 201) Kleinhenz

ELECTRICAL ENGINEERING (EE)

First Term

36. **Electrical Engineering Survey.** (Page 87) (3 cr; for Aero, ChEn, CE, ME, MinE; prereq MM 26 or 84; lect IV MTWThF; EE 237) Caverley

Second Term

37. **Electrical Engineering Survey.** (Page 87) (3 cr; for ChEn, CE, ME, MinE; prereq 36) Cartwright

Lect IV MTWTh, EE 237

Lab 1, VI-IX M, EE 118
2, VI-IX T, EE 118

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 cr; prereq 6) Haga

Sec 1, I MTWThF, E 215

Sec 2, II MTWThF, E 215

†† 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.

*Second Term***86. Advanced Technical Communication.** (3 cr; prereq 85) Guthrie

Sec 1, I MTWThF, E 215

Sec 2, II MTWThF, E 215

GENERAL ENGINEERING (GE)*First Term***70. The Slide Rule.** (Page 92) (1 cr; prereq ITM 11 or 111; V TTh; E 106) Bullen*Second Term***70. The Slide Rule.** (See first term) (V TTh; E 215) Kleinhenz**INDUSTRIAL ENGINEERING (IE)***First Term***150. Elements of Industrial Engineering and Management.** (Page 98) (3 cr) McElrath

Lect 1, I MTWThF, VI F, ME 102

Lect 2, II MTWThF, VII F, ME 102

MATHEMATICS (ITM)

See also Mathematics, College of Science, Literature, and the Arts

First Term

- 12. College Algebra and Trigonometry II.** (Page 100) (5 cr; prereq 11; III-IV MTWThF; E 106) Culmer
- 13. Analytic Geometry.** (Page 100) (5 cr; prereq 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 cr; 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 cr; 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 cr; prereq 25; I MTWThF; E 104) Lindgren
- 150.†† Calculus III: Intermediate Calculus.** Limit concept, derivative, Riemann integral, numerical integration, partial differentiation, multiple integrals. (3 cr; prereq 25; II MTWThF; E 104) Lindgren
- 154.* Vector Analysis.** (3 cr; prereq 25; IV MTWThF; E 205) Wilcox
- 165A. Introduction to Programming Modern Digital Calculators.** Organization of a modern digital calculator. Binary number system. Instruction code, elemen-

†† Note that 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.

160. Heating and Air Conditioning. (Page 107) (3 cr; prereq 132, 133 or ¶133 or #) Threlkeld

Lect 1, I MTWThF, VI F, ME 214 Lect 2, II MTWThF, VII F, ME 214

Second Term

24. Elements of Machine Design. (Page 105) (3 cr; prereq MM 128) Larsen

Lect IV MTWTh, ME 321 Lab 1, VI-VIII MW, ME 325
2, VI-VIII TTh, ME 325

34. Mechanical Engineering Laboratory II (Page 105) (2 cr; prereq 33) LaJoy

Lect III TTh, ME 321 Lab 2, VI-VIII TTh, ME 370
Lab 1, VI-VIII MW, ME 370 3, VI-VIII TTh, ME 370

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 cr; prereq 130) Ibele

Lect 1, I MTWThF, VI W, ME 208 Lect 2, II MTWThF, VII W, ME 208

141. Heat Power Engineering. (Page 106) (3 cr; prereq 132) Murphy

Lect 1, I MTWThF, VI F, ME 202 Lect 2, II MTWThF, VII F, ME 202

180. Refrigeration. (Page 108) (3 cr; prereq 132) Threlkeld

Lect 1, I MTWThF, VI F, ME 214 Lect 2, II MTWThF, VII F, ME 214

MECHANICS AND MATERIALS (MM)

First Term

26. Engineering Statics. (Page 110) (5 cr; prereq ITM 25; I-II MTWThF; Ex 10) Anderson

127. Engineering Dynamics. (Page 110) (5 cr; prereq 26; I-II MTWThF; Ex 22) Mentel

128. Engineering Solid Mechanics. (Page 110) (5 cr; prereq 26) Miller, Doeringsfeld

Sec 1, III-IV MTWThF, Ex 10 Sec 2, III-IV MTWThF, Ex 193

Second Term

127. Engineering Dynamics. (See first term) Doeringsfeld, Hsiao

Sec 1, III-IV MTWThF, Ex 193 Sec 2, III-IV MTWThF, Ex 10

128. Engineering Solid Mechanics. (See first term) (I-II MTWThF; Ex 193) Miller

¶¶ 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.

School of Chemistry

ANALYTICAL CHEMISTRY (AnCh)

First Term

1. **Quantitative Analysis.** (Gravimetric) General principles and methods of gravimetric analysis. Typical problems are assigned and attention given to proper laboratory practice. (5 cr; prereq InCh 26; lect, rec, quiz V-VI TTh, V F; C 325; lab V-VIII MW, VII-VIII TTh, VI-VIII F; C 310) Herr
7. **Quantitative Analysis.** (Premed) General principles and methods of quantitative analysis, both gravimetric and volumetric. Typical problems are assigned and attention given to proper laboratory practice. (4 cr; prereq InCh 11 or 26; 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 cr; prereq 1, 2 or 3; ar) Herr
- 301.* **Research in Quantitative Analysis.** (Cr and hrs ar) Herr

INORGANIC CHEMISTRY (InCh)

First Term

4. **General Inorganic Chemistry.** General laws of chemistry and of the nonmetals and their compounds. (4 cr; for premedics, etc; lect I MTWThF, C 100; rec V T, C 100; lab V-VII MW, C ar) Reynolds
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 cr; prereq 5, 15, or 25; lect II MTWThF, C 100; rec V M, C 100; lab V-VIII MW, C ar) Hugus
26. **Introduction to Chemical Principles.** Laboratory work in systematic qualitative analysis of the cations with lectures on solutions, ionization, chemical and physical equilibria, oxidation and reduction, etc. (5 cr; prereq 5, 15, or 25; lect II MTWThF, C 100; rec V M, C 100; lab V-VIII MWF, C ar) Hugus
- 103.* **Atomic Structure and the Properties of the Elements Based Thereon.** (3 cr; prereq OrCh 62; lect IV MTWThF, C 215; rec V T, C 215) Hugus
- 113.* **Mechanisms of Inorganic Reactions.** (3 cr; prereq PCh 103; lect III MTWThF, C 215; rec V Th, C 215) Reynolds
- 157a. **Summer Institute for High School Teachers.** (See section on Special Programs) (June 17-August 9) The structure of the atom (predictions of the properties of elements and compounds based upon structural considerations), the nature of the chemical bond, modern concepts of solutions, ionization, equilibrium, acids, and bases. Co-ordination compounds and their application to the teaching of general chemistry. A review of stoichiometry, reduction-oxidation systems, electrochemistry and practical applications of the above-mentioned topics. (4 cr [8-week term], grad cr toward M.A. in education; prereq admission to Summer Institute or 3, 1 yr college chemistry; III MTWThF, VIII M, VII F; C 100) Brasted
- 301.* **Research in Inorganic Chemistry.** (Cr and hrs ar) Hugus, Reynolds, and staff

Second Term

5. **General Inorganic Chemistry.** (See 4, first term) (4 cr; prereq 4; lect I MTWThF, C 100; rec V T, C 100; lab V-VII MW, C ar) Hugus
11. **Semimicro Qualitative Analysis.** (See first term) (Lect II MTWThF, C 100; rec V M, C 100; lab V-VIII MW, C ar) Britton

26. **Introduction to Chemical Principles.** (See first term) (Lect II MTWThF, C 100; rec V M, C 100; lab V-VIII MWF, C ar) Britton
- 104.* **Chemistry of the More Representative Elements.** (4 cr for grad, 3 cr for undergrad; prereq OrCh 62; lect IV MTWThF, C 215; rec V T, C 215) Britton
- 107.* **Oxidation-Reduction Systematics.** (3 cr; prereq PCh 103; lect III MTWThF, C 215; rec V Th, C 215) Hugus
- 302.* **Research in Inorganic Chemistry.** (Cr and hrs ar) Britton, Hugus, and staff

ORGANIC CHEMISTRY (OrCh)

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 cr; prereq 12-15 cr chem; lect I MTWThF, C 325; rec II TTh, C 325; lab II-IV MWF, C 390; lab conf III TTh, C 325) Noland
102. **Organic Qualitative Analysis.** (Elementary course) Methods of organic qualitative analysis. (Limited to 20) (4 cr; prereq 1 yr of organic chemistry; lect II MW, C 315; 12 hrs of lab work ar) Fenton
110. **Organic Qualitative Analysis.** (Advanced course) Reactions of typical functional groups, identification of pure organic compounds, separation and identification of constituents of mixtures. (Limited to 20) (4 cr; prereq 102 or equiv; lect IV MW, C 315; 12 hrs of lab work ar) Fenton
199. **Selected Topics in Organic Chemistry.** (3 cr; prereq #; IV MWF; C 325) Ingold
301. **Research in Organic Chemistry.** (Cr ar; prereq 110, Δ) Fenton, Noland

Second Term

- 62.†† **Elementary Organic Chemistry.** (See 61, first term) (4 cr; prereq 61; lect I MTWThF, C 325; rec II TTh, C 325; lab II-IV MWF, C 390; lab conf III TTh, C 325) Tombouliau
139. **Advanced Organic Chemistry Laboratory Work.** Selected laboratory problems of an advanced nature, including some original work. Ability to read German assumed. (Limited to 20) (3 cr; prereq 63 and 64; ar) Kreevoy
215. **Theoretical Organic Chemistry.** Application of chemical kinetics, thermodynamics, and simple quantum mechanics to the problems of organic chemistry. (4 cr; prereq 107, PCh 103, and integral calculus, or #; IV MTWThF; C 315) Kreevoy
302. **Research in Organic Chemistry.** (Cr ar; prereq 110, Δ) Kreevoy

PHYSICAL CHEMISTRY (PCh)

First Term

- 104, 105. **Physical Chemistry Laboratory.** (1 or 2 cr; prereq 101 for 104, 102 for 105; VI-VIII MW; C 190) Rosenberg
- 107.‡‡ **Elementary Physical Chemistry.** Primarily for premed students. (3 cr; prereq 2 yrs of college chemistry, 1 yr 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) Rosenberg
301. **Research in Physical Chemistry.** (Cr and hrs ar) 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.

Second Term

- 105, 106. Physical Chemistry Laboratory.** (1 or 2 cr; prereq 102 for 105, 103 for 106; VI-VIII MW; C 190) Rosenberg
- 108.†† Elementary Physical Chemistry.** Primarily for premed students. (3 cr; prereq 107; lect I MTWTh, C 225; rec 1 F, C 225; lab VI-VIII MW, C 190) Rosenberg
- 301. Research in Physical Chemistry.** (See first term) Staff

School of Mines and Metallurgy

METALLURGY (MetE)

First Term

- 124.*††§§ Special Problems in Mineral Dressing.** (Page 113) Detailed study of mineral dressing problems. (Cr and hrs ar; prereq 112) Cooke
- 156. Physical Metallurgy.** (ME, MinE, PetE, AgEn, Pre-Bus) Theory of metals and alloys, constitution diagrams, heat treatment, relation of structure to properties. (3 cr; I MTWThF, VI Th; AH 315) Jerabek
- 159. Dental Physical Metallurgy.** Theory of metals and alloys, constitution diagrams, heat treatment, properties and applications of metals used in dentistry. (2 cr; VI MTWF; AH 315) Jerabek
- 170-171.*††§§ Special Problems in Physical Metallurgy.** (Page 114) (1, 2, or 3 cr; prereq 5th yr MetE or grad; hrs ar) Jerabek

Second Term

- 124.*††§§ Special Problems in Mineral Dressing.** (See first term)
- 170-171.*††§§ Special Problems in Physical Metallurgy.** (See first term)

MINING ENGINEERING (MinE)

First Term

- 15.††§§ Mine Surveying Field Work.** (Page 115) (6 cr; prereq 13; 4 wks beginning about June 15) Yardley, Lacabanne
- 151-152-153.*††§§ Special Mining Engineering Problems.** (Page 115) (Cr and hrs ar; prereq 113) Ar.

Second Term

- 151-152-153.*††§§ Special Mining Engineering Problems.** (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.

‡‡ 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.

§§ Open only to students previously registered at the University of Minnesota. Advance arrangement necessary.

PETROLEUM ENGINEERING (PetE)

First Term

155-156-157.*††§§ **Special Problems in Petroleum Engineering.** (Page 118) (Cr and hrs ar; prereq ¶144 or 145, or §) Lacabanne

Second Term

155-156-157.*††§§ **Special Problems in Petroleum Engineering.** (See first term)

*School of Physics (Phys)**First Term*

1. Introduction to Physical Science. Mechanics and heat. Lectures and experimental demonstrations. (3 cr; 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. The combination of 1 and 1a may be applied toward group requirements in the College of Science, Literature, and the Arts. (1 cr; prereq ¶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 cr; prereq Phys 12 and ¶analytical geometry) Valasek

Lect and quiz, III MTWThF, Ph 166

Lab 3, VI-VII W, Ar.

Lab 1, I-II T, Ar.
2, I-II W, Ar

4, VI-VII T, Ar

14. Intermediate General Physics, Part I. Mechanics and electricity, selected topics. (2 cr; prereq Phys 13 and ¶differential calculus; I MTWThF; Ph 170) Wall

14a. Intermediate Physics Laboratory, Part I. Laboratory parallel to Phys 14. (½ cr; prereq 14 or ¶14) Ar.

Lab 1, III-IV M, Ar.
2, III-IV W, Ar.

Lab 3, VI-VII Th, Ar.

151. Intermediate Mechanics. Principles of mechanics covering Newton's laws of motion, conservation principles of energy and momentum, and accelerated systems of reference. Emphasis is placed on the experimental content of the principles by the use of lecture demonstrations. Designed for students and teachers who desire a more thorough understanding of mechanical principles than can be acquired in general physics course. Only those majoring in education may receive graduate credit. (3 cr; prereq 15 cr in physics, calculus, or §; III MTWThF; Ph 170) Wall

152. Intermediate Atomic Physics. Selected topics in atomic physics, in particular: experimental evidence for the nuclear atom, atomic energy levels and radiation, nuclear reactions and applications. Intended primarily for high school teachers. Only those majoring in education may receive graduate credit. (3 cr; prereq 15 cr in physics, calculus or §; II MTWThF; Ph 133) Valasek

†† 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.

157c. **Summer Institute for High School Teachers.** (See section on Special Programs) (June 17-August 9) Basic experimental observations and theories of electricity and magnetism; electrical circuits, direct and alternating; electromagnetic induction, applications; fundamentals of electronics. (4 cr [8-wk term], grad cr toward M.A. in education; prereq admission to Summer Institute or $\frac{1}{2}$, 1 yr of college physics; I MTWThF, VII MW; Ph 166) Buchta

Second Term

2. **Introduction to Physical Science.** Electricity and magnetism. (See 1, first term) (3 cr; lect I MTWThF; Ph 133) Verbrugge

2a. **Physical Science Laboratory.** (See 1a, first term) (1 cr; ¶2) Ar.

Lab 1, III-IV TTh, Ar.

Lab 2, VI-VII MW, Ar.

13. **General Physics for Engineers, Part II.** (See first term) Cheston

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) Cheston

14a. **Intermediate Physics Laboratory, Part II.** (See first term) Ar.

Lab 1, III-IV M, Ar.

Lab 3, VI-VII Th, Ar.

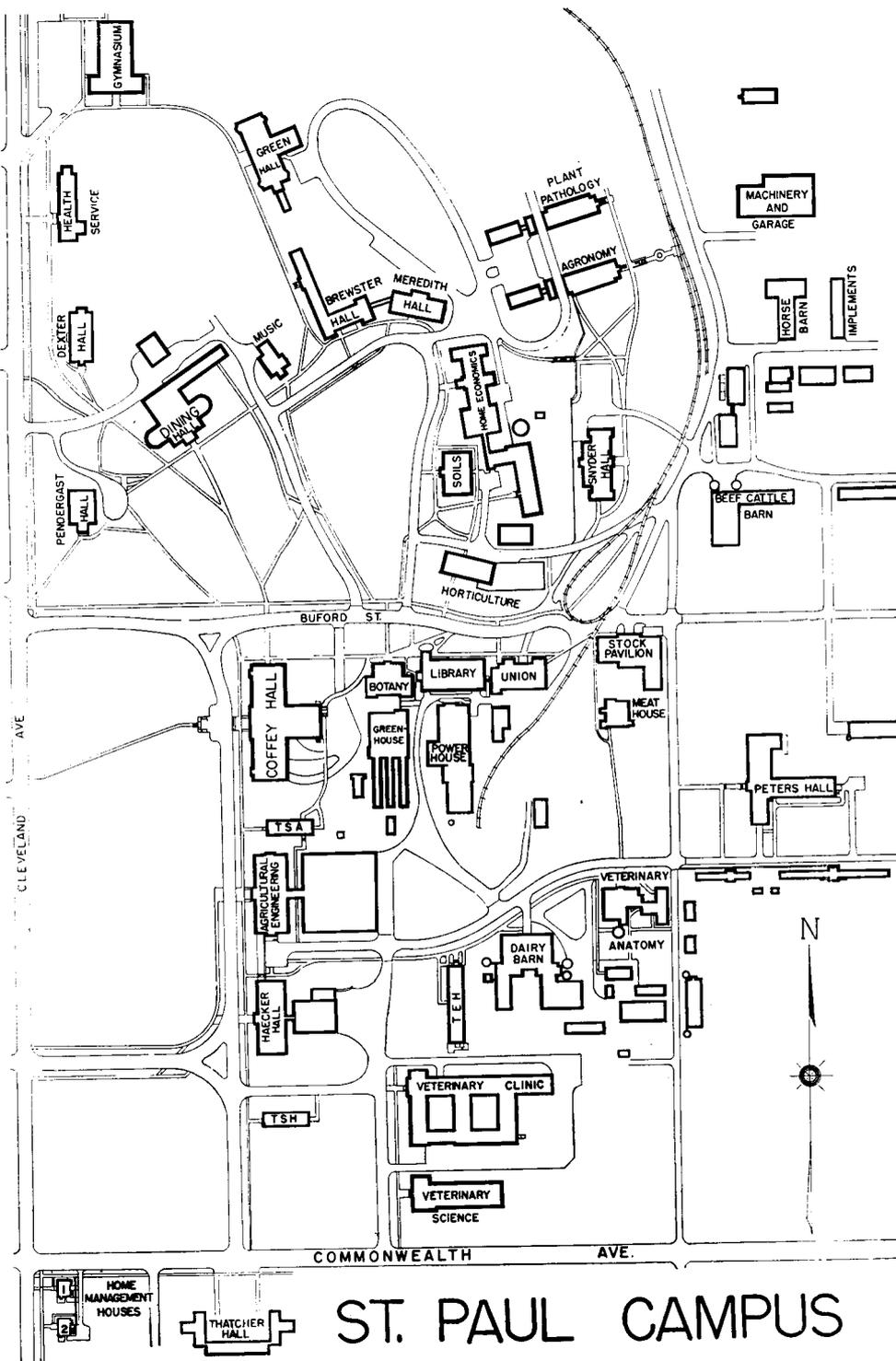
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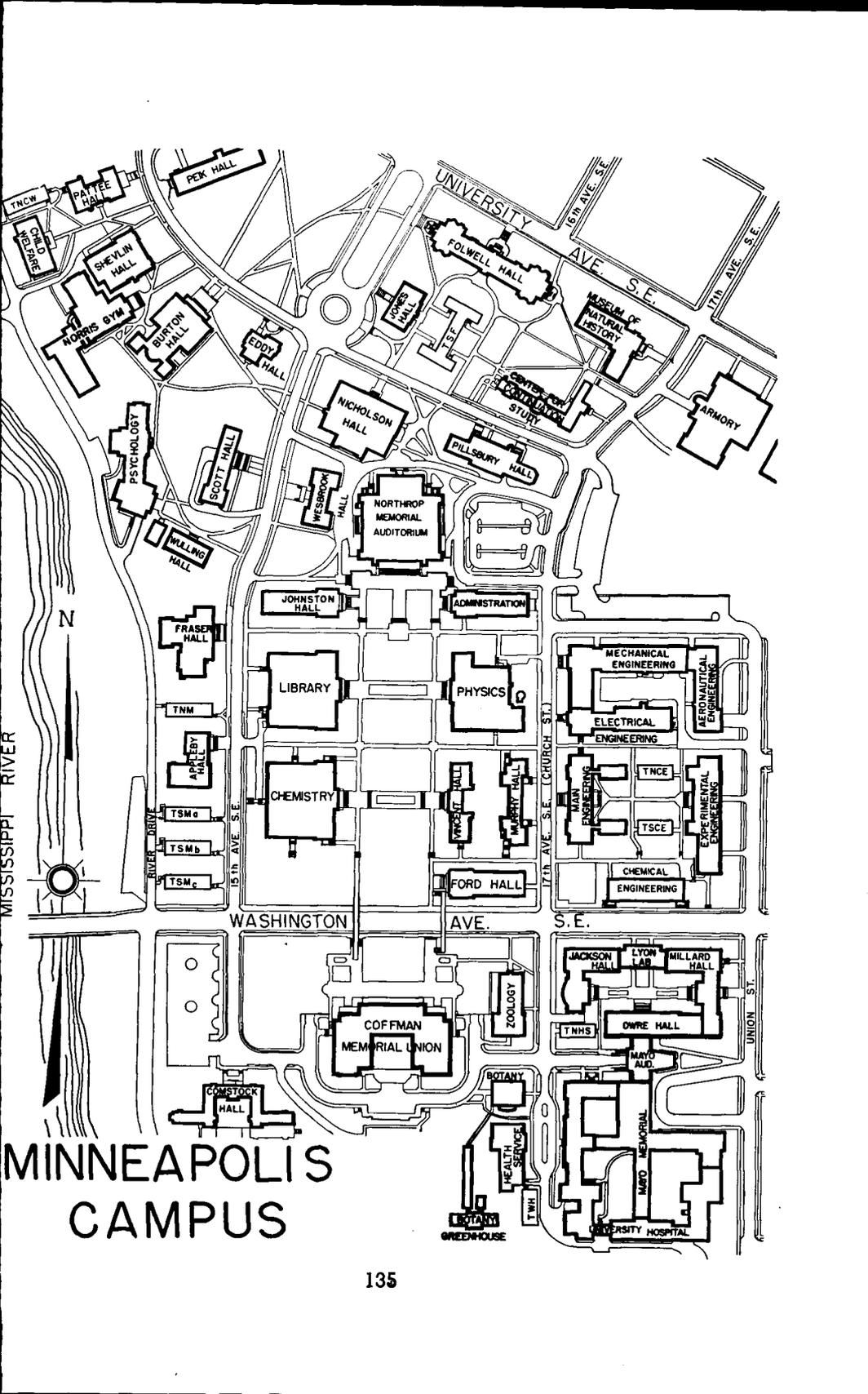
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ST. PAUL CAMPUS



MISSISSIPPI RIVER

MINNEAPOLIS
CAMPUS

Building Abbreviations

A—Armory
 AE—Aeronautical Engineering
 AgBot (StP)—Agricultural Botany
 AgLib (StP)—Agricultural Library
 Agr (StP)—Agronomy
 AH—Appleby Hall
 Bo—Botany
 BoG—Botany Greenhouse
 Bu—Burton Hall
 C—Chemistry
 CH—Cooke Hall
 ChE—Chemical Engineering
 CofH (StP)—Coffey Hall
 CW—Child Welfare
 DCB(StP)—Dairy Cattle Barn
 DH (StP)—Dining Hall
 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
 HL—Hydraulic Lab (Hennepin Island)
 HolB—Holman Bldg (2035 Univ Ave)
 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
 Stad—Stadium
 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—Wesbrook Hall
 WuH—Wulling Hall
 Z—Zoology