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Session



1965



University of Minnesota

BULLETIN

UNIVERSITY OF MINNESOTA

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On the Cover—Decorative panels flanking the entrance to the Periodical Room and to the Education Library, Walter Library, University of Minnesota.

UNIVERSITY OF MINNESOTA

Minneapolis, Minnesota

1965



Summer Session

FIRST TERM

June 14 - July 17

SECOND TERM

July 19 - August 21



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.

△ Consent of *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 abbreviated prefix 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 50 minutes after the beginning time shown below:

| | I | II | III | IV | V | VI | VII | VIII |
|--------------------------|------|------|-------|-------|-------|------|------|------|
| Minneapolis (east) | 8:30 | 9:30 | 10:30 | 11:30 | 12:30 | 1:30 | 2:30 | 3:30 |
| Minneapolis (west) | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 1:00 | 2:00 | 3:00 |
| St. Paul | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 1:00 | 2:00 | 3:00 |

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*.

Campus Maps—See back pages.

College and Department Abbreviation Code—Following is the list of abbreviated departmental prefixes used in conjunction with course numbers:

| | |
|-----------------------------------|-----------------------------------|
| Acct, Accounting | BLaw, Business Law |
| Aero, Aeronautical Engineering | Bot, Botany |
| AgEc, Agricultural Economics | |
| AgEd, Agricultural Education | CPsy, Child Psychology |
| AgEn, Agricultural Engineering | CE, Civil Engineering |
| Agro, Agronomy and Plant Genetics | ChEn, Chemical Engineering |
| AmSt, American Studies | Clas, Classics |
| Anat, Anatomy | Comm, Communication |
| AnCh, Analytical Chemistry | Comp, Composition |
| Anes, Anesthesiology | |
| AnHu, Animal Husbandry | DInd, Dairy Industries |
| Anth, Anthropology | DyHu, Dairy Husbandry |
| Arch, Architecture | |
| ArEd, Art Education | Econ, Economics |
| Art, Art | Ed, Education |
| Ast, Astronomy | EdAd, Educational Administration |
| | EdCl, Curriculum and Instruction |
| BFin, Business Finance | EdT, Methods and Student Teaching |
| BioC, Biochemistry (Agriculture) | EE, Electrical Engineering |
| Biol, Biology | Engl, English |

Ent, Entomology, Fisheries, and Wildlife
EPsy, Educational Psychology

FamS, Family Studies
For, Forestry
Fren, French
FS, Foreign Study

GC, General College
GeCh, General Chemistry
GE, General Engineering
Geog, Geography
Geo, Geology and Geophysics
Ger, German
Grk, Greek

HE, Home Economics
HEd, History and Philosophy of Education
HEED, Home Economics Education
Hist, History
Hort, Horticultural Science
Hum, Humanities
Hydr, Hydromechanics

IE, Industrial Engineering
InCh, Inorganic Chemistry
Ind, Industrial Education
Ins, Insurance
IR, Industrial Relations

Jour, Journalism

Lat, Latin
Law, Law School
Lib, Library School
LMed, Laboratory Medicine

Math, Mathematics
MdBc, Biochemistry (Medical)
ME, Mechanical Engineering
MeAg, Mechanized Agriculture
Med, Medicine
MedT, Medical Technology
MetE, Metallurgical Engineering
Mgmt, Management
MicB, Microbiology
MinE, Mining Engineering
Mktg, Marketing
MM, Mechanics and Materials
Mort, Mortuary Science
MuEd, Music Education
Mus, Music

NPsy, Psychiatry and Neurology
NSci, Natural Science
NuAd, Nursing Administration
NuEd, Nursing Education
Nurs, Nursing

Obst, Obstetrics and Gynecology
OMgt, Office Management
Oph, Ophthalmology
OrCh, Organic Chemistry
Otol, Otolaryngology

Path, Pathology
PCh, Physical Chemistry
Ped, Pediatrics
PEM, Physical Education for Men
PetE, Petroleum Engineering
PEW, Physical Education for Women
Phcg, Pharmacognosy
Phcl, Pharmacology
Phil, Philosophy
Phsl, Physiology
Phys, Physics
PiPa, Plant Pathology and Physiology
PMed, Physical Medicine and Rehabilitation
PO, Personal Orientation
Poul, Poultry Science
Pol, Political Science
Prod, Production
Psy, Psychology
PubH, Public Health

QA, Quantitative Analysis

Rad, Radiology
Rhet, Rhetoric
Russ, Russian

Scan, Scandinavian
Soc, Sociology
Soil, Soil Science
Span, Spanish
Spch, Speech
SSci, Social Science
Stat, Statistics
Surg, Surgery
SW, Social Work

Th, Theatre
Tran, Transportation

VAna, Veterinary Anatomy
VBac, Veterinary Bacteriology and Public Health
VMC, Veterinary Medicine and Clinics
VOBs, Veterinary Obstetrics
VPaP, Veterinary Pathology and Parasitology
VPP, Veterinary Physiology and Pharmacology
VSR, Veterinary Surgery and Radiology

Zool, Zoology

Building Name Abbreviations—Buildings located on the St. Paul Campus are followed by StP in parentheses. Buildings located on the West Bank are followed by W in parentheses.

A, Armory
Aero, Aeronautical Engineering
AgBot (StP), Agricultural Botany
AgEng (StP), Agricultural Engineering
Agr (StP), Agronomy
AH, Appleby Hall
Arch, Architecture

BA (W), Business Administration
Bo, Botany

BoG, Botany Greenhouse
Bu, Burton Hall

C, Chemistry
CB (W), Classroom Building
CCS, Center for Continuation Study
CD, Child Development
CH, Cooke Hall
ChE, Chemical Engineering

CMU, Coffman Memorial Union
CofH(StP), Coffey Hall

DCB(StP), Dairy Cattle Barn
DI(StP), Dairy Industries
DiehlH, Diehl Hall

E, Main Engineering
EdH, Eddy Hall
EE, Electrical Engineering
Ex, Experimental Engineering

FieldHse, Fieldhouse
FolH, Folwell Hall
ForH, Ford Hall
FP(StP), Forest Products
FraH, Fraser Hall

GH(StP), Green Hall
GY(StP), Gymnasium

HH(StP), Haecker Hall
HL, Hydraulic Lab (Hennepin Island)
HolB, Holman Bldg (2035 Univ Ave)
Hosp, University Hospitals
Hr(StP), Horticulture
HS, Health Service
Hum(Morris), Humanities

J, Jones Hall
JacH, Jackson Hall
JohH, Johnston Hall

Lib, Walter Library
LinA, Linear Activator
LinL, Linac Laboratory
LsPav(StP), Livestock Pavilion
LyonL, Lyon Laboratories

Mayo, Mayo Memorial
McNH(StP), McNeal Hall
ME, Mechanical Engineering
MEx, Mines Experiment Station
MH, Millard Hall
MinMet, Mines and Metallurgy
MMA, Mayo Memorial Auditorium
MNH, Museum of Natural History
MorH, Morrill Hall
MurH, Murphy Hall
MusE, Music Education

NGW, Norris Gymnasium for Women
NH, Nicholson Hall
NMA, Northrop Memorial Auditorium

Owre, Owre Hall

P, Pillsbury Hall
PB, Poucher Building (2007 University Ave
SE)
PeikG, Peik Hall Gymnasium
PeikH, Peik Hall
PetH(StP), Peters Hall
Ph, Physics
PP(StP), Plant Pathology
Psy, Psychology
Pt, Pattee Hall

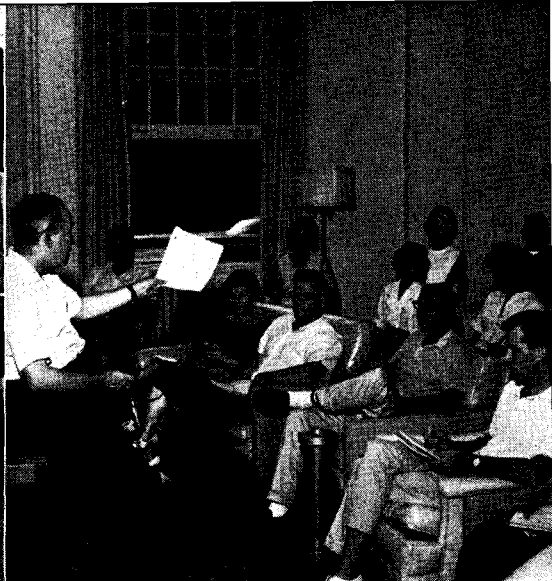
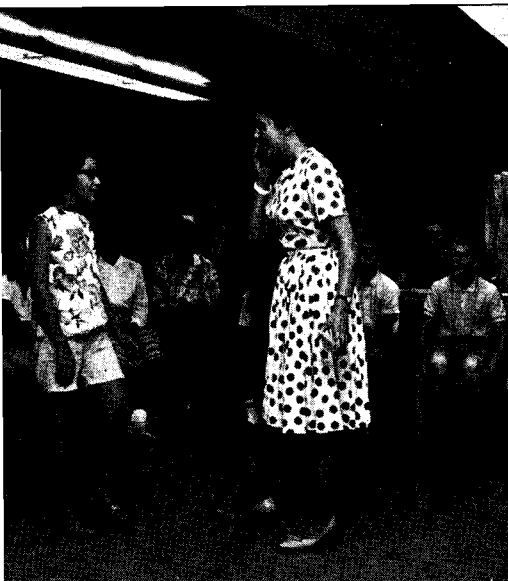
SBH, State Board of Health
ScH, Scott Hall
Sci(Morris), Science
SciB, Science Classroom Building
ShH, Shevlin Hall
SnH(StP), Snyder Hall
So(StP), Soils
SocSci(W), Social Sciences Building

TEH(StP), Temporary, East of Haecker Hall
TNCD, Temporary, North of Child Development
TNCE, Temporary, North Court of Engineering
TNM, Temporary, North of Mines (Appleby Hall)
TSC(StP), Temporary, South of Coffey Hall
TSCe, Temporary, South Court of Engineering
TSF, Temporary, South of Folwell

VCHH, Variety Club Heart Hospital
VetA(StP), Veterinary Anatomy
VetC(StP), Veterinary Clinic
VetS(StP), Veterinary Science
VH, Vincent Hall

WeH, Wesbrook Hall
WmsA, Williams Arena
WuH, Wulling Hall

Z, Zoology



Modern Language Residence Houses

During the First Term the Romance Language Department and the German Department will sponsor residence houses, located near the campus, for graduate and undergraduate students of French and German. All activities will be carried on in the language elected by the student. 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 directors of the residence houses will be Professor Norbert G. Benzel for the Deutsches Haus; and Professor Mireille Rydell for the Maison Française. In each house there will be native assistants. See course listings under Department of German and Department of Romance Languages.

Programs—The program consists of practical conversation sections in the afternoon and lectures, round-table discussions, plays, films, music, and dances in the evening conducted at the residence houses. This work carries 5 quarter credits for the elementary group and 4 quarter credits for the advanced and graduate students. To round out their programs it is recommended that the students select not to exceed 5 additional credits of work from the departmental courses of the language of their choice. It is possible, however, for students to combine work in the language houses with work in another field.

The houses have 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 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—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.

Scandinavian Area Studies

The Scandinavian Area Studies program, held alternate summers at the University of Minnesota and the University of Wisconsin, is scheduled for

the summer of 1965 at the University of Wisconsin. For detailed information write Professor Harald S. Naess, 67 Bascom Hall, University of Wisconsin, Madison, Wisconsin.

Courses in Russian

To help scientists and students of science become acquainted with the research of their Russian counterparts, the Summer Session will offer in the Department of Slavic and Oriental Languages a course in scientific Russian. Students with no prior knowledge of the Russian language may register for Russ 24, Scientific Russian. The major goal of this course will be the acquisition of a reading skill in the most direct fashion possible. Students will also be acquainted with the standard Soviet journals in the various fields.

The Department of Slavic and Oriental Languages will also offer an intensive beginning course in spoken and written Russian (Russ A and B) which covers the same ground covered by the regular 3-quarter beginning sequence during the academic year. Students completing the intensive summer course will be prepared to join students at the second-year level in the fall.

Expanded Offerings in French and Spanish

The Department of Romance Languages is offering a wider range of courses this summer so that in-service teachers and others may be able to fulfill some of the major requirements for French and Spanish. These offerings will enable many in-service teachers with degrees in education to take middle-range courses in order to fulfill major requirements before continuing toward a Master's degree in Spanish or in French.

Beginning Italian and Portuguese will also be offered this summer.

Studies in Mexico

Tutorial direction (Span 106) is a new offering. It will be in Jalapa, Vera Cruz, Mexico, from June 24 through August 6. Graduate and undergraduate credit will be available for studies at the Universidad Veracruzana equivalent to such University of Minnesota courses as Span 25, 54, 55, 58, 131, 140, 146, 190, and 259. A special fee of \$184 is required. For information write to Professor Richard A. Narváez, Director, 1965 Summer Studies in Mexico, Department of Romance Languages, 200A Folwell Hall, University of Minnesota, Minneapolis, Minnesota 55455.

American Studies

During the summer of 1965, visiting professors will offer courses in various aspects of American culture, as will members of the University of Minnesota staff in the Departments of Anthropology, History, English, Sociology, Economics, Education, Geography, Art, Music, Philosophy, Political Science, and the School of Journalism.

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



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 places to be visited are Athens, the Greek Isles, Delphi, Corinth, Mycenae, Rome, Assisi, Siena, Florence, Ravenna, Venice, Salzburg, Innsbruck, Munich, Paris, and London. Five credits will be given in Art 59 to students successfully completing the course. The total cost is \$1,415 including University fees. An examination will be required.

Members of the group will depart from New York by air on June 29, spend approximately 6 weeks in Europe, and return to New York on August 12.

Industrial Education Workshops

A research workshop (Ind 136, Section A) has been planned for the First Term to be conducted by Professor Jerome Moss. Instruction will include basic information about research procedures and individual assistance in developing specific proposals. Class meetings will be held 3 hours daily for the first 2 weeks. The remainder of the time will be devoted to individual consultations, with a few general sessions near the close of the term.

The second workshop (Ind 136, Section B), conducted by Professor William Kavanaugh, will deal with the many new electronic instruments and teaching materials now available to teachers.

Music Education

A new course, General Music in Elementary and Junior High Schools (MuEd 102) affords opportunity during the First Term for music education majors and teachers in service to concentrate in their special area of the general music class. New materials and approaches will be related to teaching problems in elementary and junior high classrooms.

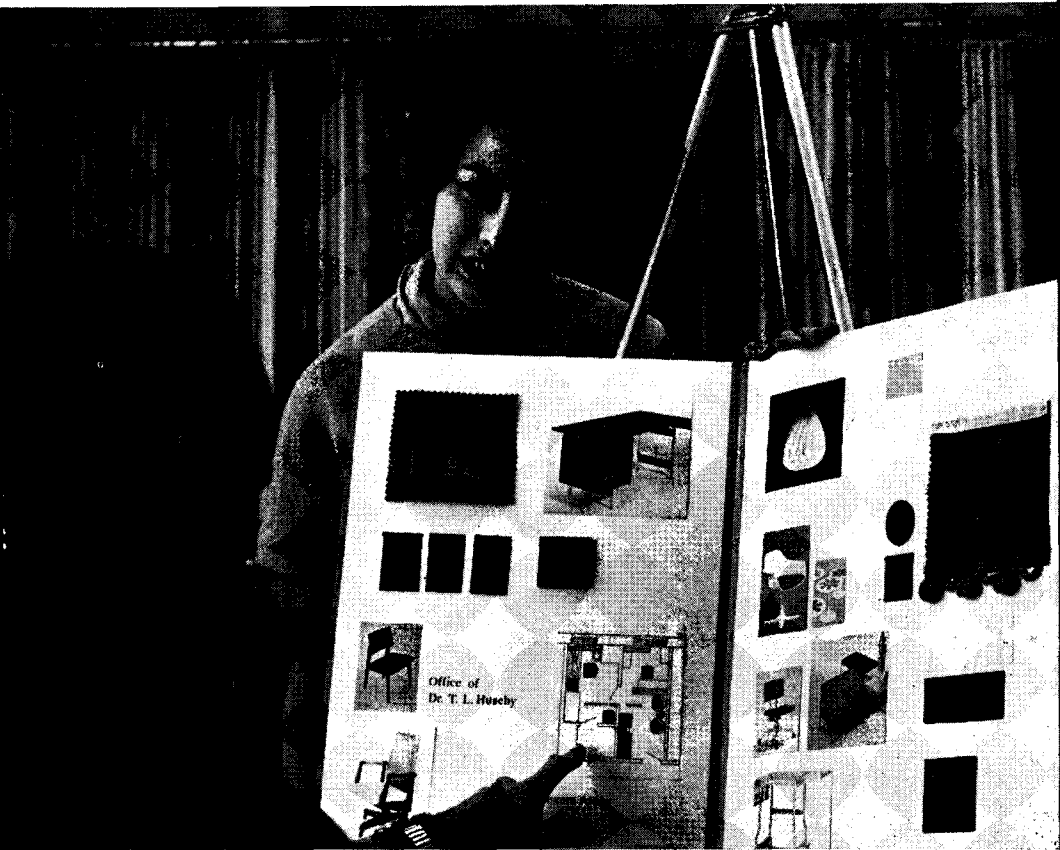
Educational Administration Two-Year Programs

Advanced graduate programs (1 year beyond the Master's degree) leading to the certification of Specialist in Education (School Administration) have been developed for elementary principals, high school principals, superintendents, school business administrators, and superintendents of intermediate units. New courses, workshops, and seminars have been introduced, several of them available this summer. An announcement describing the specialist in education programs for school administrators at all levels will be sent on request to the Department of Educational Administration, 203 Burton Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Workshops and Seminars for School Administrators

A number of workshops and seminars of special interest to school administrators are featured. In the First Term, a workshop for experienced administrators is listed under EdAd 128, scheduled 4 hours per day, June 14 to 30. Also included during First Term is the seminar for secondary school principals, EdAd 218.

In the Second Term, the two special offerings are the seminar for elementary school principals, EdAd 200; and a workshop for secondary principals, EdAd 239, scheduled from July 18 to August 4. The latter employs the technique of "simulation" and emphasizes the decision-making role of the high school principal.



Economics Education

The Department of Economics and the College of Education have planned a 6-credit offering in the First Term for teachers in Minnesota schools. Included will be 3 credits in economics, Econ 150A, and 3 credits in education, EdCI 167, Economic Education Programs; the two courses together providing materials and procedures for high school teachers of economics. Interested Minnesota teachers should write to Professor Roman F. Warmke, Business Administration Building, University of Minnesota, Minneapolis, Minnesota 55455, concerning admission to the courses and scholarships available for the participants.

Home Economics

The attention of home economics teachers concerned with the statewide curriculum project is called to courses which are directly related to the next phase of the study: Family in World Perspective, Family Relationships, and the Parent in Society. Experienced teachers are invited to enroll in the curriculum course which serves as the base for the state study.

Four workshops will be provided on the St. Paul Campus for those working at secondary, adult, or collegiate levels, extension workers, and administrators of home economics programs: Problems in Administration of Home Economics (June 14-30); Methods of Teaching Home Planning and Furnishing (July 1-17); Curriculum Workshop, Family Relationships (July 19-23); Curriculum Workshop, Foods and Nutrition (August 1-6). (See College of Agriculture, Forestry, and Home Economics and College of Education.)

Driver Education

The basic course in driver education (EdCI 101) will be offered for high school instructors in driver training involved in either classroom or behind-the-wheel teaching. It will be given First Term on the Minneapolis Campus, and Second Term on the Duluth Campus. *Because registration is limited, interested summer students must apply in advance for this work.*

High School Speech Workshop

The Department of Speech and Theatre Arts, in co-operation with the College of Education, will sponsor a special workshop for high school students interested in competitive speech activities. College speech students may observe the work of these high school students. Those wishing to do so should see Professor Bernard Brock (413 Folwell Hall). EdCI 177 is available for students desiring instruction in directing high school speech activities (see Education section of this bulletin).

Minnesota Government and Politics Institute

During the first 2 weeks of the Second Term, July 19-30, a 3-credit Institute on Minnesota Government and Politics, Pol 114, will be offered for members of civic organizations, school teachers and administrators, and others interested in the government of Minnesota. Morning panel discussions will be held in the air-conditioned Mayo Auditorium and afternoon seminars will be held in the air-conditioned Center for Continuation Study. The institute will introduce those who attend the sessions to some of the major problems of Minnesota government and politics. These problems will be discussed by panels of public officials, civic leaders, and educators, with adequate opportunity for those who enroll to enter into the discussions. In addition, the institute will feature group discussions. For further information write to: Director, Public Administration Center, University of Minnesota, Minneapolis, Minnesota 55455. (See Pol 114.)

Ground Water Development

For the sixth time since 1959, the School of Public Health will offer a special intensive program on Development of Ground Water Supplies. This

program, sponsored by the Agency for International Development of the Department of State, will place special emphasis on the public health aspects of such supplies. While designed primarily for engineers employed in economically underdeveloped areas of the world, the content will be applicable to those engaged in water supply programs in state health departments in the United States. The course will be limited in registration and will run from June 14 to August 20. For further information, write the School of Public Health, University of Minnesota, Minneapolis, Minnesota 55455.

Water Quality Investigations

A special course in research techniques in water quality investigation will be offered the First Term to health-oriented specialists who have an interest in water quality control. It will be given at Duluth, Minnesota, and will be headquartered at the Lakeside Research Laboratory of the University of Minnesota, Duluth. Activities will include formal lectures, laboratory work, and extensive field operations. The latter will be centered around Knife River Harbor where a fully equipped 30-foot research vessel is available for the scheduled field studies. The course will be limited in registration, and will run from June 14 to July 17. For detailed information write the School of Public Health, University of Minnesota, Minneapolis, Minnesota 55455.

3M Distinguished Lectures in Chemistry

The 3M visiting lecturer this summer will be noted mass spectroscopist J. H. Beynon, Imperial Chemical Industries, Ltd., Manchester, England, who will present a series of lectures on the application of mass spectroscopy to structural problems in organic chemistry. The series will begin June 16 and continue to July 16.

Tri-State Field Seminar

The Tri-State Field Seminar will be held at the Iowa Lakeside Laboratory on West Lake Okoboji near Spirit Lake, Iowa, from August 20 to September 3. Professors Clarence W. Olmstead of the University of Wisconsin and James B. Lindberg of the State University of Iowa will conduct the field seminars concerning agricultural geography and land use (Geog 276-277), and small town trade areas and functions and recreation (Geog 286-287). Reservations must be made no later than June 7. For costs, detailed information, and reservations contact Department of Geography, University of Minnesota, Minneapolis, Minnesota 55455.

Special Offerings in Civil Engineering

A special offering of six courses in civil engineering is being made during the Summer Session. CE 130, 131, 132 (Statically Indeterminate Structures, Structural Analysis, Structural Design) will be offered in the First Term; and CE 141, 142 (Reinforced and Prestressed Concrete, Design of Reinforced and Prestressed Concrete I) and CE 147 (Foundations) will be offered in the Second Term. Students may register for any part of the combined courses (CE 130, 131, 132; CE 141, 142). It is contemplated that completion of these courses will permit fourth-year students now registered in civil engineering to graduate by December 1965.

Efficient Reading

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

Speech Pathology

During the Summer Session, the Department of Speech and Theatre Arts offers an expanded program in speech pathology and rehabilitation at both the graduate and undergraduate levels. Students interested in continuing their training or working toward graduate degrees may do so through summer offerings. Bertil Sonesson, M.D., professor of anatomy at the University of Lund (Sweden), will be visiting lecturer in speech pathology during the First Term, offering courses in the physiology, structure, and action of the larynx. (See Spch 140 and 267.)

Students who wish to plan their summer work in relation to securing a degree in speech pathology should seek an early conference with Professor Ernest Henrikson or Professor Clark Starr, Speech Clinic, Shevlin Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Audiology (Hearing)

Courses in audiology will be available during both terms. During the First Term, Professor Philip Yantis, director of audiology, Cleveland Hearing and Speech Center, Western Reserve University, will teach a survey course in hearing disorders and a special offering in the selection and use of hearing aids. (See Spch 152 and 154.)

Courses will also be available in audiology and in clinical methodology taught by Professor Joseph Chaiklin, who has joined the permanent faculty.

The Audiology Clinic and a special demonstration class of hearing-impaired children will be among several special facilities and arrangements for supervised experience.

Students wishing to plan a degree program or a special unit of study in audiology should arrange an early conference with Professor Frank Lassman, Audiology Clinic, 236 Diehl Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Journalism and Communications

The School of Journalism program contains courses for both undergraduate and graduate students interested in professional training. Several of the courses are open to students who have majors in other fields and have not had previous journalism courses. A special workshop course divided into two sections is included. Section 1 is intended for journalism teachers and publications advisers in the secondary schools or junior colleges. Section 2 is designed for college student publications editors who lack formal journalism training. Students may fit regular Summer Session courses around the 2-week workshop period.

The University of Minnesota will be one of five institutions in the country offering special 4-week seminars (one each term) sponsored by the Newspaper Fund, Inc. Enrollment is open only to those awarded fellowships by the Newspaper Fund, but high school publications advisers enrolled in

regular Summer Session courses will be afforded an unusual opportunity to exchange views and experiences with Newspaper Fund fellows from many parts of the United States.

The school also offers courses on the Upper Division-Graduate level in the area of mass communications. These include History of Journalism, Topics in History of Mass Communications, Public Relations Methods, Advertising Copy Writing, Public Opinion and Propaganda, Critical Writing, Mass Communications and the News, Theory of Mass Communications, and Communication Systems of the Western World.

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.

Archaeological Field Session

The archaeological field techniques course, Anth 140, will be offered from the Minneapolis Campus. Students enrolled in the 6-credit course will receive instruction in archaeological survey techniques, site mapping, excavation procedures, and preliminary laboratory analysis. This training will be accomplished through participation in the excavation of various prehistoric sites in the state of Minnesota.

Ethnological Field Session

Training in ethnological field techniques will be offered in two related courses: Anth 154 and 240. Students are expected to take both courses in order to receive credit for the first. The course will include comprehensive training in techniques of field work: sketch mapping, census taking, genealogies, participant observation and techniques of interviewing. After a period of orientation on the Minneapolis Campus, the course will be conducted in American Indian communities in northern Minnesota.

Geographical Field Session

An intensive field research seminar, Geog 214, will be given June 14-July 5 (1 week will be on the University of Minnesota campus and enroute to the field and 2 weeks will be in the Northeastern Ozarks, Ironton, Missouri). Research will be focused upon related problems in cultural and historical geography. Reservations must be made no later than May 24. For costs, detailed information, and reservations, contact the Department of Geography, University of Minnesota, Minneapolis, Minnesota 55455.

Institutes for Teachers of Science

Physics and Chemistry

An Institute for High School Teachers of Physics and Chemistry, supported by the National Science Foundation, will be held on the Minneapolis Campus from June 14 to August 21 (that is, both terms of the Summer Session). A limited number of stipends will be available. Teachers not receiving stipends may register by special permission of the director of the institute. Credit for the courses will be given only for the full 10-week session.

Advanced Inorganic Chemistry

The Division of Inorganic Chemistry will have a National Science Foundation institute for college teachers from June 14 through July 16. The major objective of the institute will be to contribute to the improvement of teaching advanced inorganic chemistry by the participants through broadening their understanding of and background in modern inorganic chemistry. This is to be accomplished by presenting an intensive, rigorous 5-week course dealing with modern approaches to certain aspects of this timely and rapidly expanding field.

In addition to the regular faculty, 11 outstanding chemists have accepted invitations to participate as outside lecturers in this institute. These men are recognized for their original contributions to the field of inorganic chemistry both as teachers and as active research workers.

The institute is not offered for credit and is open to participants by invitation only. For further information contact Steven T. Spees, Jr., Department of Chemistry, Minneapolis, Minnesota 55455.

Physiology for High School and College Teachers

The Department of Physiology is offering a course, Phsl 100, which is specially designed to serve the interests of high school and college teachers of biology and others who feel the need of an introduction to the modern developments in general physiology. The course deals primarily with basic processes, such as transport phenomena, energetic processes, excitation and conduction, and mechanical movement. It will serve as an introduction to biophysical phenomena in living systems.

Geology for High School Teachers

The Department of Geology and Geophysics will offer a course in physical geology and a course in historical geology for high school teachers who wish to obtain an introduction to earth sciences. These courses, Geo 109C and 122C, cover the description of geologic materials and processes, and the history of the development of the earth. The lectures are augmented with intensive laboratory exercises and with guided discussions on the classroom demonstrations of geological principles. These courses are introduced to help teachers in their effort to satisfy the increasing demand for earth sciences in high school curriculums.

Research Stipends—Biology

For information regarding stipends in this field for work at the Lake Itasca Forestry and Biological Station, see section on Biology Session.

Communism: Systems and Strategies

A new offering, Pol 144 for 6 credits, is scheduled for the First Term of the Summer Session, June 14 to July 17. The course number will appear in a supplemental listing of courses before registration. Subjects covered will include the following: Soviet Russian and Communist Chinese history; Marxism; politics and government in communist systems; communist economic systems; communist international relations; and communist societies. It will

be directed by Professor David Cooperman, chairman, Social Sciences Program, University of Minnesota.

Choral Arts Institute

The Summer Session and the Center for Continuation Study of the General Extension Division are sponsoring a Choral Arts Institute, June 21 through June 29, 1965. Professor Julius Herford will direct the program of lectures, interpretation, and analyses, using the choral works of Joseph Haydn. Mr. Kurt Adler, chorus master of the Metropolitan Opera, will rehearse and conduct the chorus, along with a symphony orchestra, in the Verdi *Requiem*. Those who wish to receive credit, at no additional cost, should apply in advance for permission. For information, write to Choral Arts Institute, Center for Continuation Study, University of Minnesota, Minneapolis, Minnesota 55455.

NDEA Language Institute for Teachers

An 8-week institute under the National Defense Education Act will be offered for 30 elementary and junior high school teachers of Spanish and 30 elementary and junior high school teachers of German. For further information and applications write to Robert F. Estelle, 319 Folwell Hall, University of Minnesota, Minneapolis, Minnesota 55455. All completed applications must be received not later than March 1, 1965.

NDEA Institute for Thirty College Guidance Workers

The institute will extend for a period of 8 weeks, beginning June 28 and ending August 22, 1965. Deadline for application is March 22. For information, write to Ralph F. Berdie, Director, 1965 NDEA Counseling and Guidance Training Institute, 101 Eddy Hall, University of Minnesota, Minneapolis, Minnesota 55455.

NDEA Institute for Thirty Education Media Specialists

This institute will be conducted from July 12 through August 20 (6 weeks). Deadline for applications is April 15. For further information, write to Professor Neville P. Pearson, Director, 1965 NDEA Institute for Education Media Specialists, 108 Burton Hall, University of Minnesota, Minneapolis, Minnesota 55455.

NDEA Institute for Fifty Secondary School Teachers of English

This 7-weeks' institute will be from June 14 through July 31. Included will be three basic courses: linguistics and the English language; principles of classical and modern rhetoric; and approaches to literature and literary criticism. Other activities include: a workshop and seminar on curriculum and materials; integrating seminar; special films series; special lectures; small group and individual instruction. Applications must be received by April 15. For information, write to Stanley B. Kegler, Director, 230 Peik Hall, University of Minnesota, Minneapolis, Minnesota 55455.

NDEA Institute of Advanced Study for Teachers of Geography

This 6-weeks' institute will be held July 6 through August 14. A full course of study in geography is offered for 60 teachers of the 7th through the 12th grades. Applicants should have a B.A. and at least 9 course hours of geography. Application deadline is April 15. For information, write to Director of the Institute for Advanced Study, Department of Geography, University of Minnesota, Minneapolis, Minnesota 55455.

NDEA Institute for School Librarians

This 6-weeks' program for 30 school librarians will concentrate on new educational media. It will be held from June 28 to August 6. Completed applications must be postmarked no later than April 15. For information, write to Professor Lowell E. Olson, Director, 1965 NDEA Institute for School Librarians, 3 Walter Library, University of Minnesota, Minneapolis, Minnesota 55455.

NSF Institute for Teachers of Agriculture Sciences

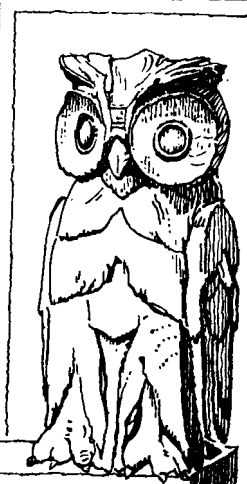
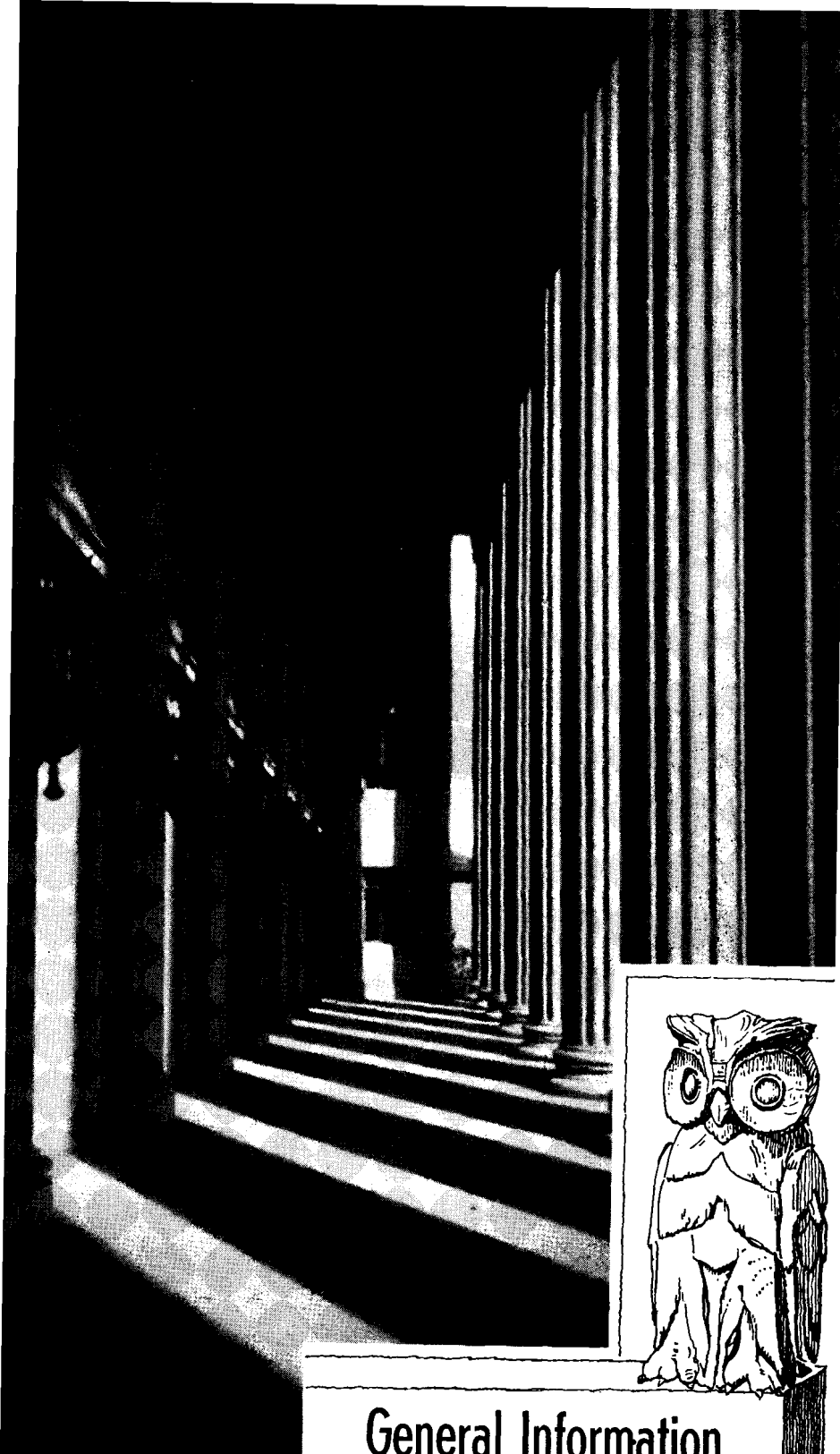
The National Science Foundation is sponsoring this 4-weeks' institute, June 21 through July 16. For information write Paul Marvin, Director, 1965 Summer Institute in Agriculture Sciences, Department of Agricultural Education, University of Minnesota, St. Paul, Minnesota 55101.

Center for Continuation Study Program

The following institutes and short courses will be offered during the Summer Session:

- June 21-29—Choral Arts Institute
- July 6-16—Aerodynamic Deceleration
- July 19-23—Infrared Spectroscopy
- July 19-30—Minnesota Government and Politics
- July 26-30—Interpretation of Infrared Spectra
- July 26-30—Reading Institute (Duluth)
- August 2-6—Creative Writing for and by Children
- August 16-28—X-Ray Defraction
- August 22-26—Clergy Economic Conference (Morris)

For further information, please write to the Director, Center for Continuation Study, University of Minnesota, Minneapolis, Minnesota 55455.



General Information

On its Minneapolis Campus the University of Minnesota places at the disposal of the Summer Session students 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 College of Agriculture, Forestry, and Home Economics and the College of Veterinary Medicine are on the St. Paul Campus on which there are library, laboratory, 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.

Dates of Summer Session

The Summer Session consists of 2 terms of 5 weeks each: June 14 to July 17 and July 19 to August 21. 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 p.m. on Tuesday, June 15. First Term classes on the Minneapolis Campus East Bank will begin Tuesday, June 15, at 8:30 a.m.; classes on the West Bank will begin at 8 a.m.; and classes on the St. Paul Campus will begin at 8 a.m.

Registration and payment of fees for the Second Term close at 4 p.m. on Tuesday, July 20. Classes for this term will open Tuesday, July 20.

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

General Offices

The office of the dean of the Summer Session is in 135 Johnston Hall. The Office of Admissions and Records and the Bursar's Office are in Morrill Hall. For the convenience of students registered in colleges located on the St. Paul Campus, 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 during the Summer Session just as during any other quarter of the year.

Library Facilities and Services

The University library system, with over 2 million volumes, is one of the 10 largest of its kind in the United States. Most of the publications which students need to consult, in addition to the required reading assignments for individual courses, are available in the University's libraries.

Walter Library

The major portion of the library's resources are housed here. In addition to the thousands of books, periodicals, and reference works in the general



collection, there are several noteworthy special collections. The James Ford Bell collection of rare volumes deals with exploration and trade with major emphasis on the 16th through 18th centuries. The Ames Library of South Asia is one of the notable specialized libraries on South Asia in the United States. The Department of Special Collections has custody of rare books and unique collections.

Other specialized resources in Walter Library are the newspaper and microfilm collection, which contains extensive holdings of foreign and domestic newspapers in either original format or on microfilm; the Education Library, a subject collection which contains the works on education, psychology, and library science; and the browsing collection containing books for recreational reading.

Freshman-Sophomore Library

Students in their first 2 years of study will find most of their course-related materials on the open shelves of this library, which is located on the ground floor of Johnston Hall. The patrons of this library are encouraged to use the Walter Library when they have need of more specialized information or services.

West Bank Branch Library

This library houses class-related materials for courses taught on the West Bank. It is located on the third floor of the West Bank Classroom Building.

Departmental Libraries

The library needs of students in some of the specialized scientific and professional fields generally are met through the collections of the various departmental libraries on both the East and West Banks of the Minneapolis Campus. On the East Bank are the Art, Architecture, Math-Physics, Chemistry, Music, Mines and Metallurgy, Journalism, Geology, and Pharmacy Libraries. Also on the East Bank are the more extensive collections of the Law, Bio-Medical and Engineering Libraries. The Public Administration Library and the Map Library are both located on the West Bank.

St. Paul Campus Libraries

A modern central library houses publications relating to agriculture and home economics. Outlying specialized collections in forestry, biochemistry, plant pathology, entomology, and veterinary medicine form a departmental library system for this campus.

Library Hours

Library hours of service during the Summer Session are posted in all of the libraries and are published in the Official Daily Bulletin. In general, except for holidays, the Walter Library is open from 8 a.m. to 10 p.m. on weekdays, from 8 a.m. to 5 p.m. on Saturday, and from 2 p.m. to 6 p.m. on Sunday.

A pamphlet containing more detailed information about the use of the library and its collections is available at any of the service desks in Walter Library.

Full library privileges are available to all Summer Session students.

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 College of Veterinary Medicine will be issued at the Office of Admissions and Records, St. Paul Campus.

Students registered in other colleges will obtain their passes at the post office on the ground floor of Coffman Memorial Union.

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 and lots at Summer Session rates for either or both terms. Reservations may be made in advance by writing to the Department of Police, Parking Facilities, 2030 University Avenue S.E., University of Minnesota, Minneapolis, Minnesota 55455.

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

University Post Offices

The University post offices are located on the ground floor of 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.

On the Minneapolis Campus, post-office boxes are provided only for those students 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 Session an Official Daily 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, each morning on which it is published, to boxes strategically placed on the campuses. *Each student is held responsible for a knowledge of such information appearing in the official notices as may affect him.*

Religious Activities

Thirty-six student religious organizations, representing various faiths and denominations, function on the Minneapolis Campus. There are nine religious foundation buildings on the University Avenue side of the campus which maintain programs of fellowship and recreation. Information may be secured from the Office of the Co-ordinator of Students' Religious Activities, 211 Eddy Hall.

University Health Service

The University Health Service conducts a dispensary and infirmary during the Summer Session on a basis similar to that of 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, health consultations, and hospitalization. General service is provided without further charge to all students who have paid the incidental fee. For services which are specialized and individual in character, such as dentistry, drugs, prolonged hospitalization, surgical operations, etc., special fees are charged. Surgical care for pre-existing conditions is not provided.

Student Employment Office

If you are a student on the Minneapolis or St. Paul Campus and need a job to help meet school expenses, the Student Employment Office, 30 Wulling Hall, will help you find part-time work either on or off campus. Apply in person at the office after you have enrolled and know your class schedule. Your chances of being placed depend on the supply of jobs, your qualifications, your need, and the hours you have available. Very frequently a job will provide valuable experience as well as financial assistance. Work for board and room is usually available for girls, and sometimes for men or married couples.

CONSULTANT ADVISER OR INSTRUCTOR

FRENCH-
SPANISH

SCANDINAVIAN



Admission • 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.

Incoming Freshmen—Students graduating from high school in June may begin their University careers in the Summer Session. Orientation programs for these students are being scheduled prior to the session. Applications for admission must be received by the Admissions Office prior to May 1. All freshman applicants are required to present ACT scores before final admission can be granted. For further information write to: Office of Admissions and Records, University of Minnesota, Minneapolis, Minnesota 55455.

Special Students—Students with previous college work who wish to attend the Summer-Session-only may do so without filing credentials, providing 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 in this bulletin. See pages 89-99.

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

All students should consult the *Bulletin of General Information* for detailed requirements governing admission and the granting of degrees. This bulletin and specific college bulletins may be obtained by writing to Office of Admissions and Records, University of Minnesota, Minneapolis, Minnesota 55455.

Registration Dates

In order that the short Summer Session 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 14, 8 a.m. to 4 p.m.

Fee payment, last day without penalty—Tuesday, June 15

Late fees for the First Term are as follows for payment of fees on:

| | |
|------------------|---------|
| June 16-18 | \$ 3.00 |
| June 21-25 | 5.00 |
| Thereafter | 10.00 |

No registrations will be accepted for the First Term later than Thursday, June 17, without special permission of the dean of the school or college concerned.

SECOND TERM

Registration—Monday, July 19, 8 a.m. to 4 p.m.

Fee payment, last day without penalty—Tuesday, July 20

Late fees for the Second Term are as follows for payment of fees on:

| | |
|------------------|---------|
| July 21-23 | \$ 3.00 |
| July 26-30 | 5.00 |
| Thereafter | 10.00 |

No registrations will be accepted for the Second Term later than Thursday, July 22, 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 14: 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 College 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 14, should begin registration at the Office of Admissions and Records, Minneapolis or St. Paul Campus as appropriate.

SECOND TERM

July 19: Information Booth, first floor, Morrill Hall (Minneapolis Campus students)
220 Coffey Hall (St. Paul Campus students)

Students registering in the College of Agriculture, Forestry, and Home Economics or the College 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, Morrill Hall, Minneapolis Campus, for registration materials and instructions.

Courses to Be Reserved

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. Students registered during spring 1965 obtain tally cards at their college class reservation or tally offices either during the preliminary registration period or on June 14. Students registering for Summer-Session-only obtain tally reservation cards and tally at Coffman Memorial Union on June 14.†† These class reservation cards must be attached to the student's registration blank when it is turned in to obtain statement of fees.

Itasca Biology Session

First Term: June 14-July 24

Botany

116, 135, 155—CofH 220

Entomology, Fisheries, and Wildlife

59, 124—CofH 220

Forestry

158—CofH 220

Plant Pathology and Physiology

56, 156—CofH 220

Zoology

72, 115, 119, 135—CofH 220

Second Term: July 26-September 3

Botany

112, 155—CofH 220

Entomology, Fisheries, and Wildlife

162—CofH 220

Forestry

2, 5, 6, 14—CofH 220

Zoology

119—CofH 220

First Term

Accounting

24—JohH 205

Aerospace Studies

All courses—A 1

Analytical Chemistry

57—JohH 205

All other courses under 200—E 136

Architecture

All courses—E 136

Art

All courses under 200 *except* 59—
JohH 205

Art Education

All courses under 200—Bu 206

Astronomy

All courses—JohH 205

Botany

See Itasca Biology Session

Child Psychology

223—Bu 206

Civil Engineering

All courses—E 136

Curriculum and Instruction

101, 107, 109, 125, 126, 167, 179—
Bu 206

Economics

1, 2, 65, 165—JohH 205

Education

55A, 75A—Bu 206

Educational Administration

128—Bu 206

Educational Psychology

110, 116, 116A, 125, 148, 150, 159, 193,
210, 216A, 233, 282A, 282B—Bu
206

†† Except students registering on the St. Paul Campus who tally at 220 Coffey Hall and Institute of Technology students who tally at Main Engineering 136.

Engineering Graphics

All courses—E 136

English

85 (IT)—E 136

1B, 3B, 55, 56—JohH 205

Entomology, Fisheries, and Wildlife

See Itasca Biology Session

Family Studies

1, 1A, 15—JohH 205

Forestry

See Itasca Biology Session

General Chemistry

4—CofH 220 for AFHE, and E 136 for IT, and JohH 205 for other students

All other courses E 136 for IT, and JohH 205 for other students

General College

All courses—NH 106

Geology and Geophysics

1, 109C—JohH 205

History and Philosophy of Education

180—Bu 206

Home Economics

All courses under 200—CofH 220

Home Economics Education

All courses under 200—CofH 220

Humanities

132—JohH 205

Industrial Education

136—TNCD 103

Inorganic Chemistry

All courses under 200—E 136

Mathematics

All courses—E 136

Mechanical Engineering

All courses—E 136

Mechanics and Materials

All courses—E 136

Metallurgical Engineering

All courses under 200—E 136

Methods and Student Teaching

50, 52, 53A—Bu 206

Mineral Engineering

All courses under 200—E 136

Mortuary Science

All courses—VH 114

Music

4—JohH 205

Music Education

51, 52—Bu 206

Organic Chemistry

61—CofH 220 for AFHE, E 136 for IT, and JohH 205 for other students

All other courses under 200—E 136

Personal Orientation

1—JohH 205

Philosophy

2A—JohH 205

Physical Chemistry

104, 105—E 136

Physical Education for Men

1A, 1B, 1C, 2A—JohH 205

Physical Education for Women

3, 7, 8, 11, 32, 70—JohH 205

Physics

1A, 13A—JohH 205

Plant Pathology and Physiology

See Itasca Biology Session

Psychology

4-5—JohH 205

Quantitative Analysis

5—BA 225

Rhetoric

22, 51—CofH 220

47—CofH 220 for AFHE, and JohH 205 for other students

Sociology

3—JohH 205

Speech

5X, 50, 81—JohH 205

Theatre

22, 61, 121, 131—JohH 205

Zoology

See Itasca Biology Session

Second Term

Aerospace Studies

All courses—A 1

Architecture

All courses—E 136

Art

All courses under 200—JohH 205

Art Education

All courses under 200—Bu 206

Botany

See Itasca Biology Session

Civil Engineering

All courses—E 136

Curriculum and Instruction

108, 125, 228—Bu 206

Economics

1, 2, 66, 166—JohH 205

Education

55B, 75B—Bu 206

Educational Administration

239—Bu 206

Educational Psychology

110, 116A, 150, 159, 217A, 233, 294—
Bu 206

English

85(IT)—E 136

1B, 2B, 55, 56—JohH 205

Entomology, Fisheries, and Wildlife

See Itasca Biology Session

Family Studies

1—JohH 205

Forestry

See Itasca Biology Session

General Chemistry

5—CofH 220 for AFHE, and E 136
for IT, and JohH 205 for other
students

All other courses E 136 for IT, and
JohH 205 for other students

General College

All courses—NH 106

History and Philosophy of Education

180—Bu 206

Home Economics

All courses under 200—CofH 220

Home Economics Education

All courses under 200—CofH 220

Humanities

133—JohH 205

Inorganic Chemistry

All courses under 200—E 136

Marketing

57, 157—BA 225

Mathematics

All courses—E 136

Mechanical Engineering

All courses—E 136

Mechanics and Materials

All courses—E 136

Metallurgical Engineering

All courses under 200—E 136

Mineral Engineering

All courses under 200—E 136

Mortuary Science

All courses—VH 114

Music Education

51, 52—Bu 206

Organic Chemistry

62—CofH 220 for AFHE, E 136 for
IT, and JohH 205 for other stu-
dents

Personal Orientation

1—JohH 205

Philosophy

2A—JohH 205

Physical Chemistry

105, 106—E 136

Physical Education for Men

1A, 1B, 2B, 2C—JohH 205

Physical Education for Women

7, 8—JohH 205

Physics

2A, 50A—JohH 205

Psychology

4-5—JohH 205

Quantitative Analysis

61—BA 225

Rhetoric

22, 51—CofH 220

47—CofH 220 for AFHE, and JohH
205 for other students

Speech

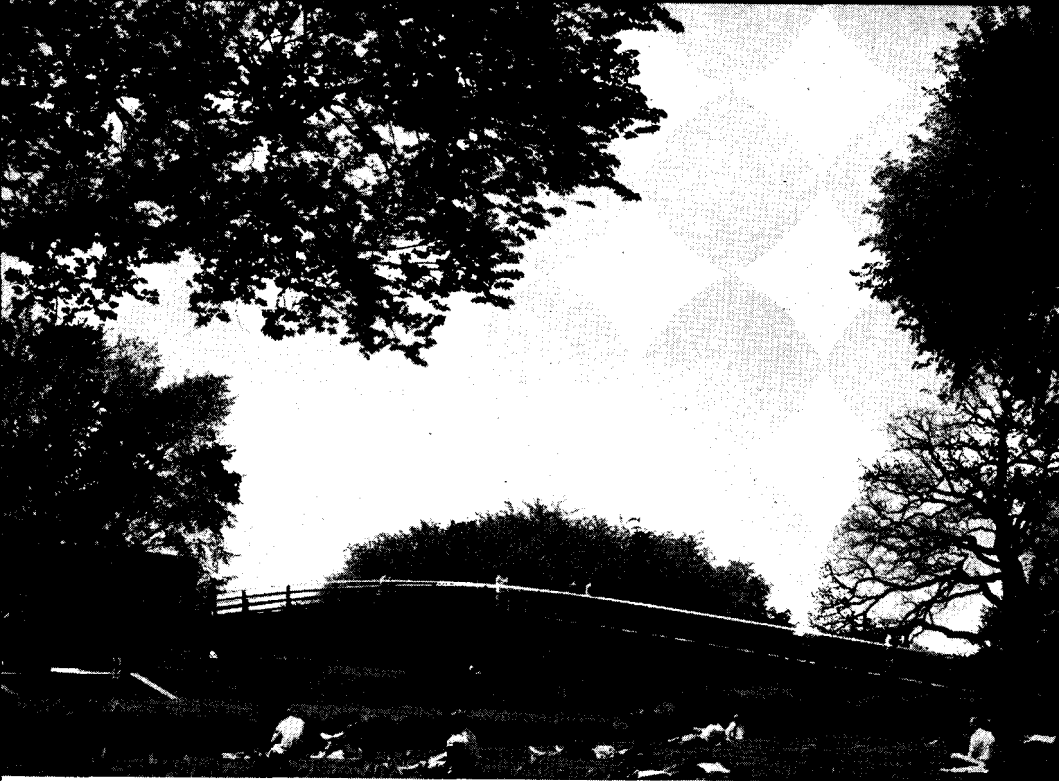
5X, 6, 65, 81—JohH 205

Theatre

21, 61—JohH 205

Zoology

See Itasca Biology Session



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) | \$59.50 |
| Incidental fee ^{‡‡} (per term) | 11.00 |
| | <hr/> |
| Total fee (per term) | \$70.50 |

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) | \$46.50 |
| Incidental fee ^{‡‡} (per term) | 11.00 |
| | <hr/> |
| Total fee (per term) | \$57.50 |

Note—Regular tuition fees as provided during the academic year will be charged all students in medicine and nursing. In law, veterinary medicine, and dentistry, students pay tuition at the summer rate or academic year rate, whichever is higher. Special tuition fees are collected for the Biology Session. All students pay the Summer Session incidental fee.

Graduate students who have passed their preliminary oral examinations and have been accepted for candidacy for the Ph.D. degree may register for 6 credits or less or thesis-only for \$20 per summer term with incidental fee optional to maintain required continuous registration. Other graduate students may register for thesis-only upon payment of \$31 tuition per term and required 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, \$45.50 per term; 3 credits or less or thesis-only, \$22.75 per term; plus incidental fee.

Please refer to the index for fees in the bulletins of the following schools, colleges, and stations:

| | |
|---------------------|--------------------------------|
| Medical School | Law School |
| School of Dentistry | School of Nursing |
| Biology Session | College of Veterinary Medicine |

^{‡‡}The incidental fee of \$11 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*.

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:

Health Service (field trips and foreign study) \$6 per summer term—required of students on University field trips such as anthropology, civil engineering, geology, mines, etc. Students in University-sponsored foreign travel groups are required to enroll in the Blue Cross-Blue Shield program or take out other adequate insurance.

Itasca Biological Station

\$ 8.50—Laboratory fee

††\$5.00 per week—Research Table fee

Modern Language Residence Houses (Summer Session)

\$40.00 per term—French (22, 56, 106); or German (22, 67, 106)

Music

\$35.00 for 2, \$70.00 for 4 half-hour individual lessons per week—A, D (no cr)

\$35.00 for 2 (2 cr), \$70.00 for 4 (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, 100

Special Fees

Music Practice Room

\$1.75 per term, 5 hours per week for 5 weeks.

\$3.50 per term, 10 hours per week for 5 weeks. (25¢ per hour for each additional hour per week—all instruments except organ.

.25 per hour—small organ

.50 per hour—large organ

Speech and Hearing Clinic—Nonstudents

Articulatory cases, per 10 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.

\$70.00—204

\$15.00—Piano for children, ages 6-16

Students paying \$35.00 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.

Physical Education (men)

Towel and locker fee for students using PE facilities for activity, \$2.50 for 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) 7, 8, 10, 32

Public Health

\$100.00 per year—169 (Field Work)

\$100.00—190 (Field Work)

\$100.00—138 (Hospital Problems)

\$200.00—230 (September field course)

\$251.00—231, 232 (Ground Water)

Speech and Hearing Clinic—Students

\$5.00 per term—special clinical treatment

Summer Session in Mexico (Span 106)

\$184.00—tuition and fees

Miscellaneous

\$ 2.50 per term—Foreign student health fee, required of all noncitizens

5.00—Credential examination

5.00—Large diploma

5.00—Master's thesis binding

25.00—Ph.D. thesis binding

5.00—Special examination

1.00—Record service fee, required of all new students

†† In lieu of tuition.

Deposit Cards

Deposit cards may be purchased from the bursar (or from the cashier, Coffey Hall, for agricultural biochemistry). Chemistry cards are \$10; biochemistry (agricultural), art, pharmacy, and biochemistry (medical) 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. 894) will receive information from their instructor concerning deposit cards and laboratory assignments.

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:

| <i>Length of Term</i> | <i>80 Per Cent Refund for Attendance</i> | <i>60 Per Cent Refund for Attendance</i> | <i>No Refund for Attendance of More Than</i> |
|-----------------------|--|--|--|
| 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) 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 Friday, July 16, 4 p.m.
Second Term Friday, August 20, 4 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 | \$10.00 |
| Institute of Technology | 5.00 |
| College of Education (except Nursing Education) | 10.00 |
| Morris (optional) | 10.00 |



Housing • Food Service

Minneapolis Campus Residence Halls—*Ada Comstock Hall* for women is a modern residence hall reserved for the use of Summer Session students and will offer comfortable living in large double and single rooms with well-planned and tasty meals prepared and served under the direction of a trained dietitian. Meals will be served in Comstock Hall every day of the week. Meals will not be served in either term until the first day of regularly scheduled classes.

Applications for residence will be filled in order of date received. To assure a choice of rooms, applications should be made as early as possible. For additional information and application forms write to Director of Comstock Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Centennial Hall, an ultra-modern men's residence, offers comfortable living in large double and single rooms. A room and board contract (meals served Monday through Friday) will be offered. Meals will not be served in either term until the first day of regularly scheduled classes. Early application is suggested. For application forms and additional information, write to Director of Centennial Hall, University of Minnesota, Minneapolis, Minnesota 55455.

St. Paul Campus Residence Hall—*Bailey Hall* is a new attractive residence hall offering comfortable accommodations in large double rooms. It has one wing for men and a separate wing for women, joined by a common lounge. A room and board contract will be offered, provided there is a sufficient number of residents. Meals will not be served until the first day of regularly scheduled classes. For application forms and information, write to Director of Bailey Hall, University of Minnesota, St. Paul, Minnesota 55101.

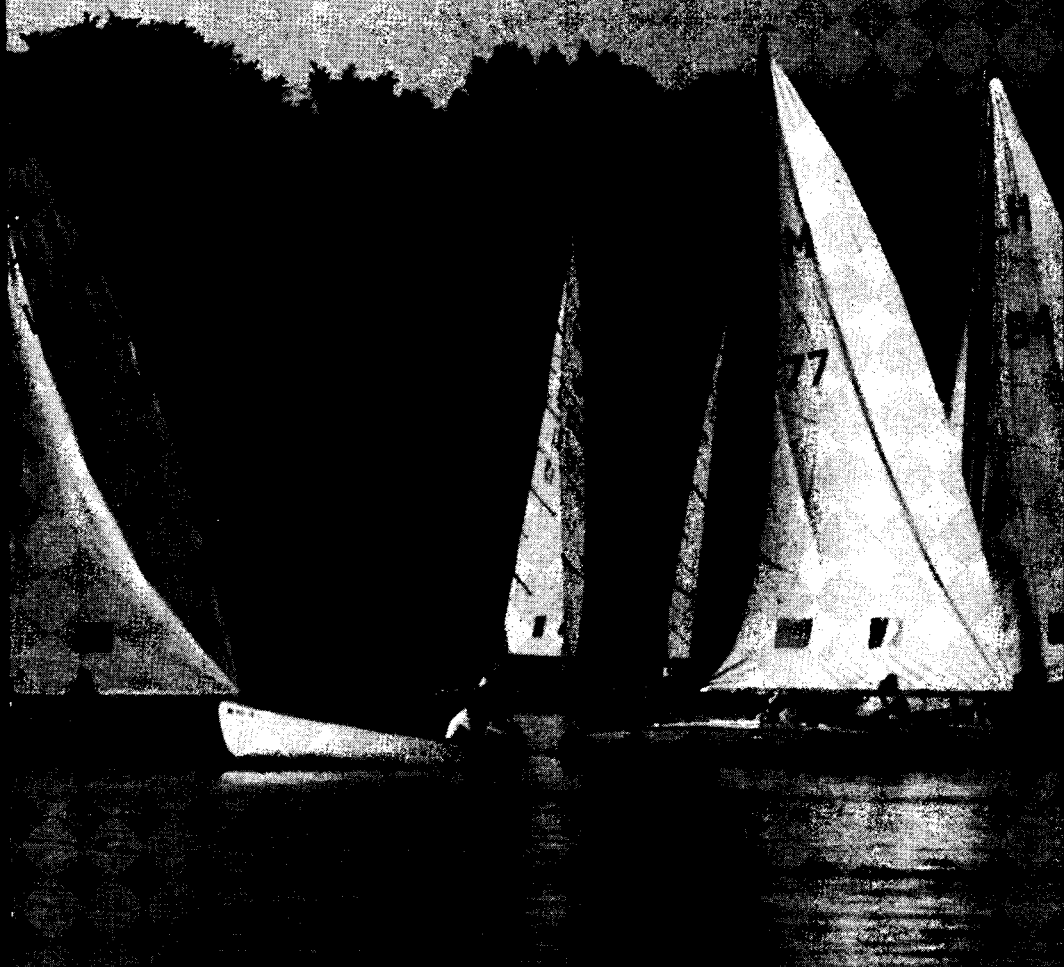
Private Residences—Many rooms in private homes, rooming houses, fraternities, sororities, and a newly remodeled private co-educational residence hall, Andrew House, are available. Rooms in Andrew House may be arranged in advance, but vacancy listings for the other types of private residences can be secured after arrival on campus. Upon request, lists of sublets in housekeeping units such as apartments and houses are available beginning in May. Residences of regularly enrolled students are inspected for health, safety, and study conditions.

Information about housing facilities and assistance in locating residence accommodations may be secured from the Student Housing Bureau, 209 Eddy Hall on the Minneapolis Campus, and 101 Coffey Hall on the St. Paul Campus.

Food Service—Several cafeterias and lunchrooms are available to students in Coffman Memorial Union. Largest is the cafeteria on the ground floor. Also there are a soda fountain and "commuters' lunchrooms" for students who bring lunches from home. Banquet, party, and private dining room facilities are also available. Lunchroom and soda fountain facilities are offered in the St. Paul Campus Student Center. In addition there are privately operated restaurants near the Minneapolis and St. Paul Campuses.



Summer Recreation



The University of Minnesota, aware of the need for relaxation during the intensive accelerated summer academic program, has planned a variety of recreational and cultural activities on campus at very little or no cost to the student.

The location of the University makes possible the use of the many cultural and recreational facilities of a large metropolitan area. Lakes and lagoons . . . swimming beaches . . . picnic grounds in parks and along roadsides . . . evening concerts on lake shores and in parks . . . art centers, museums, libraries . . . excellent 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 by public or private transportation. Trips to the famous North Shore of Lake Superior or to one of the many lakeside resorts for fishing or relaxing are possible on weekends.

Sports Program

Tournaments for men in tennis, bowling, fast and slow-pitch softball, golf, and horseshoes are arranged each summer. Men and women students may participate in badminton, golf, table tennis, and archery as free practice activities at Norris Gymnasium and at Cooke Hall. Swimming pools, with attendants and instructors, are open at scheduled hours . . . at Cooke Hall for men and at Norris Gymnasium for women. Most of these activities involve no extra charge except for towel service.

On the St. Paul Campus the pool and the gymnasium will also be open at scheduled hours.

University golf courses and tennis courts may be used by regularly enrolled Summer Session students upon presentation of their fee statements and payment of a small fee. The 18-hole golf course can be reached by car or by intercampus bus.

Sports Facilities

Facilities for healthful exercise are offered by the University's physical education plants. These include recreation fields . . . an 18-hole golf course and a 9-hole short course . . . gymnasiums and swimming pools for men in Cooke Hall, and in Norris Gymnasium for women . . . Delta Field offers facilities for baseball and softball . . . 20 tennis courts . . . space for other sports such as track, 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.

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.

Museum of Natural History

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

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

The exhibition corridors are open to the public from 8:30 a.m. to 4:30 p.m. Monday through Saturday and from 1:30 to 4:30 p.m. on Sundays and most holidays during both summer terms.

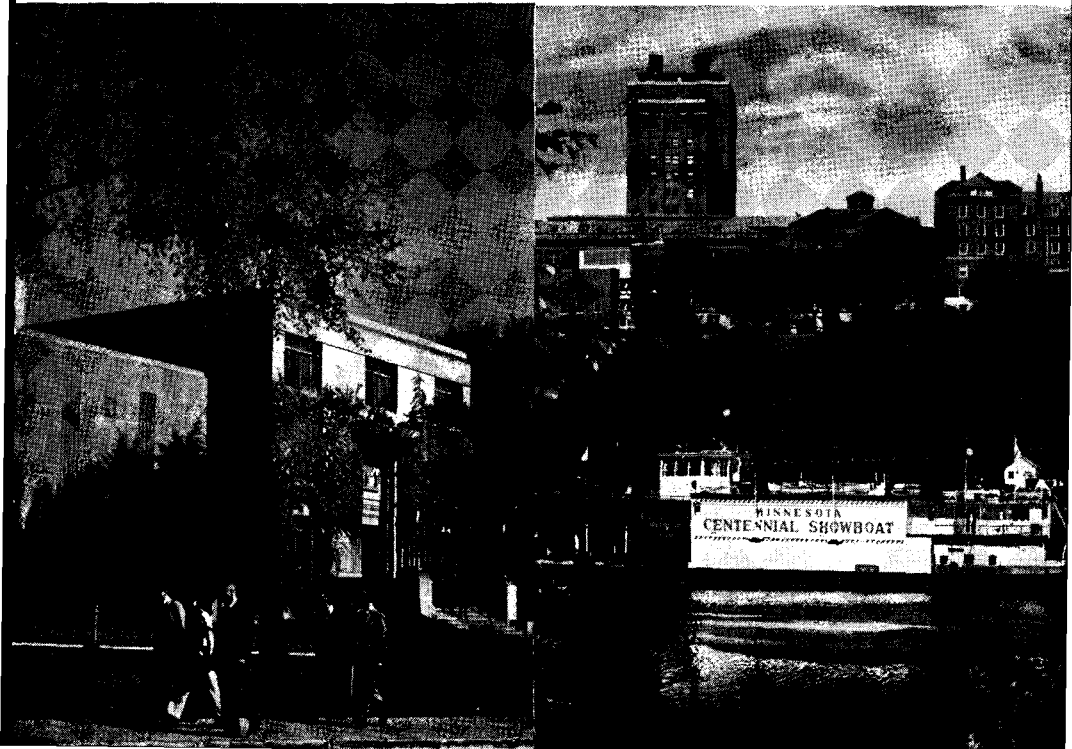
The museum's modern auditorium is widely used by many campus departments.

University Theatre

The University Theatre has won world-wide acclaim with its presentation of exceptionally fine plays on campus, its International Touring Companies, and the Minnesota Centennial Showboat. The Showboat will again be operated on the Mississippi River by the University Theatre, a high point of the Summer Session activities.

During each term the University Theatre will present a play on the Minneapolis Campus.

In addition, a series of new, experimental, and traditional plays are presented in workshops and classes by enrolled students. A series of one-act plays featuring high school actors is of special interest.





Visiting professor in theatre arts during the Second Term will be Bertram Joseph. Perhaps the foremost living authority on Elizabethan acting, Professor Joseph has, in recent years, devoted himself more and more to the development of a style of acting and directing Shakespeare which is true to Elizabethan principles and yet geared to the 20th century. To this end, he has worked with the Bristol Old Vic Company; Joan Littlewood's Company at Stratford, London E15; the London Academy of Music and Dramatic Art; and, most recently, the Stratford, Ontario, Company. (See theatre courses 61 and 212.)

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 . . . modern bowling lanes with automatic pin-spotters . . . an Art Craft Studio 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 ball-

room 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 classes in square and modern dancing, in bowling, and in bridge, in addition to social hours, parties, musical programs, and art exhibits. Many of these instruction classes and activities are open to students without charge. Some of the dancing and social hour programs are conducted on the outdoor terrace.

Films

A 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 Audio-Visual Education Service. Special film programs not regularly scheduled are announced in the *Minnesota Daily* and on the bulletin boards.

University Gallery

The University Gallery, located on the third and fourth floors of Northrop Memorial Auditorium, stresses a program of frequently changing major exhibitions which provide the opportunity to both students and staff to have contact with large numbers of original works of art from all periods and in all media.



For the student who seeks a liberal education in the arts, the University Gallery, with its exhibition program and growing permanent collection, provides a unique opportunity to supplement experiences in the lecture room, studio, and library. For the student who seeks professional training in the arts, the gallery provides research facilities and specialized exhibitions, as well as workshop training in museum principles and practices.

The University Gallery also maintains programs for the loan of framed paintings, prints, and other original works of art to students and staff for their homes or campus offices.

During the summer months, the exhibition areas of the University Gallery are open from 8 a.m. until 4 p.m., Mondays through Fridays; the loan program for students is open during the first week of each summer term; the selection of pictures for offices is by appointment. For further information, please inquire at the offices of the gallery, 316 and 306 Northrop Memorial Auditorium, or call 373-3424 or 373-3225.

St. Paul Campus Student Center

On the St. Paul Campus the Student Center will be open throughout the Summer Session. Complete information about the Student Center and the St. Paul Campus may be obtained at the information desk on the first floor of this building.

Facilities include lounges, a ballroom, a craft shop, television, magazines, a photo darkroom, conference rooms, and a games area, which includes bowling lanes, table tennis, and billiards tables.

The Rouser Room is open for those who wish breakfast, a light lunch, or a between-meal snack.



Schools and Colleges



COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

There are many courses, primarily for graduate students, in the College of Agriculture, Forestry, and Home Economics. 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 summer courses of the School of Home Economics, including the Department of Home Economics Education, are planned to meet the varying needs of undergraduate and graduate students, of 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. In addition to regularly scheduled courses, a variety of offerings has been arranged to permit those who wish to attend the national meeting of the American Home Economics Association to schedule courses afterward.

Included in the summer program are readings, seminars, special problems, and concentrated courses as well as regularly scheduled classes. It is possible for students in some areas to earn advanced degrees through work completed during the Summer Session only.

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.

Agricultural Economics (AgEc)

FIRST TERM

172 ECONOMICS OF WORLD AGRICULTURE

Distribution, quality, and utilization of agricultural resources; variations in population densities and characteristics; internal organization and techniques; comparative advantage; world trade in agricultural products; national and international policies relating to agriculture; future trends and prospects. (3 cr; 9:30-11:20 MTWThF [meets first 3 wks only]; HH 100) Blackmore

200 GENERAL SEMINAR: AGRICULTURAL ECONOMICS

Special problems for individual work by qualified students. (3 cr; prereq # in advance of regis; hrs and room ar) Staff

SECOND TERM

201 GENERAL SEMINAR: AGRICULTURAL ECONOMICS

(See 200, first term) Staff

Agricultural Education

See Index

Agricultural Engineering (AgEn)

FIRST TERM or SECOND TERM

Mechanized Agriculture (MeAg)

130 INSTRUCTIONAL METHODS IN FARM MECHANICS

Planning high school farm shops including building layouts, equipment organization, tool and supply selection, and storage methods. Administering farm mechanics programs, demonstrations, job records, and farm mechanics problems related to the student's farming program. (3 cr; prereq 4, 23, AgEd 91; hrs ar; AgEng 35 and 20)

131 PROBLEMS AND FIELD STUDIES IN ADVANCED FARM MECHANICS

Principles and practices pertaining to the implementation of an instructional program in farm mechanics. (3 cr per term, max 9 cr; prereq 130; hrs ar; AgEng 35 and 20)

Agronomy and Plant Genetics (Agro)

FIRST TERM or SECOND TERM

Agronomy

201* RESEARCH IN AGRONOMY

Problems in physiology and production of crop plants. (Cr and hrs ar; prereq 121, 127) Staff

Plant Genetics

241* RESEARCH IN PLANT GENETICS

(Cr and hrs ar; prereq 132 or equiv) Staff

244 LABORATORY METHODS IN PLANT BREEDING

Practice in plant breeding techniques, methods of controlling pollination, and handling of plant cultures. (1½ cr; prereq 132 or equiv; hrs ar) Staff

Animal Husbandry (AnHu)

FIRST TERM

166 INTRODUCTION TO ANIMAL NUTRITION

Basic concepts of animal nutrition, nature of requirements, functions of various nutrients, nature of deficiencies, and critical evaluation of reports of scientific investigations in the field. (3 cr; prereq 37, BioC 6 or #: 7:30-9:20 MTWThF; PetH 108) Smith

FIRST TERM or 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; prereq #: hrs ar) Comstock, Hanson, Jordan, Meade, Rempel, Meiske, Smith

Biochemistry (BioC)

FIRST TERM or SECOND TERM

203 RESEARCH PROBLEMS

Work on research problems in various fields of biochemistry. (2-5 cr; prereq grad, #: hrs ar) Briggs, Henderson, Jenness, Kirkwood, Liener, Schultze, Smith, Gander, Glass, Lovrien, Warner

Dairy Husbandry (DyHu)

FIRST TERM or SECOND TERM

202* RESEARCH IN DAIRY PRODUCTION

Special problems assigned to fit student needs. (Cr ar; prereq prelim grad work; hrs ar) Cole, Graham, Williams, Young, Otterby

Dairy Industries (DInd)

FIRST TERM or SECOND TERM

210* RESEARCH IN DAIRY PRODUCTS

Problems assigned to fit needs of student. (2-5 cr; prereq prelim grad work; hrs ar)
Coulter, Morris, Thomas

212* RESEARCH IN DAIRY MICROBIOLOGY

Problems assigned to fit needs of student. (2-5 cr; prereq prelim grad work; hrs ar)
Jezeski, Olson

Entomology, Fisheries, and Wildlife (Ent)††

Ample opportunity for research work in various phases of entomology, fishery biology, and wildlife biology will be afforded properly qualified students. This work will be on an individual basis.

FIRST TERM or SECOND TERM

243* RESEARCH IN ENTOMOLOGY

(Cr ar) Hodson, Chiang, Cook, Cutkomp, Haydak, Richards, Brooks, Peterson, Price

267* RESEARCH IN FISHERY BIOLOGY

(Cr ar) Smith, Waters

280* RESEARCH IN WILDLIFE BIOLOGY

(Cr ar) Marshall, Beer, Tester

Forestry (For)

Offered on the St. Paul Campus

FIRST TERM or SECOND TERM

200* RESEARCH PROBLEMS IN SILVICULTURE

(Cr ar) Hansen, Duncan, B Brown, Bakuzis

203* RESEARCH PROBLEMS IN FOREST MANAGEMENT

(Cr ar) Irving, Duncan, B Brown, Winsness

205* RESEARCH PROBLEMS IN FOREST ECONOMICS

(Cr ar) Skok

207* RESEARCH PROBLEMS IN FOREST PRODUCTS ENGINEERING

(Cr ar) Hossfeld, Kaufert, Haygreen

218* RESEARCH PROBLEMS IN FOREST UTILIZATION

(Cr ar) Hossfeld, Kaufert, Haygreen

215* RESEARCH PROBLEMS IN FOREST TREE PHYSIOLOGY

(Cr ar) Sucoff

218* RESEARCH PROBLEMS IN FOREST MEASUREMENTS AND PHOTOGRAMMETRY

(Cr ar) Meyer, John

219* RESEARCH PROBLEMS IN FOREST RECREATION

(Cr ar) Duncan

220* RESEARCH PROBLEMS IN FOREST TREE GENETICS

(Cr ar) Pauley

221* RESEARCH PROBLEMS IN FOREST INFLUENCES

(Cr ar) Duncan, Thorud

222* RESEARCH PROBLEMS IN FOREST POLICY

(Cr ar) Irving, Skok, Winsness

†† For additional courses, see index for Biology Session.

Offered at Lake Itasca Forestry and Biological Station

SECOND TERM

(August 3 to September 11)

Required of all forest resources management and forest science majors. Must be completed between sophomore and junior years. Trigonometry, a college course in botany or biology, and a college physics course are required for registration. The schedule is arranged to occupy the student's full time for 5 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 of all students. All students must register for the following courses:

2 IMPORTANT FOREST PLANTS

Identification of forest plants as related to forest types. (2 cr) Grafstrom

5 FOREST ECOLOGY

Ecological principles. Silvical characteristics of tree and shrub species. Forest communities and environmental factors. (4 cr) Hansen and Thorud

6 FIELD FOREST MEASUREMENTS

Woods surveying, tree measurements, and timber estimating. (1 cr) Ar

14 INTRODUCTION TO FOREST RECREATION

An introduction to recreational use of the forest based upon the planning, management, and interpretation at Itasca State Park. (1 cr) Duncan

Soil 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) Arneman

Home Economics (HE)

FIRST TERM

FamS 15 THE HOME AND ITS FURNISHINGS

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 cost. (3 cr, but cr added to CLA grad req; I MTWThF; JohH 122) Ludwig

24A HOME PLANNING AND FURNISHINGS I

Problems involved in choosing location and in planning or selecting a dwelling unit and its furnishings. Emphasis on design and appraisal of individual and family needs. (3 cr; prereq soph; IV MTWThF; McNH 350) Ludwig

28 CONSTRUCTION AND REFINISHING OF HOME FURNISHINGS

Laboratory problems in the refinishing and reupholstering of furniture and the making of slip covers and draperies. Emphasis on design. Techniques suitable for homemakers, extension workers, and homemaking teachers. Students furnish own materials. (3 cr; prereq #; II-III MTWThF; McNH 433) Myren

49 HOUSEHOLD EQUIPMENT

Principles that should guide in selection, operation, care, and convenient arrangement of equipment in the home. (3 cr; prereq soph, MeAg 35 or #; II-III MTThF; McNH 128) Ehrenkranz

69 ADMINISTRATIVE FOOD SERVICE EXPERIENCE

Planned experience in selected type of food service including menu planning, purchasing and storage of food, supervision of preparation and serving and maintenance of high sanitary conditions, accounting and bookkeeping. (5 cr; prereq 65; hrs and room ar) Ar

76 NUTRITION OF THE FAMILY

Principles of nutrition and the problems of food selection most commonly met in everyday living. (4 cr, \$170 and \$171; prereq 31, 40, physiology or human biology; VI MTWThF, VII-VIII Th; McNH 201) Morse

86 HOME MANAGEMENT LABORATORY

(Students should not register for a first period class.) Residence for 5 weeks in one of two home management houses, with direct experience in management and sharing of various activities and responsibilities involved in group living of the students in

residence. (4 cr; limited to 12 students; prereq 85...41 recommended; deposit of \$10 required) Ar

127 PURCHASING HOME FURNISHINGS

Detailed study of home furnishings in terms of use, cost, and appearance. Includes furniture, dinnerware, floor and wall coverings, fabrics, and accessories. Actual materials, slides, and references used. Field trips. (3 cr; prereq 24A or equiv, 50; VI-VII MTWThF, VIII T; McNH 360) Myren

133 TOPICS IN HOUSEHOLD EQUIPMENT

Assigned readings, reports, and discussions of topics in household equipment. (1-2 cr; prereq 49, total of 15 cr in physics, foods, textiles, and clothing or #; hrs and room ar) Ehrenkranz

138 FOOD PURCHASING

Cost factors, quality standards, informative labels, food laws, economy of new trends in food processing. (3 cr; prereq 15 cr in food and nutrition, principles of economics; V MTWThF; McNH 201) Trammell

144 TOPICS IN EXPERIMENTAL FOODS

Assigned readings, reports, and discussions of topics in experimental foods. (2-3 cr; prereq OrCh 42 or equiv, 15 cr in foods and nutrition; hrs and room ar) Noble

155 EXPERIMENTAL STUDIES IN CLOTHING CONSTRUCTION

The comparative study of selected procedures in clothing construction, with evaluation of suitability for use in teaching at secondary, college, and adult levels. Individual experimental problems and class reports. (3 cr; prereq 53, tchg exper, #; II-III MTWThF; McNH 327) Williams

172 CURRENT DEVELOPMENTS IN NUTRITION

Fundamental facts and techniques for solving current nutrition problems. (3 cr; prereq 31, 40, BioC 1A, Phsl 51, or #; II MTWThF; McNH 44) Sirny

183 FAMILY IN WORLD PERSPECTIVE

Comparison of family organization and modes of functioning in selected major world civilizations. Emphasis on adaptation of the family to urbanization and industrialization, and family influences on personality formation. (3 cr; prereq HEEd 90, or #; VI MTWThF; McNH 222) Ar

184 HOME MANAGEMENT PRINCIPLES

Study and discussion of managerial aspects of homemaking; work simplification of household activities; financial records and budget-making for the individual and the family. (3 cr; prereq 40...41 advised; IV MTWThF; McNH 201) Ar

187 READINGS IN FAMILY RELATIONSHIPS

Independent study in selected areas with faculty conferences. (1-3 cr per qtr, 3 cr maximum; prereq #) Ar

220 READINGS IN RELATED ART

Independent study and review of books and periodicals in selected areas of related art. Written reports. (3 cr; prereq #) Esteros

295-296 HOME ECONOMICS PROBLEMS

Food, nutrition, textiles and clothing, home management and family relationships, household equipment, related art. Independent study and written reports. (1-5 cr; prereq #) Graduate faculty

SECOND TERM

21 COLOR

Study of color theory and its application to problems in dress and interiors; experiments with paint mixing, color in light, color illusion. Emphasis on development of sensitivity and awareness. (3 cr; II-IV MTWThF; McNH 433) Abell

26 CRAFT PROBLEMS I

Beginning studio craft design and studies in one selected area such as weaving, enameling on metal, needlework, glass, or plastics. Discussions concerning production problems of the home craftsman and the designer craftsman. (3 cr; prereq 19 recommended, or #; VI-VII MTWThF; McNH 433) Abell

86 HOME MANAGEMENT LABORATORY

(See first term) Ar

86A HOME MANAGEMENT LABORATORY

(At home) (4 cr; prereq #; VI-VII TTh; ar) Ar

87 FAMILY RELATIONSHIPS

Analysis of the family as an institution and system of relationships. Survey of current developments in study of family. Analysis of changes in American society and their

influences on family life. (3 cr; prereq Psy 2, Soc 1 or 1A; V MTWThF; McNH 201) Tallman

126 CRAFT DESIGN II

Advanced craft design in one selected medium. Readings. (3 cr; prereq 25 or 26 or #; VI-VII MTWThF; McNH 433) Abell

174 NUTRITION TOPICS

Assigned readings, reports, and discussions of nutrition topics. (1 cr; prereq 170; II TTh; McNH 44) Sirny

179 READINGS IN NUTRITION

Survey of literature in the field, oral and written reports. (2 cr; prereq 170; II MWF; McNH 44) Sirny

182 PARENT IN AMERICAN SOCIETY

Analysis of the relationship between changes in American social structure and parental behavior. Analysis of contribution by psychological and sociological behavior theories to research and knowledge in parenthood and parental behavior. (3 cr; prereq 87 or equiv; VI MTWThF; McNH 201) Tallman

295-296 HOME ECONOMICS PROBLEMS

(See first term) Graduate faculty

Home Economics Education

See Index

Horticultural Science (Hort)

FIRST TERM

130 OLERICULTURE

(Lecture, laboratory, and field trips) Taxonomy and the role of climate, photoperiod, nutrition, chemical weed control, etc., on vegetable crop production. (3 cr; prereq #) Turnquist

FIRST TERM or SECOND TERM

190-191-192 SPECIAL PROBLEMS

Problems based upon work given in preceding courses. (2-4 cr each; prereq #: hrs and room ar) Staff

247* REPORTS ON SPECIAL HORTICULTURAL TOPICS

(Cr ar, maximum 9) Staff

249* RESEARCH IN HORTICULTURAL CROP BREEDING

(Cr ar, maximum 9) Currence, Hutchins, Lauer

Plant Pathology and Physiology (PiPa)††

FIRST TERM or SECOND TERM

201* RESEARCH IN NEMATOLOGY

Taxonomy, or ecology, of plant parasitic and free-living terrestrial or aquatic nematodes. (Cr ar; prereq PiPa 101 or #) Kernkamp, R V Anderson

203* RESEARCH IN PLANT PATHOLOGY

Special assignment of work in laboratory and field problems in pathological research. (Cr ar) Kernkamp, C M Christensen, Eide, French, Hart, King, Kommedahl, Moore, Rowell, Wilcoxson, N Anderson

207* PROBLEMS IN MYCOLOGY

Research along such lines as taxonomy of natural groups, fungus flora of particular regions, localities, or habitats; investigation of fungi involved in industrial or natural

†† For additional courses, see index for Biology Session.

processes; morphology or physiology of special forms. (Cr ar; prereq 105, 106, 107)
C M Christensen, N Anderson

- 254* **RESEARCH PROBLEMS IN PLANT PHYSIOLOGY**
Special assignment of work in plant physiology. (Cr ar) Rowell, Linck, Sudia

Poultry Science (Poul)

FIRST TERM or SECOND TERM

- 214* **RESEARCH IN POULTRY SCIENCE**
Research problems assigned to meet the needs of the student. (Cr ar; prereq #; hrs ar)
Staff
- 215* **RESEARCH IN POULTRY NUTRITION**
(Cr ar; prereq #; hrs ar) Waibel, Snetsinger
- 216* **RESEARCH IN POULTRY BREEDING**
(Cr ar; prereq #; hrs ar) Shoffner
- 218* **RESEARCH IN POULTRY PRODUCTS**
(Cr ar; prereq #; hrs ar) Ar

Rhetoric (Rhet)

FIRST TERM

- 22 **PUBLIC SPEAKING**
A practical course in the fundamentals of speech making. Particular emphasis upon organizing the speech and projecting it to the audience. (3 cr; limited to 20 students; prereq satisfaction of freshman communication requirements; IV MTWThF; AgEng 105) Lair
- 44 **HUMANITIES: THE AMERICAN EXPERIENCE**
The development of major trends in American thought with particular emphasis on the impact of European ideas. Puritanism, agrarianism, transcendentalism, pragmatism, social Darwinism, collectivism. (3 cr; prereq 41; V MTWThF; AgEng 108) Marchand
- 47 **EFFICIENT READING**
Designed 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. (3 cr; each section limited to 30 students) Brown, Horberg, Marchand, Price
- | | |
|----------------------------|------------------------------|
| Sec 1, I MTWThF, ForH 85 | Sec 4, IV MTWThF, ForH 85 |
| Sec 2, II MTWThF, ForH 85 | Sec 5, V MTWThF, ForH 85 |
| Sec 3, III MTWThF, ForH 85 | Sec 6, III MTWThF, AgEng 315 |
- 51 **EXPOSITION**
Essays and articles, technical writing, application letters, review of English usage. (3 cr; limited to 25 students; prereq satisfaction of freshman communication requirements; II MTWThF; AgEng 105) Lair

SECOND TERM

- 22 **PUBLIC SPEAKING**
(See first term) (IV MTWThF; AgEng 307) Nichols
- 47 **EFFICIENT READING**
(See first term) Wright, Miller
- | | |
|---------------------------|----------------------------|
| Sec 1, I MTWThF, ForH 85 | Sec 3, III MTWThF, ForH 85 |
| Sec 2, II MTWThF, ForH 85 | Sec 4, IV MTWThF, ForH 85 |
- 51 **EXPOSITION**
(See first term) (II MTWThF; AgEng 307) Davenport
- 251 **SEMINAR: LISTENING COMPREHENSION**
Research problems and methods in this field. Evaluation of published research. (2 cr, §Spch 251; III MTWThF; AgEng 221) Nichols

Soil Science (Soil)

FIRST TERM or SECOND TERM

202* RESEARCH PROBLEMS IN SOILS

Individual laboratory or field work on special problems in a phase of soils other than student's major thesis. Arrangements must be made in advance. (2-5 cr; prereq #: hrs ar) Martin, Burson, Blake, Arneman, Rust, Farnham, Grava, Caldwell, MacGregor, Schmidt, Adams, Baker

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, Farnham

BIOLOGY SESSION

Lake Itasca Forestry and Biological Station

June 14 - September 3

During two 6-week terms of the Summer Session an excellent opportunity for the study of terrestrial and fresh-water biology in its most fundamental aspects is presented 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 Liberal Arts. Classes will be held at the station beginning June 14, ending September 4.

Interested persons may find the following opportunities offered:

1. Elementary and advanced instruction for college undergraduates, graduate students, high school and nature study teachers, and others interested.
2. Opportunities for graduate students who may wish to pursue biological investigation in the lakes, fields, or forests close to the station.
3. Opportunities for teachers of botany, zoology, and biology.
4. Opportunities for guest investigators for independent research in terrestrial and fresh-water biology.

For a special bulletin describing in detail the opportunities and facilities at the station and for reservations write to Dean of the Summer Session, 690 Johnston Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Biological Research Stipends

Stipends for research workers in biology will be available at the station under the terms of a grant by the National Science Foundation (see *Bulletin of the Biology Session*).

Admission and Registration††

The courses are open to all qualified graduate and undergraduate students who have had usual preliminary courses in biological subjects.

Graduate work taken at the Itasca Biology Session may be considered for resident requirement at the University of Wisconsin upon application to the Graduate School at Madison and upon recommendation of the department concerned.

All students should make a reservation for either term not later than June 1. Students in the Twin Cities should present their Request for Reservation found on the inside of the back cover of the *Bulletin of the Biology Session* to 135 Johnston Hall on the Minneapolis Campus, or to 220 Coffey Hall on the St. Paul Campus. Out-of-town students should mail the Request for Reservation to: Director of the Biology Session, 300 Coffey Hall, University of Minnesota,

†† See section on Admission and Registration.

St. Paul, Minnesota 55101. The necessary class reservation cards will be held with the reservation request for use by the student when he registers at the station.

Fees and Expenses

Registrations will be accepted as long as class space is available.

The following fees are payable by each registrant on or before June 15 or July 27 and must be paid before registration is completed:

| | |
|----------------------|---------|
| Tuition fee | \$85.00 |
| Incidental fee | 13.20 |
| Laboratory fee | 8.50 |

Total fees for the term \$106.70

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 \$37.20 tuition per term as well as the incidental and laboratory fees.

Individuals holding the Ph.D. degree or its equivalent, pursuing research as independent investigators, will pay a Research Table fee of \$5 per week.

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 \$90 for the 6 weeks. A charge of \$18 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 each term.

Laboratory fee includes the use of microscopes, nets, boats, various class supplies, and accessories.

The estimated cost of \$214.70 for each 6-week term does not include traveling expenses, clothing, laundry, and minor incidental personal expenses.

Tuition and fees are payable on or before June 15 or July 27. After June 15 or July 27 the late fee will be charged according to the following schedule:

| | |
|--------------------------------|--------|
| June 16-18 or July 28-30 | \$3.00 |
| June 21-25 or August 2-6 | 5.00 |
| Thereafter | 10.00 |

No registration will be accepted after June 17 or July 29 without the approval of the director.

FIRST TERM

(Six weeks—June 14-July 24)

Botany (Bot)

- 116 **SUMMER FLORA OF MINNESOTA**
(5 cr; prereq 10 cr in botany or zoology, or #; TF) Thieret
- 135 **ECOLOGY OF THE ITASCA REGION**
(5 cr; prereq Bot 50 or 130 or For 4; MTh) Dix
- 155 **FRESH-WATER ALGAE**
(5 cr; prereq 10 cr in botany, biology, or zoology, or #; TF) Brook
- 196* **PROBLEMS IN ECOLOGY, TAXONOMY, BRYOLOGY, OR ALGOLOGY**
(Cr ar; prereq #) Staff
- 208* **RESEARCH PROBLEMS IN TAXONOMY**
(Cr ar; prereq #) Thieret

- 224* **RESEARCH PROBLEMS IN ECOLOGY**
(Cr ar; prereq ‡) Dix
- 236* **RESEARCH PROBLEMS IN CRYPTOGAMS**
(Cr ar; prereq ‡) Brook

Entomology, Fisheries, and Wildlife (Ent)

- 59 **FIELD ENTOMOLOGY**
(5 cr; prereq Biol 2 or equiv; TF) Cook
- 124 **THE BIOLOGY OF IMMATURE INSECTS**
(5 cr; prereq Biol 2 and Ent 52 or equiv or Δ; WS) Cook
- 196* **SPECIAL PROBLEMS IN ENTOMOLOGY, FISHERIES, AND WILDLIFE**
(Cr ar; prereq ‡) Cook, Marshall, Tester

Forestry (For)

- 158 **MEASUREMENTS OF THE FOREST ENVIRONMENT AND PLANT BEHAVIOR**
(5 cr; prereq college physics, plant ecology or physiology or ‡; WS) Sucoff, Thorud

Plant Pathology and Physiology (PiPa)

- 56 **INTRODUCTION TO THE STUDY OF FUNGI**
(5 cr; prereq jr, sr, 9 cr in botany, or ‡; MTh) French
- 156 **STUDY OF FUNGI FOR ADVANCED STUDENTS**
(5 cr; prereq 9 cr in botany, or ‡; MTh) French
- 210* **SPECIAL PROBLEMS IN MYCOLOGY**
(Cr ar; prereq grad, Myc 107) French

Zoology (Zool)

- 72 **NATURAL HISTORY OF INVERTEBRATES AND FISHES**
(5 cr; prereq Biol 2 or equiv; MTh) Cole
- 115 **ADVANCED NATURAL HISTORY OF INVERTEBRATES AND FISHES**
(5 cr; prereq 15 cr in zoology; MTh) Cole
- 119 **LIMNOLOGY**
(5 cr; prereq 15 cr in general biology incl Biol 2 or equiv; WS) Underhill
- 135 **FIELD ORNITHOLOGY**
(5 cr; prereq 15 cr in zoology; TF) Nero
- 195* **PROBLEMS IN ORNITHOLOGY, ECOLOGY, AND LIMNOLOGY**
(Cr ar; prereq Biol 2 or equiv, and ‡) Cole and Underhill

SECOND TERM

(Six weeks—July 26-September 3)

Botany (Bot)

- 112 **AQUATIC FLOWERING PLANTS**
(5 cr; prereq 10 cr in botany or zoology, or ‡; TF) Ownbey
- 155 **FRESH-WATER ALGAE**
(5 cr; prereq 10 cr in botany, biology, or zoology, or ‡; TF) Thompson
- 208* **RESEARCH PROBLEMS IN TAXONOMY**
(Cr ar; prereq ‡) Ownbey
- 236* **RESEARCH PROBLEMS IN CRYPTOGAMS**
(Cr ar; prereq ‡) Thompson

Entomology, Fisheries, and Wildlife (Ent)

162 VERTEBRATE ECOLOGY

(5 cr; prereq Bot 50 and Zool 94, or equiv; MTh) Tester, Marshall

196* SPECIAL PROBLEMS IN ENTOMOLOGY, FISHERIES, AND WILDLIFE

(Cr ar; prereq §) Marshall, Tester

Zoology (Zool)

119 LIMNOLOGY

(5 cr; prereq 15 cr in general biology incl Biol 2 or equiv; MTh) Underhill

195 PROBLEMS IN ECOLOGY AND LIMNOLOGY

(Cr ar; prereq Biol 2 or equiv, and §) Underhill

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 Liberal Arts or the Institute of Technology. These requirements may be completed at another institution. A student must have a minimum of approximately 90 credits, with an over-all grade average of at least "C." See *Bulletin of the School of Business Administration*.

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 this school 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 for the direction of graduate students working on theses. For further information, inquire at the office of the director of graduate programs 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.

Accounting (Acct)

FIRST TERM

24 PRINCIPLES OF ACCOUNTING

Recording, reporting, and interpreting business events. Use of accounting as a tool of business management. (3 cr, §55A; prereq 3rd qtr fr)

Sec 1, I MTWThF, CB 110, Ar

Sec 2, II MTWThF, CB 125, Lund

25 PRINCIPLES OF ACCOUNTING

Continuation of Acct 24. (3 cr, §55B; prereq 24; II MTWThF; CB 145) Ar

55A ELEMENTARY ACCOUNTING

The equivalent of Acct 24 (Principles of Accounting) for School of Business Administration students and for 5-year combined engineering and business students. (4 cr, §24; counts as Lower Division course when transferred to CLA; prereq soph [summer only]; III MTWThF and 2 hrs ar; CB 220) Bentley

55C MANAGERIAL COSTS

General survey of cost accounting from the point of view of the executive who must use cost information in conduct of his business. (3 cr, §115A, §115B, §265A; prereq 26 or equiv; II MTWThF; CB 225) Bentley

85†† ACCOUNTING FOR LAW STUDENTS

Accounting concepts and practices, their relationship to the law. Designed for law and prelaw students. (1½ cr per term for law students, 2½ cr per term for others, §55A-B, §24-25-26; prereq Upper Division law or prelaw students; 1:00-1:50 MTWThF; FraH 120) Pavlock

105A†† INTERMEDIATE ACCOUNTING I

Review of accounting processes, nature and measurement of business income, accounting treatment of inventories and plant assets. (1½ cr per term; prereq 26 or equiv; III MWF; CB 230) Pavlock

115A†† COST ACCOUNTING

Practices, principles, and procedures of handling production costs for use in inventory valuation and income determination. Job order, process, and standard cost systems. A brief introduction to standard cost as a tool of cost control. (1½ cr per term, §55C; prereq 26 or equiv; IV MWF; CB 240) Pavlock

125†† AUDITING PRINCIPLES AND PROCEDURES

Verification of financial data. Consideration is given to procedures, programs, work papers, standards, and reporting. (2 cr per term; prereq 105C or ¶105C and 105B; I MTWF; CB 415) Berryman

135†† INCOME TAX ACCOUNTING

The more common and important provisions of the Federal and State of Minnesota income tax systems. Problems and case research for individuals, partnerships, and corporations. (2 cr per term; prereq 55D or 105A or §; II MTWF; CB 415) Berryman

155A INTRODUCTION TO MANAGERIAL ACCOUNTING

(See Acct 55A) (3 cr, §24 or §55A; prereq grad or §; III MTWThF and 2 hrs ar; CB 220) Bentley

185A ADVANCED ACCOUNTING

Consolidated statements, fiduciary and fund accounting, partnership accounting. (3 cr; prereq 105C or ¶105C; IV MTWThF; CB 210) Lund

265A MANAGERIAL COST ACCOUNTING

(See Acct 55C) (3 cr, §55C, §115A, §115B; prereq 26 or equiv; II MTWThF; CB 225) Bentley

SECOND TERM**25 PRINCIPLES OF ACCOUNTING**

(See first term) (I MTWThF; CB 110) Ar

26 PRINCIPLES OF ACCOUNTING

(3rd qtr—see Acct 24, first term) (3 cr, §55B; prereq 25; II MTWThF; CB 110) Ar

55B ELEMENTARY ACCOUNTING

Combined course—continuation of Acct 55A. The equivalent of Acct 25-26 (Principles of Accounting) for School of Business Administration students and for 5-year combined engineering and business students. (4 cr, §25-26; to be counted as Lower Division course when transferred to CLA; prereq soph [summer only], 55A; III MTWThF and 2 hrs ar; CB 145) Smith

85†† ACCOUNTING FOR LAW STUDENTS

(See first term) (1:00-1:50 MTWThF; FraH 120) Pavlock

105A†† INTERMEDIATE ACCOUNTING I

(See first term) (III MWF; CB 220) Pavlock

115A†† COST ACCOUNTING

(See first term) (IV MWF; CB 230) Pavlock

125†† AUDITING PRINCIPLES AND PROCEDURES

(See first term) (I MTWF; CB 415) Berryman

135†† INCOME TAX ACCOUNTING

(See first term) (II MTWF; CB 415) Berryman

155B INTRODUCTION TO MANAGERIAL ACCOUNTING

Combined course—continuation of Acct 155A. (See Acct 55B) (3 cr, §25-26 or §55B; prereq grad or §, 155A; III MTWThF and 2 hrs ar; CB 145) Smith

†† The course runs for 2 terms. No credit is given for First Term until satisfactory completion of Second Term.

Business Finance (BFin)

FIRST TERM

56 CORPORATION FINANCE

Principles governing the planning, raising, and control of short- and long-term funds for a business enterprise. Cash-flow, valuation, capital structures, investment banking, dividend policy, mergers, and reorganization. (3 cr, §156; prereq Acct 26; not suggested for students who have had Acct 105B; I MTWThF; CB 135) Stevenson

76 FINANCIAL MANAGEMENT

Financial problems of business concerns presented in case materials. Application of principles to such situations as budgeting, short- and long-term funds needs, debt and equity choices, mergers, and reorganizations. (3 cr, §276; prereq 56 or Acct 105B; III MTWThF; CB 120) Stevenson

72 CAPITAL MARKETS AND INSTITUTIONS (formerly BFin 106)

Study of the characteristics and institutional structure of the money and capital markets and their interrelationship through interest rates and prices. Observation of price behavior of the market as a whole and of specific types of securities. Attention to new issue markets and to secondary trading on over-the-counter and national exchanges. (3 cr; prereq 56; IV MTWThF; CB 145) Ar

156 CORPORATION FINANCE

(See BFin 56) (3 cr, §56; prereq grad, Acct 26 or 155B; I MTWThF; CB 135) Stevenson

276 FINANCIAL MANAGEMENT

(See BFin 76) (3 cr, §76; prereq 56 or 156; III MTWThF; CB 120) Stevenson

SECOND TERM

56 CORPORATION FINANCE

(See first term) (I MTWThF; CB 135) Nelson

66 INVESTMENT FUNDAMENTALS (formerly BFin 116)

An introduction into the appraisal of securities and the management of investment funds, essentially from the viewpoint of an individual investor. Stresses principles of value determination and risks associated with investment in the various types of securities. Includes appraisal of bonds and preferred stocks, with main attention to appraisal of common stocks. Coverage includes industrials, utilities, financial institutions and investment companies, and government units. (3 cr; prereq 56; III MTWThF; CB 110) Nelson

Business Law (BLaw)

FIRST TERM

58 BUSINESS LAW: CONTRACTS

Law of contracts. Case methods used in BLaw 58, 78, 88, and 98. (3 cr, §158; prereq Econ 2 or equiv; I MTWThF; CB 140) Wright

158 BUSINESS LAW: CONTRACTS

(See BLaw 58) (3 cr, §58; prereq grad or #; I MTWThF; CB 140) Wright

Industrial Relations (IR)

FIRST TERM

52 SYSTEMS OF INDUSTRIAL RELATIONS: LABOR MARKETING

Introduction to current employment relationships; an economic approach and analysis. The application and conservation of human resources in employment, related social and economic problems. Labor marketing, collective bargaining, unions and employer associations, industrial unrest and conflict, employment and unemployment, wage problems. (3 cr, §152; prereq Econ 2 or equiv; III MTWThF; CB 240) Ar

72 SYSTEMS OF INDUSTRIAL RELATIONS: MANPOWER MANAGEMENT

Personnel management and labor relations, the development and application of effective work-teams within firms and agencies. Overview of policy and practice in major manpower management functions of staffing, training, communications, motivation, compensation, and morale maintenance. (3 cr, §172; prereq Econ 2 or #; II MTWThF; CB 110) Ar

152 PRINCIPLES OF INDUSTRIAL RELATIONS: LABOR MARKETING

(See IR 52) (3 cr, §52; prereq grad or #; Econ 2 or equiv; III MTWThF; CB 240) Ar

172 PRINCIPLES OF INDUSTRIAL RELATIONS: MANPOWER MANAGEMENT

(See IR 72) (3 cr, §72; prereq Econ 2 or #; II MTWThF; CB 110) Ar

192 INDUSTRIAL RELATIONS PRACTICES AND TECHNIQUES

Role of quantitative measurement and analysis in formulation, administration, and evaluation of industrial relations practices and programs. (3 cr; prereq 72 or 172, 3 cr statistics; III-IV TTh; CB 125) England

202 ORGANIZATION AND STAFFING

Translation of organization goals and objectives to specific manpower goals and objectives, and staffing to meet an organization's manpower needs. Techniques for recruitment, selection, and assignment of manpower resources for optimal utilization. (3 cr; prereq 72 or 172; III-IV MWF; CB 125) England

SECOND TERM

52 SYSTEMS OF INDUSTRIAL RELATIONS: LABOR MARKETING

(See first term) (III MTWThF; CB 230) Smythe

152 PRINCIPLES OF INDUSTRIAL RELATIONS: LABOR MARKETING

(See first term) (III MTWThF; CB 230) Smythe

182A INTERMEDIATE LABOR MARKETING

Advanced discussion and analysis of labor marketing concepts, structures, and processes. Examination of sources of information and different approaches to study, analysis, and resolution of problems in the labor market. (3 cr; prereq 52 or 152; III-IV MWF; CB 125) Mahoney

242 MANAGEMENT DEVELOPMENT

Examination of today's management development movement including management development programs within industry and in universities. Basic policy, current problems, and research findings concerning selection of management trainees, management appraisal and inventory, management motivation and compensation, and methods and techniques of development. (3 cr; prereq 72 or 172; III-IV TTh; CB 125) Mahoney

282 GRADUATE TOPICS—COLLECTIVE BARGAINING

Advanced analysis and study of role and nature of collective bargaining in industrial relations. Examination of impact and implications of collective bargaining, alternative approaches to conflict resolution, and evaluation of proposals for improvement. (3 cr; prereq 152 or 172; II MTWThF; CB 145) Smythe

Insurance (Ins)

FIRST TERM

53 RISK MANAGEMENT AND INSURANCE

Recognition, measurement and evaluation of insurable personnel, property, and liability risks of economic units. Tools of risk management; retention, loss prevention, transfer, and others with emphasis on insurance. Design and implementation of the optimum risk management program. Government regulation of insurance. (3 cr, §153; prereq Econ 2 or equiv; II MTWThF; CB 155) Williams

93 PROPERTY AND LIABILITY INSURANCE I

Nature and relative importance of insurable property and liability risks; analysis of property and liability insurance contracts; insurance surveys—optimum property and liability insurance programs. (3 cr, §223; prereq 53; IV MTWThF; CB 120) Williams

153 RISK MANAGEMENT AND INSURANCE

(See Ins 53) (3 cr, §53; prereq grad or §, Econ 2; II MTWThF; CB 155) Williams

223 PROPERTY AND LIABILITY INSURANCE I

(See Ins 93) (3 cr, §93; prereq 153; IV MTWThF; CB 120) Williams

Management (Mgmt)

FIRST TERM

70 FUNDAMENTALS OF MANAGEMENT

The principal functional areas of management: planning, organizing, staffing, directing, and controlling. Examines attributes of good organization; establishment of goals, policies, and procedures; control systems and techniques; providing necessary factors and relationships to achieve organizational objectives. (3 cr; prereq 1st qtr sr; I MTWThF; CB 255) Ar

150A FUNDAMENTALS OF MANAGEMENT

A first course in management at the graduate level covering functions of the manager; planning, organization, staffing, direction, and control. Activities, problems, and com-

mon remedies under each of these functional headings. Case analysis designed to bring out specific points and develop insights into management problems. (3 cr, §70, §old 160, §old 170; prereq grad or §; III MTWThF; CB 255) Wickesberg

Marketing (Mktg)

FIRST TERM

57 PRINCIPLES OF MARKETING

Marketing functions and institutions. Channels of distribution. Retail and wholesale trade. Pricing policies and practices. Marketing policies and methods for consumers' goods, producers' goods, and raw materials. (3 cr, §157; prereq Econ 2 or equiv; II MTWThF; CB 255) Holloway

97 MARKET ANALYSIS AND RESEARCH I

Techniques used in marketing research. Emphasis on marketing information which can aid in the solution of marketing problems. Selected nonsurvey and survey research techniques. (3 cr, §217; prereq QA 51, 57; IV MTWThF; CB 220) Holloway

157 MARKETING FUNDAMENTALS

(See Mktg 57) (3 cr, §57; prereq grad or §, Econ 2 or equiv; II MTWThF; CB 255) Holloway

187 PRICE POLICY

Managerial problems concerning pricing and price policy. Methods used and factors considered in pricing goods and services in industrial and consumer markets. Topics include administered pricing, price behavior, non-price competition, government intervention, pricing objectives, organization for pricing, price leadership. (3 cr [not available for grad cr]; prereq 57; III MTWThF; CB 145) Harper

217 MARKET ANALYSIS AND RESEARCH

(See Mktg 97) (3 cr, §97; prereq 51 or 151 and 57 or 157; IV MTWThF; CB 220) Holloway

287 PRICE POLICY

Managerial problems concerning pricing and price policy. Methods and factors considered in pricing goods and services in industrial and consumer markets. Topics include administered pricing, price behavior, non-price competition, government intervention, pricing objectives, organization for pricing, price leadership, and others. (3 cr, §187; prereq 57 or 157; III MTWThF; CB 145) Harper

SECOND TERM

57 PRINCIPLES OF MARKETING

(See first term)

Sec 1, I MTWThF, CB 220, Hancock

Sec 2, III MTWThF, CB 135, Hancock

77 ADVERTISING

A survey of economics and functions of advertising, budgets, agencies, media, copy, layout, printing processes, and research. (3 cr, §207; prereq 57...Psy 156 recommended; II MTWThF; CB 220) Lewis

117 SALES MANAGEMENT I

Sales policies and planning, sales organization, election, training and compensation of salesmen, control of sales performance, sales budgets, and cost control. Case materials. (3 cr, §237; prereq 57; IV MTWThF; CB 220) Lewis

157 MARKETING FUNDAMENTALS

(See Mktg 57) (3 cr, §57; prereq grad or §, Econ 2 or equiv)

Sec 1, I MTWThF, CB 220, Hancock

Sec 2, III MTWThF, CB 135, Hancock

207 ADVERTISING AND SALES PROMOTION

(See Mktg 77) (3 cr, §77; prereq 57 or 157; II MTWThF; CB 220) Lewis

237 SALES MANAGEMENT

(See Mktg 117) (3 cr, §117; prereq 57 or 157; IV MTWThF; CB 220) Lewis

Production (Prod)

FIRST TERM

50 PRODUCTION MANAGEMENT

The techniques, the managerial problems, and the decision-making processes in planning and controlling the production activity. Production as a function of the

enterprise rather than as a strictly manufacturing activity. Research and development, the role of standards, physical facilities, systems and procedures analysis, work measurement, materials control, quality control, and production planning and control. (3 cr, §150B; prereq Econ 2 or equiv; I MTWThF; CB 145) Hoffmann

150B ADMINISTRATION OF PRODUCTION

Fundamentals of production from management point of view. Techniques, managerial problems, and decision-making processes in administration of production function. Limited use of case material and/or field study to observe practical difficulties in utilizing operating principles. (3 cr, §50; prereq Mgmt 150A or §; II MTWThF; CB 120) Hoffmann

Quantitative Analysis (QA)

FIRST TERM

5 ELEMENTS OF STATISTICS

Sources and collection of data, tabular and graphic presentation; frequency distributions; probability; sampling; introduction of statistical estimation and decision-making. (3 cr, §151, §Soc 45, §Psy 70; prereq Math 10 or equiv)

Sec 1, 8:30-9:30 MTWThF, MurH 420, Ar
Sec 2, 9:30-10:30 MTWThF, MurH 420, Ar

51 BUSINESS STATISTICS

Basic concepts of regression and correlation; statistical estimation and decision-making, applications to survey sampling, acceptance sampling and statistical quality control; time series analysis and index numbers. (3 cr, §161; prereq soph with §, 5 or equiv; IV MTWThF; CB 205) Ar

171 STATISTICAL METHODS FOR SAMPLE SURVEYS

Sampling methods, stratified sampling, multistage sampling and cluster sampling; methods of estimation, ratio and regression estimates; design of surveys taking into account various costs; statistical measurement and control of nonsampling errors. (3 cr; prereq 51 or 151 or equiv; III MTWThF; CB 450) Ar

258 QUANTITATIVE APPROACHES TO ADMINISTRATIVE PROBLEMS I

Uses of probability, statistics, mathematics, economic analysis, and operations research in the solution of business problems at administrative levels. (3 cr; prereq 151, Acct 155A, 155B, Econ 65 or 165 or equiv; II MTWThF; CB 220) Ar

SECOND TERM

5 ELEMENTS OF STATISTICS

(See first term) (IV MTWThF; CB 145) Ar

51 BUSINESS STATISTICS

(See first term) (III MTWThF; CB 205) Ar

61 INTRODUCTION TO ELECTRONIC COMPUTERS

Basic concepts of computer logic and construction. Flow charting and programming problems for computers. Operating a computer. Programming and processing short problems. (2 cr; prereq QA 5, Math 10 or equiv; Lect IV MTWThF; CB 205) Braasch

Sec 1, hrs ar, CB 93

Sec 2, hrs ar, CB 93

Transportation (Tran)

FIRST TERM

54 FUNDAMENTALS OF TRANSPORTATION

Organization and economic aspects of the transportation system of the United States including rail, highway, air, pipeline, and water transportation. Nature of the transportation function in business. Regulatory problems. Current developments and problems. (3 cr, §154; prereq Econ 2 or equiv; IV MTWThF; CB 230) Harper

154 TRANSPORTATION I: PRINCIPLES AND BUSINESS LOGISTICS

(See Tran 54) (3 cr, §54; prereq grad only, Econ 2 or equiv; IV MTWThF; CB 230) Harper

SCHOOL OF DENTISTRY

The School of Dentistry will not offer courses regularly scheduled in the dental curriculum unless the necessity arises to offer such instruction for students who may fail and will need to remove such failures before being promoted to the 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: Clark, Gorlin, Hall, Hampel, Holland, Holte, Jensen, Korn, Meyer, Morstad, Olsen, Petersen, Serr, Stallard, Wakely, Wittich, Yamane, Yock.

Dentistry fees during the summer quarter are: full-time tuition, resident \$155, nonresident \$330; less than a full program may be paid at the summer rate or academic year rate, whichever is higher. There will be an incidental fee of \$22.

COLLEGE OF EDUCATION

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. Under each of the four divisions, courses of general interest are listed under *General Courses*; these are followed by the offerings in *Elementary Education*, *Secondary Education*, and *Higher Education*.

Summer Session students who do not expect to become candidates for an undergraduate or graduate degree do not need to make application for admission nor present credentials (see section on Admission and Registration). Those wishing to enter a graduate program should apply immediately for admission to the Graduate School (see Admission under Graduate School section). Students expecting to become candidates for a Bachelor's degree 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.

For all general matters relating to admission, advanced standing, credits, grade points, curriculums, and requirements for graduation, students should consult the *Bulletin of the 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 or secondary education or the Student Personnel Office, 206 Burton Hall, concerning a program for renewal of certificates. Summer programs for those planning to re-enter secondary school teaching should include courses in their teaching subjects.

Counseling Services

The staff of the Student Personnel Office of the College of Education 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 chairman or his representative will be available in 206 Burton Hall during both terms.

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 program.

Student Teaching

Student teaching during summer terms is open only to certain groups of students completing programs in the College of Education: (a) regularly approved applicants for student teaching in nursing and in the nursery school-kindergarten program; (b) secondary education seniors needing 3 or less credits for completion of graduation requirements in the First Term; (c) elementary education seniors working toward junior high school endorsement; and (d) some students in special education. Application must be made by May 28 in the Student Teaching Office, 227 Burton Hall. Because of limited facilities, it is not possible to offer student teaching to students completing programs in other institutions.

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 art, the language arts, mathematics, social studies, science, speech, debate, theater, typing, and German. The summer program emphasizes both 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, Peik Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Students registered in student teaching will be assigned to observation and student teaching in the classes of the high school. The facilities of the high school are available to college classes for demonstration purposes. (I, II, III, IV MTWThF)

Summer Demonstration Elementary School

Tuttle Elementary School, grades 1 to 6 inclusive, will be in operation during First Term. The school will be staffed by the principal and teachers of the Tuttle School which is used as a demonstration elementary school of the College of Education under a co-operative agreement with the Board of Education of the City of Minneapolis. The school may be observed by students of elementary school methods and by those registered in the laboratory course in elementary school practices. (See EdCI 186) (I, II, III, IV MTWThF; Tuttle School, Talmadge and 18th Avenues S.E.)

Psycho-Educational Clinic

The Psycho-Educational Clinic will be in operation during both terms for purposes of training, research, and service. The clinic program will include remedial reading classes for children whose difficulties have been previously diagnosed and for whom special remedial work has been recommended. These children will attend school 2 hours daily, 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 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 257. Information may be obtained from the Director, Psycho-Educational Clinic, Pattee Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Preschool

The Institute of Child Development maintains a preschool in the First Term available for demonstration and observation. Courses offered by the institute are given for teachers wishing nursery school training and others interested in child psychology.

Master's Degree Candidacy

Normally, only those students whose candidacy for the M.A. degree has been approved will be registered for research problems. All M.A. students majoring in any area of education must apply for candidacy for the Master's degree, through the College of Education, after having completed 9 to 12 credits of their programs. Candidacy approval requires (1) a B average for graduate courses completed, (2) endorsement of the adviser, and (3) satisfactory standing on the examinations required of all entering graduate students in the fields of education. Dates for the battery of tests required under (3) above will be announced in graduate classes and in the Official Daily Bulletin. These should be taken only after admission to the Graduate School and completion of 9 credits of course work, or at the request of the student's adviser.

Detailed Description of Courses

For detailed description of courses and curriculums in education see the *Bulletin of the College of Education*.

Agricultural Education (AgEd)

FIRST TERM

- 141 **SUPERVISED FARM PRACTICE IN VOCATIONAL AGRICULTURE**
Selection, planning, supervising, and summarizing of individual farming programs. Adaptation to meet needs of high school F.F.A. students, young farmers, and adults. (3 cr; prereq 10 cr in education or #; I-II MTWThF first 3 wks, ar second 2 wks; Hr 301)
- 221 **FIELD PROBLEMS**
The development and study of special problems in the field of the individual student's choice. (3 cr; hrs ar) Peterson, Kitts, Swanson, Marvin
- 232* **RESEARCH IN AGRICULTURAL EDUCATION**
Selecting research problems, preparing bibliographies, analyzing and interpreting data, and preparing manuscripts. (Cr ar; prereq 15 cr in education) Peterson, Kitts, Swanson, Marvin
- 250 **SUPERVISION OF VOCATIONAL AGRICULTURE**
Objectives, functions, responsibilities of state and local supervision at the secondary level; role in teaching-learning process; organizing supervisory activities; aids to effective supervision. (1-3 cr; prereq #; III-IV MTWThF first 3 wks, ar second 2 weeks; Hr 301) Peterson

SECOND TERM

- 221 **FIELD PROBLEMS**
(See first term) Peterson, Kitts, Swanson, Marvin
- 232* **RESEARCH IN AGRICULTURAL EDUCATION**
(See first term) Peterson, Kitts, Swanson, Marvin

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 pro-

vides opportunities to combine a creative art career with a teaching position, a combination popular with many outstanding contemporary artists.

During Summer Session 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 in the College of Liberal Arts.

FIRST TERM

- 17 PICTORIAL EXPRESSION FOR ELEMENTARY EDUCATION**
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; WuH 240) Mitra
- 18 DESIGN ACTIVITIES FOR ELEMENTARY EDUCATION**
Relationships between art and nature. Problems in invention, arrangement and decoration, color, lettering, posters, bulletin board displays, etc. (3 cr; III-IV MTWThF; WuH 210) Mitra
- 80 CONTEMPORARY CRAFTS**
Basic materials, equipment, design criteria and techniques for textile, wood, metal, and ceramics. Contemporary emphasis for application to educational programs in elementary and secondary schools, adult education, special education, recreation, and occupational therapy. (3 cr; each section limited to 30 students) Cooper
Sec 1, I-II MTWThF, WuH 110 and 120
Sec 2, III-IV MTWThF, WuH 110 and 120
- 151 CURRICULUM BUILDING IN ART EDUCATION**
Selection, evaluation, and organization of material for teaching units and projects. (3 cr; limited to 35 students; I MTWThF; WuH 130) Hastie
- 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; II MTWThF; WuH 220) Gayne
- 184 IMPROVING ART PROGRAMS IN THE ELEMENTARY SCHOOL**
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 tchg exper or ‡; IV MTWThF; WuH 220) 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 tchg exper or ‡; III MTWThF; WuH 130) Hastie
- 295* PROBLEMS IN ART EDUCATION**
Independent projects under staff guidance; may include advanced studio practice or technical problems requiring experimental or library research. (Cr ar; prereq ‡) Gayne, Hastie
- 296 SEMINAR: 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; VI Th; WuH 130) Gayne and staff

SECOND TERM

- 17 PICTORIAL EXPRESSION FOR ELEMENTARY EDUCATION**
(See first term) (I-II MTWThF; WuH 240) Olson
- 18 DESIGN ACTIVITIES FOR ELEMENTARY EDUCATION**
(See first term) (III-IV MTWThF; WuH 210) Davis
- 19 FUNCTIONAL ARTS AND CRAFTS IN ELEMENTARY EDUCATION**
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; III-IV MTWThF; WuH 220) Olson
- 184 IMPROVING ART PROGRAMS IN THE ELEMENTARY SCHOOL**
(See first term) (IV MTWThF; WuH 110) Gayne
- 295* PROBLEMS IN ART EDUCATION**
(See first term) Gayne

Institute of Child Development

The Institute of Child Development is one of the country's oldest and best known centers for research and training in child psychology. The institute offers graduate and undergraduate courses, and conducts a nursery school for demonstration and research, and the Child Development Clinic for the training of students in clinical work with children.

Nursery School

The Nursery School will be in session from 8:30 to 12 noon, beginning June 15 and closing July 16. Applications for the enrollment of children will be received at the office of the institute. Tuition is \$35 for the term. Parents are responsible for the transportation of their children to and from the school.

Child Development Clinic

The Child Development Clinic will operate during the First Term. The clinic is open to parents seeking guidance concerning children's problems of adjustment.

Child Psychology (CPsy)

FIRST TERM

80 CHILD PSYCHOLOGY

Introduction to the science of child behavior. Emphasis is placed upon a critical review of theories and research in child psychology. (3 cr; prereq Psy 2; II MTWThF; Arch 10) K Hill

132 ADOLESCENT DEVELOPMENT

Physical, personal, and social changes occurring during adolescent years. (3 cr; prereq sr, 12 cr in psychology, educational psychology, sociology, or home economics; I MTWThF; CD 218) Harper

140 BEHAVIOR PROBLEMS

Types, origin, development, and treatment of behavior difficulties in normal children. (3 cr; prereq 80 or equiv; III MTWThF; CD 218) Harper

143 PROBLEMS OF MENTAL DEFICIENCY

Diagnosis, care, training; social and vocational problems. (3 cr; prereq 80 or equiv; II MTWThF; CD 218) Birnbrauer

144 PSYCHOLOGY OF THE GIFTED CHILD

Psychology and development of high intellectual ability and of special talents. (3 cr; prereq 80 or equiv; II MTWThF; FraH B-1) Charlesworth

179 CLINICAL PROCEDURES WITH CHILDREN

Survey of methods of clinical psychology emphasizing basic concepts and research problems in clinical work with children. Primarily for students not majoring in clinical psychology. (3 cr; prereq 12 cr in psychology, educational psychology, sociology or child psychology; III MTWThF; Pt 202) Hall

180 PERSONALITY DEVELOPMENT

Development of personality in children. Emphasis on psychoanalytic and behavior theory formulations and related research literature. (3 cr; prereq 80; IV MTWThF; CD 218) Stein

190 TOPICS: CHILD PSYCHOLOGY

Independent reading or research. (Cr and hrs ar; prereq #) Ruebush and staff

223 SEMINAR: DEVELOPMENTAL PSYCHOLOGY

(3 cr; each section limited to 15 students; prereq #; hrs ar)

Sec 1, CD 102, Eichorn

Sec 2, CD 102, White

250 PRACTICUM IN CLINICAL CHILD PSYCHOLOGY

Supervised experience in psychodiagnostic work with emotionally disturbed children and their families. (5 cr; prereq #; hrs ar) Ruebush

- 295 **SEMINAR: PROJECTIVE METHODS WITH CHILDREN AND ADOLESCENTS**
 Demonstrations, critical analysis and discussion of research tools and clinical devices.
 (3 cr; prereq #: I MTWThF; CD 205) Hall

SECOND TERM

- 80 **CHILD PSYCHOLOGY**
 (See first term) (II MTWThF; CD 218) Klein
- 132 **ADOLESCENT DEVELOPMENT**
 (See first term) (II MTWThF; FolH 202) J Hill
- 140 **BEHAVIOR PROBLEMS**
 (See first term) (I MTWThF; Pt 202) Galese
- 179 **CLINICAL PROCEDURES WITH CHILDREN**
 (See first term) (I WThF and hrs ar; CD 218) Wiener
- 180 **PERSONALITY DEVELOPMENT**
 (See first term) (IV MTWThF; CD 218) J Hill
- 181 **SOCIAL DEVELOPMENT**
 Family and peer influences; social interaction and social relations; developmental changes.
 (3 cr; prereq 80 or equiv; III MTWThF; CD 218) K Hill
- 190 **TOPICS: CHILD PSYCHOLOGY**
 (See first term) (Cr and hrs ar; prereq #) J Hill and staff

Educational Administration (EdAd)

FIRST TERM

GENERAL COURSES

- 101 **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, not open to majors in EdAd; II MTWThF; FolH 103) Popper
- 128† **WORKSHOP: EDUCATIONAL ADMINISTRATION**
 Laboratory approach which provides opportunities for experienced administrators to concentrate their study on common administrative and supervisory problems. (1-4 cr; limited to 30 students; prereq practicing administrator or #; V-VIII MTWThF; June 14-30; PeikH 155) Mueller
- 201 **FOUNDATIONS OF EDUCATIONAL ADMINISTRATION**
 Foundation for all students preparing for administrative positions in schools. Sources, meaning, and application of administrative theory, organizational structure, human relations, and leadership roles as they relate to the conduct of school organizations. (3 cr; I MTWThF; Arch 10) Davis
- 202 **FOUNDATIONS OF EDUCATIONAL ADMINISTRATION**
 Foundation for all students preparing for administrative positions in school organizations. Aspects of federal, state, and local relationships as they relate to the co-ordination and operation of public elementary and secondary schools. (3 cr; II MTWThF; Bu 211) Mueller
- 211 **SCHOOL BUSINESS MANAGEMENT**
 Administration of school business affairs. (3 cr; prereq 210 or #; I MTWThF; Bu 211) Domian
- 224 **LEGAL ASPECTS OF PUBLIC SCHOOL ADMINISTRATION**
 Constitutional, statutory, and common law bases of school administration; principles growing out of fundamental legal procedures. (3 cr; III MTWThF; Bu 211) Hooker
- 227 **PUBLIC SCHOOL PERSONNEL PROGRAMS**
 Selection, assignment, evaluation, and development of school personnel. Salary and conditions of service policies of administrative, instructional, and noninstructional personnel. (3 cr; IV MTWThF; JohH 106) Davis
- 228* **PROBLEMS: EDUCATIONAL ADMINISTRATION**
 For superintendents and principals qualified to make intensive studies of specific problems of the administration of a school system. (1-3 cr; hrs ar) Domian, Hooker, Davis, Mueller

†† 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.

236 FIELD STUDY

Required for the specialist in education certificate. The 10 credits will be based on a written report covering an approved field study. Students may register for the general planning and organization of their study without credit. (0-10 cr; prereq #; hrs ar) Curtin, Domian, Hooker, Firth, Popper, Davis

ELEMENTARY EDUCATION

215 THE ELEMENTARY SCHOOL PRINCIPALSHIP

Specific problems in elementary school administration and the principal's role of leadership. (3 cr; prereq 201 and 202, or #; II MTWThF; FoIH 104) Lambert

270A* PROBLEMS: ELEMENTARY SCHOOL ADMINISTRATION

(Cr ar; prereq #; hrs ar) Curtin, Lambert

SECONDARY EDUCATION

218 SEMINAR: SECONDARY EDUCATION

Current problems and literature. (Cr ar; IV MTWThF; FoIH 103) Popper

264 THE SECONDARY SCHOOL PRINCIPALSHIP

The principal's role in the secondary school, his qualifications, duties and problems, including current issues, and factors of staff and student relationships. (3 cr; I MTWThF; FoIH 104) Nickerson

265 ADMINISTERING THE HIGH SCHOOL PROGRAM

Practices and procedures in scheduling, improving the curriculum, community relations, records and reports, school services, and program evaluation. (3 cr; III MTWThF; JohH 106) Nickerson

270B* PROBLEMS: SECONDARY SCHOOL ADMINISTRATION

(Cr ar; prereq #; hrs ar) Domian, Hooker, Firth, Popper, Davis, Mueller, Nickerson

HIGHER EDUCATION

274 THE JUNIOR COLLEGE

(3 cr; I MTWThF; Arch 15) White

SECOND TERM

GENERAL COURSES

201 FOUNDATIONS OF EDUCATIONAL ADMINISTRATION

(See first term) (I MTWThF; Bu 211) Davis

202 FOUNDATIONS OF EDUCATIONAL ADMINISTRATION

(See first term) (IV MTWThF; FoIH 102) Mueller

210 PUBLIC SCHOOL FINANCE

Current practices; sources of revenue, types of taxes, theory of taxation, and formulas used for distribution of school aids. Federal, state, and local support of education. (3 cr; II MTWThF; WuH 130) Mueller

228* PROBLEMS: EDUCATIONAL ADMINISTRATION

(See first term) Domian, Davis, Mueller

236 FIELD STUDY

(See first term) Curtin, Domian, Goossen, Firth, Davis

239†† SCHOOL PRINCIPAL'S WORKSHOP

Designed this year for persons now in secondary school administrative positions. Emphasizes decision-making, recent research and theory related to everyday school problems, participants' self-evaluation as administrators, relation of human behavior to administration. Using the technique of "simulation" the workshop participants will be placed in the role of the principal of "Jefferson High School" and during the workshop each person will make more than 110 decisions relative to operation of the simulated school. (4 cr; limited to 25 students; III-VI MTWThF; July 19-Aug. 4; PeikH 155) Davis, Nickerson

†† 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

- 200 SEMINAR: ELEMENTARY SCHOOL ADMINISTRATION
(3 cr; prereq 215 or #; III-IV TTh; FoIH 104) Lambert
- 270A* PROBLEMS: ELEMENTARY SCHOOL ADMINISTRATION
(See first term) Curtin, Goossen, Lambert

SECONDARY EDUCATION

- 264 THE SECONDARY SCHOOL PRINCIPALSHIP
(See first term) (I MTWThF; PeikH 175) Nickerson
- 270B* PROBLEMS: SECONDARY SCHOOL ADMINISTRATION
(See first term) Doman, Firth, Davis, Mueller, Nickerson

Educational Psychology (EPsy)

FIRST TERM

GENERAL COURSES

- 110 EDUCATIONAL MEASUREMENT IN THE CLASSROOM
(3 cr; each section limited to 45 students)
Sec 1, IV MTWThF, JohH 122, Ar Sec 2, VI MTWThF, Bu 120, Mehrens
- 116 INTRODUCTORY STATISTICAL METHODS
Not equivalent to EPsy 216, 216A. (3 cr; each section limited to 60 students; not open to Master's or PhD candidates who will take more than 1 qtr statistics)
Sec 1, III MTWThF, JohH 114, MacEachern
Sec 2, V MTWThF, JohH 114, Hennen
- 116A INTRODUCTORY STATISTICAL METHODS—LABORATORY
(2 cr; limited to 22 students; prereq ¶116; VI-VII TWTh; WuH 330) Ar
- 117 BASIC PRINCIPLES OF MEASUREMENT
(3 cr; prereq 116 or 216 or Psy 70 or equiv; VI MTWThF; Bu 211) Anderson
- 125 GROUP DYNAMICS IN EDUCATION
Examines the major "great ideas" about the dynamics of group behavior and evaluates their implications for education. Provides laboratory practice in T-Group methods, creative problem-solving in groups, and the conduct of experiments in group interaction. (3 cr; limited to 50 students; III MTWThF; FoIH 102) Torrance
- 133 BASIC PROCEDURES IN STUDENT PERSONNEL WORK
(3 cr; prereq 9 cr in education; I MTWThF; Bu 125) Steffire
- 140 INSTRUMENTS AND TECHNIQUES OF MEASUREMENT
(3 cr; prereq sr, 110 or 117; III MTWThF, III-IV TTh; FraH B-1) Mehrens
- 148 CLINICAL DIAGNOSIS OF READING DIFFICULTIES
(3 cr; limited to 20 students; prereq EdCI 145; II MTWThF; AH 9) Ar
- 150 CLINICAL PRACTICE IN REMEDIAL TEACHING
Remedial tutoring of individual children who have difficulty in school learning. (3 cr; each section limited to 30 students; prereq EdCI 145 or 151 and #) B Balow and clinical staff
Sec 1, I MTWThF and 2 hrs ar, Pt 108
Sec 2, IV MTWThF and 2 hrs ar, Pt 108
- 152 INTRODUCTION TO SCHOOL PSYCHOLOGICAL SERVICES
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; VI MTWThF; Pt 202) Duker
- 159 PERSONALITY DEVELOPMENT AND MENTAL HYGIENE
Examines theory and research in personality development and mental functioning in the light of knowledge concerning the psychology of stress and the concept of mental health as constructive behavior in response to change and stress. (3 cr; each section limited to 55 students)
Sec 1, I MTWThF, NH 209, Torrance Sec 2, IV MTWThF, NH 209, Ar

- 182 EDUCATION OF EXCEPTIONAL CHILDREN**
Overview of the field of special education. For classroom teachers, counselors, supervisors, and administrators; also the initial course for students working for special class certificates. (3 cr; prereq Ed 55B or 75B; VI MTWThF; JohH 122) McClard
- 183 EDUCATION OF GIFTED CHILDREN**
(3 cr; prereq Ed 55B or 75B or equiv; III MTWThF; FolH 104) Reynolds
- 184 EDUCATION OF MENTALLY RETARDED CHILDREN IN THE ELEMENTARY SCHOOLS**
(3 cr; prereq 182 or #; IV MTWThF; WuH 130) Podolsky
- 185 EDUCATION OF AUDITORIALLY HANDICAPPED CHILDREN**
(3 cr; hrs and rm ar) Fulton
- 186 EDUCATION OF EMOTIONALLY DISTURBED AND SOCIALLY MALADJUSTED CHILDREN**
(3 cr; prereq #; I MTWThF; AH 9) Wilderson
- 193 PSYCHOLOGY OF HUMAN LEARNING**
(3 cr; each section limited to 55 students)
Sec 1, I MTWThF, JohH 115, P Johnson
Sec 2, II MTWThF, AH 350, Deno
- 208* METHODS IN EDUCATIONAL RESEARCH**
Methods and techniques employed in the investigation and report of educational problems. (3 cr; IV MTWThF; AH 350) Hoyt
- 209 SEMINAR: RESEARCH PLANNING**
(1 cr; VI MWF; FolH 103) Hoyt
- 210 INDIVIDUAL MENTAL TESTING**
Revised Stanford-Binet and Wechsler Adult or Wechsler Intelligence Scale for Children. Student supplies material for at least one test. (3 cr; limited to 20 students; prereq 110 or 117 or #117 and #; VII-VIII MTWThF; Pt 202) Cardon
- 216 STATISTICAL METHODS**
(3 cr; prereq 116 or Psy 70 or equiv; I MTWThF; Arch 145) MacEachern
- 216A STATISTICAL METHODS—LABORATORY**
(2 cr; each section limited to 22 students; prereq #216) Anttonen
Sec 1, II-III TWTh, WuH 330 Sec 2, IV-V TWTh, WuH 330
- 225 COUNSELING THEORY AND PROCEDURE I**
Influences bearing on definition of counseling; theoretical approaches to counseling and vocational choice theories; measurement versus appraisal; diagnostic principles utilized. (3 cr; prereq 140 or #140 and any one of the following: 133, 250, or Psy 130; III MTWThF; Bu 125) Parker
- 233* PROBLEMS: GUIDANCE AND PERSONNEL WORK**
(1-9 cr)
Sec 1, limited to 25 students, VI-VII MW, Bu 125, Parker, Tennyson
Sec 2, limited to 50 students, hrs ar, Tennyson, Hansen, Parker
- 253* RESEARCH PROBLEMS**
(Cr and hrs ar; prereq #) Hoyt, Reynolds, Wilk, Torrance, B Balow, Duker, P Johnson, MacEachern, Podolsky, Wilderson
- 257 CLINICAL PRACTICE IN EDUCATIONAL DIAGNOSIS**
Supervised work with children referred to the Psycho-Educational Clinic for diagnosis of learning disabilities and school related problems. Parent and child interviewing, testing and preparation of case reports. (3 cr, #151; prereq 210 or equiv, EdCI 145, #; 1:00-4:00 MTWThF; Pt 108) B Balow and clinical staff
- 288 PRACTICUM: SPECIAL EDUCATION**
Individually arranged, supervised experience in special education. May include supervision, administration, or co-ordination teaching, and related work in schools, agencies, institutions, and other facilities of exceptional children. (3-9 cr; prereq #; hrs ar) Reynolds, Wilderson, Landrud
- 293* PSYCHOLOGY OF LEARNING**
(3 cr; prereq 12 cr in psychology and educational psychology; II MTWThF; Bu 125) P Johnson

SECONDARY EDUCATION

- 134 SCHOOL COUNSELING PROCEDURES**
(3 cr; prereq 110 or 117, 133 and #; III MTWThF; FolH 103) Steffire

282A-B SUPERVISED PRACTICUM IN COUNSELING

(3 cr each; limited to 10 students; prereq ‡; V-VIII MTWThF; rm ar) Burks, Lundgren

SECOND TERM**GENERAL COURSES**

- 60 INTRODUCTION TO MEASUREMENT AND STATISTICS**
(3 cr; prereq 6 cr in psychology; IV MTWThF; Bu 125) Hoyt
- 110 EDUCATIONAL MEASUREMENT IN THE CLASSROOM**
(See first term) (Each section limited to 45 students)
Sec 1, III MTWThF, Bu 211, Ar Sec 2, IV MTWThF, Bu 123, Hennen
- 116 INTRODUCTORY STATISTICAL METHODS**
(See first term) (III MTWThF; Bu 123) MacEachern
- 116A INTRODUCTORY STATISTICAL METHODS—LABORATORY**
(See first term) (V-VI TWTh; WuH 330) Ar
- 117 BASIC PRINCIPLES OF MEASUREMENT**
(See first term) (III MTWThF; FolH 102) Anderson
- 133 BASIC PROCEDURES IN STUDENT PERSONNEL WORK**
(See first term) (II MTWThF; Bu 123) Tennyson
- 150 CLINICAL PRACTICE IN REMEDIAL TEACHING**
(See first term) (Each section limited to 30 students) B Balow and clinical staff
Sec 1, I MTWThF and 2 hrs ar, Pt 108
Sec 2, III MTWThF and 2 hrs ar, Pt 108
- 159 PERSONALITY DEVELOPMENT AND MENTAL HYGIENE**
(See first term) (3 cr; each section limited to 55 students) Borow
Sec 1, II MTWThF, NH 209 Sec 2, IV MTWThF, NH 209
- 182 EDUCATION OF EXCEPTIONAL CHILDREN**
(See first term) (I MTWThF; Bu 125) Force
- 190 EDUCATIONAL PROBLEMS OF CEREBRAL PALSY**
Unique problems in development, learning, and adjustment produced by cerebral palsy; study and development of materials to meet the special educational needs.
(3 cr; prereq 182 or ‡; IV MTWThF; WuH 130) Force
- 193 PSYCHOLOGY OF HUMAN LEARNING**
(See first term) (I MTWThF; WuH 230) P Johnson
- 208 METHODS IN EDUCATIONAL RESEARCH**
(See first term) (3 cr; II MTWThF; Bu 125) Hoyt
- 217 STATISTICAL METHODS**
(3 cr; prereq 216; I MTWThF; P 110) MacEachern
- 217A STATISTICAL METHODS—LABORATORY**
(2 cr; each section limited to 22 students; prereq ‡217) Anttonen
Sec 1, III-IV TWTh, WuH 330 Sec 2, VII-VIII TWTh, WuH 330
- 226* COUNSELING THEORY AND PROCEDURE II**
Dimensions of counseling relationships; dynamics of interviewing; distinction between psychotherapy and counseling; treatment of factors related to counseling-counselor attitude and personality; applications of counseling in different settings. (3 cr; prereq 225 or equiv; III MTWThF; Bu 125) Parker
- 233* PROBLEMS: GUIDANCE AND PERSONNEL WORK**
(See first term)
Sec 1, limited to 25 students, VI-VII MW, rm ar, Parker, Tennyson
Sec 2, limited to 50 students, hrs and rm ar, Parker, Tennyson
- 253* RESEARCH PROBLEMS**
(See first term) (Hrs ar) Borow, Hoyt, B Balow, Force, Houchins, Wilk, P Johnson, MacEachern
- 257 CLINICAL PRACTICE IN EDUCATIONAL DIAGNOSIS**
(See first term) (1:00-4:00 MTWThF; Pt 108) B Balow and clinical staff
- 294 RECENT THEORY AND RESEARCH IN HUMAN LEARNING**
(3 cr; limited to 40 students; prereq ‡; II MTWThF; FolH 102) P Johnson

General Education - 12

Curriculum and Instruction (EdCI) - 12

FIRST TERM

GENERAL COURSES - 8

- 105 AUDIO-VISUAL MATERIALS IN EDUCATION**
(3 cr; prereq sr; I MTWThF and 2 hrs lab ar; NH 211) Pearson
- 107 RADIO AND TELEVISION IN EDUCATION**
Production, techniques of classroom use, selection of equipment, teaching appreciation, and administration. (3 cr; limited to 30 students; prereq 9 cr in education; III MTWThF; WeH 202) Pearson
- 109 PROJECTED AUDIO-VISUAL MATERIALS AND EQUIPMENT LABORATORY**
Planning and making projected materials for audio-visual education; use of materials and equipment. (3 cr; each section limited to 15 students; prereq 105 or 1105; IV MTWThF; WeH 206) Alton Jensen
- Sec 1, VI MW, WeH 206 Sec 2, VI TTh, WeH 206
- 115 INTRODUCTION TO EDUCATION OF VISUALLY HANDICAPPED CHILDREN**
Educational programs, services, and resources for blind and partially seeing children; exploration of historical background, philosophy, sociological and psychological problems. (3 cr; prereq #; IV MTWThF; NH 216) Martin
- 116 BRAILLE I**
Mastery of literary Braille code and introduction to use of mathematics and music codes; analysis of specialized equipment with emphasis on use of Braille writers and slates. (3 cr; prereq 115 or #; 1:00-2:30 MTWThF; NH 216) Ar
- 117 BRAILLE II**
Development of classroom materials involving literary Braille code; mastery of Nemeth code of mathematics; mastery of music code; new approaches in setting up text and reference material. (3 cr; prereq 115; 1:00-2:30 MTWThF; FoH 108) Jenkins
- 126 ORIENTATION AND MOBILITY FOR BLIND CHILDREN**
Provides teachers with basic techniques which help blind children gain skill in orientation and mobility. Lectures and demonstrations; films and observation of blind children; practice in travel techniques. (For application write to Miss Jeanne R. Kenmore, 110 Shevlin Hall, University of Minnesota, Minneapolis, Minnesota 55455) (6 cr; limited to 20 students; prereq #; 9:00-11:30 and 1:30-3:30 MTWThF; June 15-July 10; A 12) Martin
- 145 READING DIFFICULTIES**
(3 cr; prereq 143 or 144 or equiv; III MTWThF; WuH 230) I Balow
- 151 DIAGNOSIS AND TREATMENT OF LEARNING DIFFICULTIES**
Evaluation of the results of teaching; diagnosis of pupil difficulty; development and prevention; tests as aids to teaching; following up a testing program. (3 cr; I MTWThF; Pt 202) Wesenberg
- 174-175-176 CLINICAL METHODS AND PRACTICE IN SPEECH PATHOLOGY**
(3 cr each; limited to students attending full time spring qtr 1965; prereq #; hrs ar) Starr
- 178 STRUCTURE AND FUNCTION OF THE EYE—EDUCATIONAL IMPLICATIONS**
An ophthalmologist discusses the anatomy and physiology of the eye. An educator presents the educational implications. Considerations of vision screening, visual efficiency, aids. Field trips, films, observations. (3 cr; prereq #; 8:00-8:50 MTWThF; Arch 135) Kantar, Jenkins
- 179 CURRICULUM DEVELOPMENT FOR EDUCABLE MENTALLY RETARDED CHILDREN**
Designed for experienced teachers in the elementary and junior high school. Emphasis on development of units of work, related materials, and integration of units into broader areas of the curriculum. (3 cr; limited to 15 students; prereq EPsy 184, 1 yr teaching retarded children or #; I-II MTWThF; FoH 108) Podolsky
- 182 EDUCATION OF PARTIALLY SEEING CHILDREN**
Principles of preparation, selection, and effective use of instructional materials for the partially seeing child; adaptation of school environment. (3 cr; prereq 115, 118 and #; I MTWThF; FoH 103) Sorensen
- 189 MATERIALS AND CURRICULUM CONSTRUCTION IN MODERN LANGUAGES**
Curriculum development, preparation of units, testing techniques; materials for classroom, language laboratory, televised instruction, and programmed learning. (3 cr; prereq 185 and #; III MTWThF; PeikH 225) Birkmaier

First Term (continued)

- 201* **PROBLEMS: TEACHING SOCIAL STUDIES**
Individual research. (Cr and hrs ar; prereq 102, 155 or 168, 204 or §) Gardner
- 205* **PROBLEMS: AUDIO-VISUAL EDUCATION**
(Cr and hrs ar; prereq §) Pearson
- 271 **PROBLEMS: CURRICULUM CONSTRUCTION**
(Cr and hrs ar; prereq §) Birkmaier, Boeck, Curtin, Donovan Johnson, Chase, Dykstra, Odland, Gardner, Firth, Keach, Lambert, I Balow
- 273* **PROBLEMS: READING**
(Cr ar; prereq 143 or 144 or §) Kegler, Chase, Odland, I Balow
- 288* **SEMINAR: RESEARCH IN MODERN LANGUAGE LEARNING**
Criteria for evaluating major studies with implications for language teachers; needed research; planning and design of individual study. (3 cr; prereq 185 and §; IV MTWThF; PeikH 225) Birkmaier
- 296* **PROBLEMS: TEACHING ENGLISH**
(Cr and hrs ar) Kegler, Chase, Dykstra

ELEMENTARY EDUCATION

- 60 **TEACHING READING IN THE ELEMENTARY SCHOOL**
(3 cr; prereq Ed 75A; I MTWThF; Bu 120) Mitchell
- 61 **TEACHING SOCIAL STUDIES IN THE ELEMENTARY SCHOOL**
(3 cr; prereq Ed 75B; II MTWThF; Pt 202) Keach
- 62 **TEACHING MATHEMATICS IN THE ELEMENTARY SCHOOL**
(3 cr; prereq Ed 75A, Math 5; I MTWThF; Arch 35) Ar
- 63 **CHILDREN'S LITERATURE**
(3 cr; II MTWThF; Bu 120) Peltola
- 64 **TEACHING ENGLISH IN THE ELEMENTARY SCHOOL**
(3 cr; prereq Ed 75A; III MTWThF; Arch 10) Monson
- 65 **TEACHING SCIENCE IN THE ELEMENTARY SCHOOL**
(3 cr; prereq Ed 75A, 10 cr in natural science; IV MTWThF; Bu 211) Gennaro
- 102 **TEACHING SOCIAL STUDIES IN THE ELEMENTARY SCHOOL**
Planned for graduate students and for summer students who already hold a Bachelor's degree. Undergraduate students should register for EdCI 61. (3 cr; prereq Ed 75B or equiv; IV MTWThF; Pt 202) Keach
- 103 **TEACHING SCIENCE IN THE ELEMENTARY SCHOOL**
Planned for graduate students and for summer students who already hold a Bachelor's degree. Undergraduate students should register for EdCI 65. (3 cr; prereq sr, Ed 75B or tchg exper; III MTWThF; Bu 120) Boeck
- 118 **EDUCATION OF BLIND CHILDREN IN THE ELEMENTARY GRADES**
Adaptation of broad curriculum areas for blind children in elementary grades; procedures in teaching specialized curriculum, i.e., Braille reading, typing, orientation, and mobility; utilization of family, school, and community resources. (3 cr; prereq 115, 116, and §; 9:30-11:00 MTWThF; Arch 140) Høglund
- 119 **ELEMENTARY SCHOOL CURRICULUM**
(3 cr; prereq Ed 75B or equiv; IV MTWThF; Bu 123) Lambert
- 121 **LITERATURE FOR THE ELEMENTARY SCHOOL**
(3 cr; II MTWThF; Bu 123) Odland
- 143 **TEACHING AND SUPERVISION OF READING IN THE ELEMENTARY SCHOOL**
Planned for graduate students and for summer students who already hold a Bachelor's degree. Undergraduate students should register for EdCI 60. (3 cr; prereq 9 cr in education; I MTWThF; WuH 230) I Balow
- 149A **TEACHING AND SUPERVISION OF MATHEMATICS IN THE ELEMENTARY SCHOOL**
Present practices and trends in methods, evaluation, and diagnosis; objectives, psychology, and philosophy related to improvement of instruction. (3 cr; prereq 62 or equiv undergrad course or tchg exper; I MTWThF; Arch 40) Jackson
- 149C **CURRENT DEVELOPMENTS IN ELEMENTARY SCHOOL MATHEMATICS INSTRUCTION**
Contemporary literature, trends and experimentation with content; criteria for program evaluation. (3 cr; prereq 62 or 149A or §; III MTWThF; Arch 35) Jackson
- 150 **SUPERVISION AND IMPROVEMENT OF INSTRUCTION**
(3 cr; prereq 9 cr in education; III MTWThF; Bu 123) Curtin

- 153 **TEACHING AND SUPERVISION OF ENGLISH IN THE ELEMENTARY SCHOOL**
(3 cr; prereq Ed 75B or equiv; III MTWThF; FoH 110) Chase
- 162 **LABORATORY IN NURSERY SCHOOL AND KINDERGARTEN INSTRUCTION PRACTICES**
(3 cr; open to experienced teachers and others by §; VI MWF and hrs ar; CD 105) Headley
- 166 **CURRENT TRENDS, KINDERGARTEN EDUCATION**
Continuing needs of children in our changing culture; current practices and recent research. (3 cr; prereq tchg exper primary, kindergarten, or nursery school or §; IV MTWThF; CD 105) Headley
- 186 **LABORATORY IN ELEMENTARY INSTRUCTIONAL PRACTICES**
Daily observation of elementary classes with discussion of techniques; emphasis on activity units, visual aids, materials and individual differences. Students enrolling in this class must carry at least one other course in the College of Education. (2 cr; prereq experienced teachers only; observation 4 hrs per wk ar MTWThF, Tuttle School; lect VI TTh, Bu 123) Arthur Jensen
- 261* **PROBLEMS: IMPROVEMENT OF INSTRUCTION**
(Cr and hrs ar; prereq §) Boeck, Curtin, Chase, Dykstra, Keach, Lambert, Odland, Stochl, I Balow

SECONDARY EDUCATION

- 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 the State Department of Education for driver education in the schools. (3 cr; limited to 32 students; prereq Δ; VI-VII MTWThF; ForH 85) Gebhard
- 113 **HIGH SCHOOL CURRICULUM**
(3 cr; prereq Ed 55B or equiv; II MTWThF; NH 207) Firth
- 120 **EDUCATION OF BLIND STUDENTS IN THE SECONDARY SCHOOLS**
Adaptation of curriculum of junior-senior high schools for blind students; preparation of educational materials; consideration of reader service, orientation and mobility, specialized equipment; utilization of guidance and counseling services; local, state, and national resources. (3 cr; prereq 118 and §; III MTWThF; NH 207) Sorensen, Jenkins
- 122 **LITERATURE FOR ADOLESCENTS**
(3 cr; prereq Ed 55B or junior-senior high school tchg exper; II MTWThF; Peikh 275) Kegler, Kemp
- 124 **FOUNDATIONS OF CAREER DEVELOPMENT**
Vocational theory and career development research; occupational analysis and industrial structure; various methods of classifying the world of work; labor force and employment trends; basic concepts for effective work in educational and vocational planning and development. (3 cr; II MTWThF; WuH 130) Tennyson
- 125 **OCUPATIONAL INFORMATION LABORATORY**
(3 cr; limited to 25 students; prereq §; VI MTWThF; FoH 203) Hansen
- 136 **ORGANIZATION AND ADMINISTRATION OF DISTRIBUTIVE EDUCATION**
Principles, practices, and legislation followed in developing co-operative part-time and adult programs under federal vocational acts. Basic course for teacher-coordinators and vocational administrators. (3 cr; II MTWThF; Bu 103) Meyer
- 139 **CO-ORDINATION TECHNIQUES**
Problems of co-ordinators in the co-operative part-time program. Guidance and selection; placing students in work station, assisting job adjustments, developing the training program. (3 cr; IV MTWThF; Bu 103) Meyer
- 142 **BUSINESS AND DISTRIBUTIVE PROGRAMS FOR ADULTS**
Selection and training of evening school instructors; planning and promotion of evening school distributive education classes. (3 cr; VI MTWThF; Bu 103) Ashmun
- 144 **TEACHING READING IN SECONDARY SCHOOLS**
(3 cr; prereq 9 cr in education; I MTWThF; Bu 123) Chase
- 158 **MATERIALS AND METHODS IN OFFICE AND STENOGRAPHIC PROCEDURES**
(3 cr; I MTWThF; Bu 103) Price
- 167 **ECONOMIC EDUCATION PROGRAMS**
(3 cr; limited to 20 students; prereq Econ 2 or equiv or §; III MTWThF; BA 735) Warmke

- 168 **CURRENT DEVELOPMENTS IN THE SOCIAL STUDIES**
(3 cr; prereq grad or §; II MTWThF; Arch 60) Gardner
- 177 **DIRECTING SECONDARY SCHOOL SPEECH ACTIVITIES**
Method in preparing students for debate, discussion, and public speaking activities. (3 cr; III MTWThF; FolH 306) Brock
- 191 **ADVANCED TEACHING AND SUPERVISION OF SECONDARY MATHEMATICS**
Present practices in methods, materials, and curriculum development; principles of learning applied to mathematics; review of research; preparation and evaluation of units, tests, and materials of instruction. (3 cr; II MTWThF; PeikH 315) Donovan Johnson
- 192 **MATHEMATICS LABORATORY**
Sources and types of materials, laboratory projects and techniques of using mathematical devices and instruments; visual aids and community resources. (3 cr; prereq grad or experienced teacher; IV MTWThF and V TTh; PeikH 315) Donovan Johnson
- 195 **CURRENT DEVELOPMENTS AND CURRICULUM CONSTRUCTION IN ENGLISH**
Analysis and evaluation of curriculum and trends; emphasis on articulation. (3 cr; prereq EdT 75C or D or equiv; III MTWThF; PeikH 275) Kegler, Kemp
- 199E **INTERNSHIP: RECREATION LEADERSHIP**
(Cr and hrs ar; available for master of education students in recreation) Ar
- 200 **ORGANIZATION AND SUPERVISION OF BUSINESS EDUCATION**
(3 cr; prereq §; III MTWThF; Bu 103) Price
- 225* **PROBLEMS: SECONDARY SCHOOL SUPERVISION**
(Cr and hrs ar; prereq §) Firth
- 237 **SEMINAR: RESEARCH IN BUSINESS, DISTRIBUTIVE, AND ECONOMIC EDUCATION**
(No cr; prereq §; hrs ar) Price, Meyer, Warmke
- 238* **PROBLEMS: DISTRIBUTIVE EDUCATION**
(Cr and hrs ar; prereq §) Meyer
- 239* **PROBLEMS: BUSINESS EDUCATION**
(Cr and hrs ar; prereq §) Price, Warmke
- 266 **SUPERVISION OF HIGH SCHOOL INSTRUCTION**
(3 cr; prereq EPsy 293, 193, or §; IV MTWThF; FolH 108) Firth
- 287* **RESEARCH FOUNDATIONS OF SECONDARY SCHOOL SCIENCE TEACHING**
(3 cr; I MTWThF; PeikH 355) Boeck
- 295 **READINGS IN ENGLISH AND MODERN LANGUAGE EDUCATION**
(1-3 cr; prereq MA or equiv; hrs ar) Birkmaier, Kegler

SECOND TERM

GENERAL COURSES

- 105 **AUDIO-VISUAL MATERIALS IN EDUCATION**
(See first term) (I MTWThF and 2 hrs lab ar; NH 211) Pearson
- 106 **CO-ORDINATING AN AUDIO-VISUAL EDUCATION PROGRAM**
Criteria of equipment, facilities and materials, in-service training of teachers, and special problems encountered in small and large systems. (3 cr; prereq 105 or §; III MTWThF; NH 213) Pearson
- 108 **NONPROJECTED AUDIO-VISUAL MATERIALS AND EQUIPMENT LABORATORY**
Planning and making nonprojected materials for audio-visual education; use of materials and equipment. (3 cr; each section limited to 15 students; prereq 105 or ¶105; lect IV MTWThF; WeH 206) Alton Jensen
 Sec 1, VI MW, WeH 206 Sec 2, VI TTh, WeH 206
- 128 **INTRODUCTION TO THE EDUCATION OF HEARING-IMPAIRED CHILDREN**
Educational programs, services, and resources for hearing-impaired individuals; historical background; philosophy; sociological and psychological problems. (3 cr; prereq §; IV MTWThF; FolH 105) Houchins
- 145 **READING DIFFICULTIES**
(See first term) (III MTWThF; Bu 120) I Balow
- 174-175-176 **CLINICAL METHODS AND PRACTICE IN SPEECH PATHOLOGY**
(See first term) Starr
- 201* **PROBLEMS: TEACHING SOCIAL STUDIES**
(See first term) Gardner

- 205* **PROBLEMS: AUDIO-VISUAL EDUCATION**
(See first term) Pearson
- 271* **PROBLEMS: CURRICULUM CONSTRUCTION**
(See first term) Boeck, Curtin, Goossen, Dykstra, Gardner, Firth, Keach, Lambert, I Balow
- 273* **PROBLEMS: READING**
(See first term) Kegler, Odland, I Balow
- 296* **PROBLEMS: TEACHING ENGLISH**
(See first term) Kegler, Dykstra

ELEMENTARY EDUCATION

- 60 **TEACHING READING IN THE ELEMENTARY SCHOOL**
(See first term) (I MTWThF; Bu 120) Mitchell
- 61 **TEACHING SOCIAL STUDIES IN THE ELEMENTARY SCHOOL**
(See first term) (II MTWThF; Pt 202) Keach
- 62 **TEACHING MATHEMATICS IN THE ELEMENTARY SCHOOL**
(See first term) (I MTWThF; Arch 40) Ar
- 64 **TEACHING ENGLISH IN THE ELEMENTARY SCHOOL**
(See first term) (II MTWThF; FolH 105) Ar
- 65 **TEACHING SCIENCE IN THE ELEMENTARY SCHOOL**
(See first term) (IV MTWThF; Bu 211) Gennaro
- 102 **TEACHING SOCIAL STUDIES IN THE ELEMENTARY SCHOOL**
(See first term) (IV MTWThF; Pt 202) Keach
- 103 **TEACHING SCIENCE IN THE ELEMENTARY SCHOOL**
(See first term) (II MTWThF; Bu 211) Goossen
- 119 **ELEMENTARY SCHOOL CURRICULUM**
(See first term) (III MTWThF; WuH 130) Goossen
- 143 **TEACHING AND SUPERVISION OF READING IN THE ELEMENTARY SCHOOL**
(See first term) (IV MTWThF; Bu 120) I Balow
- 149A **TEACHING AND SUPERVISION OF MATHEMATICS IN THE ELEMENTARY SCHOOL**
(See first term) (I MTWThF; Arch 35) Jackson
- 150 **SUPERVISION AND IMPROVEMENT OF INSTRUCTION**
(See first term) (II MTWThF; FolH 109) Lambert
- 153 **TEACHING AND SUPERVISION OF ENGLISH IN THE ELEMENTARY SCHOOL**
(See first term) (I MTWThF; Bu 123) Dykstra
- 165A **MATHEMATICS FOR GIFTED CHILDREN**
Curriculum and methods of instruction for academically talented children; development of enrichment units; source materials for teachers. (3 cr; prereq 62 or 149A or #; II MTWThF; Arch 35) Jackson
- 261* **PROBLEMS: IMPROVEMENT OF INSTRUCTION**
(See first term) Curtin, Goossen, Dykstra, Keach, Lambert, I Balow

SECONDARY EDUCATION

- 113 **HIGH SCHOOL CURRICULUM**
(See first term) (I MTWThF; FolH 102) Firth
- 122 **LITERATURE FOR ADOLESCENTS**
(See first term) (I MTWThF; PeikH 275) Kegler, Kemp
- 125 **OPTIONAL INFORMATION LABORATORY**
(See first term) (Limited to 25 students; IV MTWThF; FolH 107) Burks
- 132 **TEACHING THE BASIC BUSINESS SUBJECTS**
(3 cr; II MTWThF; Bu 103) Price
- 144 **TEACHING READING IN SECONDARY SCHOOLS**
(See first term) (II MTWThF; PeikH 275) Kegler, Kemp
- 155 **MATERIALS LABORATORY FOR SOCIAL STUDIES TEACHERS**
Printed and audio-visual material useful in social studies classes. (3 cr; prereq #; II MTWThF; PeikH 175) Gardner

- 156 **TRENDS IN BUSINESS EDUCATION**
(3 cr; IV MTWThF; Bu 103) Price
- 190 **CURRENT DEVELOPMENTS IN SECONDARY SCHOOL SCIENCE TEACHING**
(3 cr; prereq EdT 68B-C or 68M, equiv undergrad courses or experience in science teaching; I MTWThF; PeikH 355) Boeck
- 199E **INTERNSHIP: RECREATION LEADERSHIP**
(See first term) Ar
- 225* **PROBLEMS: SECONDARY SCHOOL SUPERVISION**
(See first term) Firth
- 237 **SEMINAR: RESEARCH IN BUSINESS, DISTRIBUTIVE, AND ECONOMIC EDUCATION**
(See first term) Price
- 239* **PROBLEMS: BUSINESS EDUCATION**
(See first term) Price
- 266 **SUPERVISION OF HIGH SCHOOL INSTRUCTION**
(See first term) (III MTWThF; FolH 103) Firth
- 295 **READINGS IN ENGLISH AND MODERN LANGUAGE EDUCATION**
(See first term) Kegler

HIGHER EDUCATION

- 228*†† **WORKSHOP: PROBLEMS OF HIGHER EDUCATION AND TEACHER EDUCATION**
(6 cr; hrs ar MTWThF; July 19-August 13; rm ar)

Sec 1, Problems of Higher Education, Sagan, McCune, and consultants
Sec 2, Problems of Teacher Education, Mork, Woestehoff, and consultants

Education (Ed)

FIRST TERM

55A INTRODUCTION TO SECONDARY SCHOOL TEACHING

Open only to students accepted for the regular degree program in the College of Education. Those not previously registered as regular students should apply for admission to the College of Education not later than May 10 in order to allow time for tests, interviews, and approval by the major department. The course is designed principally for those who have finished the junior year with sufficient work in the teaching major to permit their entrance to student teaching in the fall. (5 cr; each section limited to 30 students; prereq Psy 2; lect I MTWThF; Ph 166) Randleman

Sec 1, II MTWThF, PeikH 365, MacLeod
Sec 2, II MTWThF, PeikH 385, Surplus
Sec 3, III MTWThF, PeikH 365, MacLeod
Sec 4, III MTWThF, PeikH 385, Surplus
Sec 5, IV MTWThF, PeikH 365, Becklund

75A INTRODUCTION TO ELEMENTARY SCHOOL TEACHING

Limited to students accepted for the Bachelor's degree with a major in elementary education in the College of Education. Those not previously registered as regular students should apply for admission to the College of Education not later than May 10, in order to allow time for tests, interviews, and approval by the major department. (5 cr; each section limited to 35 students; prereq Psy 2, Δ; lect II MTWThF; Arch 35) Dykstra, Mitchell

Sec 1, I MTWThF, Arch 60, Mitchell Sec 3, I MTWThF, Arch 130, Stang
Sec 2, I MTWThF, Arch 45, Rosen

SECOND TERM

55B INTRODUCTION TO SECONDARY SCHOOL TEACHING

Open only to students accepted for a regular degree program in the College of Education who have completed Ed 55A. (5 cr; each section limited to 30 students; prereq 55A, §; lect I MTWThF; Ph 166) Becklund

Sec 1, II MTWThF, PeikH 225, MacLeod
Sec 2, II MTWThF, PeikH 315, Randleman

†† 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.

Sec 3, III MTWThF, Peikh 225, MacLeod
Sec 4, III MTWThF, Peikh 315, Randleman
Sec 5, IV MTWThF, Peikh 315, Becklund

75B INTRODUCTION TO ELEMENTARY SCHOOL TEACHING

Open only to students accepted for the elementary education major in the College of Education who have completed Ed 75A First Term or previously. (5 cr; each section limited to 35 students; prereq 75A; lect III MTWThF; Arch 35) Curtin

Sec 1, IV MTWThF, Arch 15, Mitchell
Sec 2, IV MTWThF, Arch 30, Rosen
Sec 3, IV MTWThF, Arch 45, Stang

History and Philosophy of Education (HEd)

FIRST TERM

141 CRITICAL ISSUES IN CONTEMPORARY EDUCATION

Introduces students to ideas involved in current theory and practice. (3 cr; I MTWThF; AH 150) Morris

156 HISTORY OF IDEAS IN AMERICAN EDUCATION

Readings in American political, economic, and social development; special reference to the emerging system of public education. Recommended as background for 170 but not a prerequisite for 170. (3 cr; II MTWThF; Arch 15) Williston

180 THE SCHOOL AND SOCIETY

(3 cr; each section limited to 70 students; prereq sr)

Sec 1, II MTWThF, AH 150, Herrick
Sec 2, III MTWThF, AH 150, Herrick
Sec 3, IV MTWThF, P 110, Williston

182 COMPARATIVE PHILOSOPHIES OF EDUCATION

(3 cr; III MTWThF; AH 101) Morris

SECOND TERM

131 COMPARATIVE EDUCATION

European, Asiatic, and American systems and philosophies of education; explores possibilities of international education. (3 cr; II MTWThF; Arch 130) Beck

141 CRITICAL ISSUES IN CONTEMPORARY EDUCATION

(See first term) (3 cr; III MTWThF; Arch 130) Beck

180 THE SCHOOL AND SOCIETY

(See first term) (Each section limited to 70 students) Herrick

Sec 1, III MTWThF, P 110 Sec 2, IV MTWThF, P 110

241* PROBLEMS: HISTORY AND PHILOSOPHY OF EDUCATION

For graduate students interested in research and work in these areas. (Cr ar; prereq #; hrs ar) Beck

Home Economics Education (HEEd)

FIRST TERM

61 METHODS OF TEACHING HOME ECONOMICS

Teaching procedures; materials of instruction. Not open to undergraduates during Summer Session. (3 cr; prereq 60, 162; IV MTWThF; McNH 102) Turck

62 EVALUATION IN HOME ECONOMICS

Techniques for measuring progress. (3 cr, §192; prereq 60, 161; II-III MWF; McNH 102) Brown

160A HOME ECONOMICS CURRICULUM

(Secondary level) Contribution of home economics at secondary levels; techniques employed in curriculum planning and construction. For experienced teachers. (3 cr, §193A; prereq 63 or #; I MTWThF; McNH 102) Horn

190 READINGS IN HOME ECONOMICS EDUCATION

Independent study under tutorial guidance. (1-3 cr; prereq #; hrs ar) Ford, Brown

196A WORKSHOP: TEACHING HOME PLANNING AND FURNISHING

A study of problems in teaching home planning and furnishing at high school levels; use of new materials and techniques; group and individual projects to meet the needs and interests of experienced teachers. (4 cr; limited to 25 students; prereq grad; 8:30-3:30 MTWThF; June 14-30; McNH 103) Ford, Esteros

201 PROBLEMS: HOME ECONOMICS EDUCATION**

To be given July 1-17 as workshop for college staff concerned with administration of home economics education programs. (1-9 cr; prereq 200A, #; 8:30-3:30 MTWThF; McNH 103) Ford, consultant

SECOND TERM

60 CURRICULUM IN HOME ECONOMICS EDUCATION

Selection and organization of content in home economics curriculum at secondary level. (3 cr; prereq 49, Soc 1A or 1, Ed 55B or 1Ed 55B; VI MTWThF; McNH 103) Hickner

162 EVALUATION: THEORETICAL AND TECHNICAL ASPECTS

Relation among concepts pertinent to evaluation in teaching; collecting and interpreting evidences related to achievement of objectives emphasizing higher levels of cognition and affective behaviors. (3 cr; prereq 62 and #; III-IV MWF; McNH 102) Brown

190 READINGS IN HOME ECONOMICS EDUCATION

(See first term) Ford, Brown

201* PROBLEMS: HOME ECONOMICS EDUCATION

Independent study of current educational problems. (1-9 cr, \$293; prereq 200A and #; hrs ar) Ford, Brown

Industrial Education (Ind)

FIRST TERM

105 ADMINISTRATION OF INDUSTRIAL EDUCATION

General and vocational phases; objectives, programs, and practices; laws, rulings, and standards for aid; significant literature. (3 cr; prereq 35 or #; I MTWThF; TNCD 116) Nelson

135 INDUSTRIAL COURSE CONSTRUCTION

Principles and techniques; experience in planning, organizing, and building a teaching guide. (3 cr, \$40; II MTWThF; TNCD 113) Kavanaugh

136 INSTRUCTIONAL MATERIALS LABORATORY

Section A. Instruction will include basic information about research procedures and individual assistance in developing specific proposals. Classes will meet 3 hours daily during first 2 weeks; remaining time will be devoted to individual consultations. (6 cr; prereq major, tchg exper or #; V-VII MTWThF; June 15-25; TNCD 116; individual conferences ar June 28-July 16) Ar

Section B. New electronic instrument teaching materials. (3 cr; IV MTWThF; TNCD 116) Kavanaugh

200* RESEARCH PROBLEMS

Independent work for the degrees, master of arts, Plan B, and master of education, Plan Y. Individual conferences. (3, 6, or 9 cr; prereq approval of candidacy for Master's degree; hrs ar MTWThF; TNCD 103) Nelson, Kavanaugh, Randleman

250 LITERATURE OF INDUSTRIAL EDUCATION

Professional literature, organizations, leaders, and movements in the field. (3 cr; prereq #; III MTWThF; TNCD 116) Nelson

SECOND 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; prereq 40, Ed 55B or #; I MTWThF; TNCD 116)

** 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.

- 101 TESTS IN INDUSTRIAL SUBJECTS**
Application of principles of evaluation to shop and drawing subjects. (3 cr; prereq Ed 55B; II MTWThF; TNCD 113) Kavanaugh
- 103 INSTRUCTIONAL AIDS**
Planning, construction, use. (3 cr; prereq 55 or 100 or equiv; III MTWThF; TNCD 113) Kavanaugh
- 110 VOCATIONAL GUIDANCE**
History of 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; IV MTWThF; TNCD 113) Nelson
- 155 CRITICAL ISSUES IN INDUSTRIAL EDUCATION**
Identification analysis and discussion of major current problems in the field. (3 cr; II MTWThF; TNCD 116)
- 200* RESEARCH PROBLEMS**
(See first term) Nelson, Kavanaugh

Methods and Student Teaching (EdT)

FIRST TERM

- 50 JUNIOR PRACTICUM IN SPECIAL EDUCATION**
Supervised observation and participation in classroom and related school activities for exceptional children. A pre-student teaching exploratory experience. (Cr and hrs ar; limited to 1 student; prereq ♯) Shannon
- 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 Term. (Cr and hrs ar; limited to 20 students) Ar
- 53A TEACHING HANDICAPPED CHILDREN**
Observing work with special classes; teaching under direction. (6 cr; limited to 1 student; prereq ♯) Shannon
- 69†† STUDENT TEACHING IN THE SOCIAL STUDIES**
(1 cr; prereq jr, †Ed 55A; hrs ar) Kyle
- 77†† STUDENT TEACHING IN THE NURSERY SCHOOL**
Five half days per week in supervised classroom participation. (3 cr; prereq sr, ♯; hrs ar) Moore
- 84 PRACTICE AND FIELD WORK IN RECREATION LEADERSHIP**
(2 cr; prereq recreation major; hrs ar) Ar
- 85 PRACTICE AND FIELD WORK IN RECREATION**
(2 cr for majors, 1 cr for minors; prereq recreation majors or minors; hrs ar) Ar

SECOND TERM

- 84 PRACTICE AND FIELD WORK IN RECREATION LEADERSHIP**
(See first term) (Hrs and rm ar) Ar
- 85 PRACTICE AND FIELD WORK IN RECREATION**
(See first term) (Hrs and rm ar) Ar

Music Education (MuEd)

(See also Music in the section on College of Liberal Arts)

FIRST TERM

- 51 TEACHING MUSIC**
(Kindergarten-Primary grades) For nonmusic majors. Appreciation; methods. (2 cr; each section limited to 25 students; prereq Mus 4) Borg
- Sec 1, III MTWThF, NMA 4 Sec 2, IV MTWThF, NMA 4

†† Student teaching is open only to students in College of Education regular degree programs. Application must be made prior to May 28. Forms and instructions are available in the Student Teaching Office, 227 Burton Hall.

- 52 **TEACHING MUSIC**
(Intermediate grades) For nonmusic majors. Appreciation, methods, materials. (2 cr; each section limited to 25 students; prereq 51, Mus 4 or ‡) Sieber
Sec 1, I MTWThF, NMA 4 Sec 2, V MTWThF. ScH 104
- 61†† **STUDENT TEACHING AND SUPERVISION OF MUSIC**
(3-12 cr; prereq sr, 53, Ed 55B, ‡; VIII W; ScH 104) Ivory
- 102 **GENERAL MUSIC IN ELEMENTARY AND JUNIOR HIGH SCHOOLS**
Open to music education and nonmusic majors. Methods, materials, problems in teaching general music classes; emphasis on music literature. (3 cr; prereq 54 or ‡; II MTWThF; ScH 104) Borg
- 124 **SELECTION, CONDUCTING OF CHORAL MATERIALS**
Student conducting with class as performing ensemble; criteria for selecting choral and combined choral and instrumental materials; rehearsal techniques. (3 cr; prereq sr; III MTWThF; NMA 5) Caswell
- 125 **SELECTION OF INSTRUMENTAL MUSIC MATERIALS**
Sources and criteria; orchestra, band, and ensemble music, choral accompaniment; class teaching methods, books; individual projects, group activities. (3 cr; prereq sr; IV M; ScH 104) Ivory
- 224* **RESEARCH PROBLEMS**
(3-9 cr; prereq knowledge of elementary statistics; VII T; ScH 104) Caswell, Ivory

SECOND TERM

- 51 **TEACHING MUSIC**
(See first term) (Limited to 25 students; III MTWThF; NMA 4) Sieber
- 52 **TEACHING MUSIC**
(See first term) (Each section limited to 25 students) Sieber
Sec 1, I MTWThF, NMA 4 Sec 2, IV MTWThF, NMA 4
- 103 **PSYCHOLOGICAL FOUNDATIONS**
Implications of developmental and objective psychological data in music theory and acoustics. (3 cr; prereq sr, ‡; I MTWThF; ScH 103) Caswell
- 105 **ADVANCED TOPICS: INSTRUMENTAL MUSIC**
Individual selection of topics for intensive study. Bibliographical methods, library resources. (3 cr; prereq sr, ‡; I MTWThF; ScH 3) Ivory
- 110 **GENERAL MUSIC EDUCATION WORKSHOP**
Using a junior high school age laboratory group for demonstrations, the workshop explores materials and techniques for teaching unison, two-, three-, and four-part choral music in the general music class and in the elective choral groups. Special attention to the development of a set of criteria to determine difficulty and appropriateness of choral materials, methods of voice classification, rote and note teaching, and the boys' changing voice. (3 cr; II MTWThF; WuH 320) Caswell
- 224* **RESEARCH PROBLEMS**
(See first term) (VII T; ScH 104) Caswell, Ivory

Physical Education for Men (PEM)

FIRST TERM

- 1A **BEGINNING ARCHERY**
(1 cr; each section limited to 20 students) Tenney
Sec 1, V MTWTh, NGW 60 (co-ed) Sec 2, VI MTWTh, NGW 60 (co-ed)
- 1B **BEGINNING GOLF**
(1 cr; each section limited to 20 students)
Sec 1, III-IV MW, Golf Course, Tutt Sec 3, III-IV TTh, Golf Course, Bolstad
Sec 2, VI-VII MW, Golf Course, Tutt Sec 4, VI-VII TTh, Golf Course, Bolstad
- 1C **BEGINNING SWIMMING**
(1 cr; limited to 20 students; V MTWThF; CH Pool) Mowerson

†† Student teaching is open only to students in College of Education regular degree programs. Application must be made prior to May 28. Forms and instructions are available in the Student Teaching Office, 227 Burton Hall.

- 2A BEGINNING TENNIS**
(1 cr; each section limited to 20 students) Ar
Sec 1, IV-V MW, Tennis Courts Sec 2, IV-V TTh, Tennis Courts
- 4C TRACK FUNDAMENTALS**
Demonstrations and practice in all track and field events. (1 cr; III MTWThF; CH 214) Griak
- 9A-B FUNDAMENTAL RHYTHMS AND SQUARE AND BALLROOM DANCING**
Basic steps and folk dances. Instruction in circle, line, square, mixer, couple dances; square dance calling. (1 cr each; VI MTWThF; NGW 151 [co-ed]) Horvei
- 60A PREVENTION AND CARE OF INJURIES**
Policies for conditioning of athletes in interscholastic and intercollegiate sports; safety controls; care and prevention of injuries in physical education activities. (3 cr; prereq 50 or Anat 57; VI MTWThF; CH 215) Stein
- 60B ATHLETIC TRAINING LABORATORY**
Thirty hours of practical experience in the training room under supervision. (1 cr; prereq 60A; VII MTWThF and ar; CH Tr Rm) Stein
- 68 BASKETBALL COACHING**
Theory, styles of offense and defense, the conditioning and handling of players. (2 cr; prereq 4B; III MTWThF; CH 215) Kundla
- 69 TRACK COACHING**
Techniques of performance in all of the standard track and field events; methods of coaching; organization of track meets; study of rules; officiating methods and practice. (2 cr; prereq 4C; IV MTWThF; CH 215) Griak
- 82 PRINCIPLES OF PHYSICAL EDUCATION**
Philosophy of physical education; principles underlying curriculum building, methods of teaching, measurement, and outcomes. (3 cr; prereq sr; I MTWThF; CH 215) Donnelly
- 101 FOUNDATIONS OF PHYSICAL EDUCATION**
Establishment of guide lines for individual and group professional action based upon an examination of pertinent social forces, educational philosophies and general ethics. (3 cr; prereq grad or MEd student; V MTWThF; CH 214) Piper
- 112 PROGRAMMING IN RECREATION**
Principles of program planning for an organized offering of recreation opportunities. (3 cr; prereq PEM 57, 58; I MTWThF; CH 206) Schultz
- 136 INTRODUCTION TO RESEARCH IN SCHOOL HEALTH EDUCATION, PHYSICAL EDUCATION, AND RECREATION**
Research methods applied to physical education and recreation; designs for research problems. (3 cr; prereq #; VI MTWThF; CH 214) McAdam
- 224* RESEARCH PROBLEMS: SCHOOL HEALTH EDUCATION, PHYSICAL EDUCATION, AND RECREATION**
Individual problems in areas of philosophy, methods, curriculum, evaluation, and measurement; all levels. (Cr ar; prereq 136 and 135 or EPsy 116 or #) Donnelly, Piper, McAdam
- 233 ADMINISTRATION OF THE PHYSICAL EDUCATION PROGRAM IN SECONDARY SCHOOLS**
Special administrative procedures in promotion of physical education program. (3 cr; prereq 63; IV MTWThF; CH 214) Piper
- 261A SEMINAR: CONTEMPORARY PROBLEMS IN PHYSICAL EDUCATION**
Individual presentation and class discussion of studies completed by the class members and contemporary problems selected by class members. (3 cr; prereq 136 and #; I MTWThF; CH 214) McAdam

SECOND TERM

- 1A BEGINNING GOLF**
(See first term) (Each section limited to 20 students) Bolstad
Sec 1, V-VI MW, Golf Course Sec 2, V-VI TTh, Golf Course
- 1B BEGINNING SWIMMING**
(See first term) (Limited to 20 students; VI MTWThF; CH Pool) Mowerson
- 2B INTERMEDIATE SWIMMING**
(1 cr; limited to 20 students; VII MTWThF; CH Pool) Mowerson

- 2C BEGINNING TENNIS**
(1 cr; each section limited to 20 students) Mowerson
Sec 1, III-IV MW, Tennis Courts Sec 2, III-IV TTh, Tennis Courts
- 5B GYMNASTICS**
Stunts on the buck, side horse, long horse, parallel bars, low bar, high bar, rings, trampoline, springboard, and mats; stall bar exercises; rope climbing; and pyramid building. (1 cr; I MTWThF; CH App Gym) Richardson
- 51 MECHANICS OF MOVEMENT**
Structure of the body; principles and mechanics of bodily movements. (3 cr; prereq 50 or Anat 57; I MTWThF; CH 206) Osell
- 67 FOOTBALL COACHING**
Theory, strategy, generalship, styles of offense and defense, methods of organizing practices, and handling of players. (2 cr; prereq 4A or 1 yr experience on squad; V MTWThF; CH 215) Crawford
- 71 PHYSIOLOGICAL APPLICATION TO SPORTS**
Consideration of muscular contraction with applications for strength development programs; contributions of training programs to endurance, speed, and skill acquisition; influence of training on the cardiovascular system; fatigue and recovery; early season training, pregame meals and ergogenic aids in athletics. Required for the Minnesota Coaching Certificate. (3 cr, §PubH 91, 92; prereq Anat 57 or PEM 50; IV MTWThF; CH 215) Alexander
- 121 PRINCIPLES OF RECREATION METHODS**
Leadership methodology in all aspects of recreation. (3 cr; prereq EdT 84; I MTWThF; CH 214) Schultz
- 135 TESTS AND MEASUREMENTS IN PHYSICAL EDUCATION**
Place and limitations of measurement in physical education; construction and interpretation of evaluative procedures in physical education. (3 cr; prereq grad or MED, EPsy 60; V MTWThF; CH 214) Alexander
- 224* RESEARCH PROBLEMS: SCHOOL HEALTH EDUCATION, PHYSICAL EDUCATION, AND RECREATION**
(See first term) Richardson, Alexander
- 235 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 §; I MTWThF; CH 215) Richardson

Physical Education for Women (PEW)

Physical Examination

It is recommended that every woman student avail herself of the opportunity offered by the University Health Service for a physical examination. 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. and other facilities for general recreation from 2:30 to 3:30 p.m. during the First Term. All facilities, including the swimming pool, are available for recreational use from 1:30-2:30 p.m. during the Second Term. The rental fee for suits and towels for swimming is 20 cents and the rental fee for towels for shower baths is 10 cents. 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.

Teaching Requirements for Physical Education

Those interested in teaching physical education in the state of Minnesota must qualify in one of the following professional programs.

1. Courses offered this summer which apply to the minor in physical education are PEW 3, 7, 8, 10, 11, 18, 25, 32, 40C, 102.
2. Courses offered this summer which apply to the undergraduate major in physical education are PEW 7, 8, 10, 11, 18, 25, 40C, 102.
3. Courses offered this summer which apply to advanced and graduate degrees with a major in physical education are PEW 102, 104, 117B, 130, 224.

Required Physical Education

Those interested in meeting a college requirement in physical education may register for PEW 3, 7, 8, 10, 11, 32.

Elementary School Majors

PEW 70 is being offered this summer to accommodate elementary school majors and also classroom teachers wishing help with the planning and selection of appropriate units of instruction and methods in health and physical education for elementary school children.

FIRST TERM

3** ARCHERY FOR BEGINNERS

Instruction will include shooting skills and techniques, proper handling of equipment, and rules and etiquette of the sport. Individual skill guidance is stressed. Equipment will be provided. (1 cr; each section limited to 22 students)

Sec 1 (co-ed), V MTWTh, NGW 60, Tenney
 Sec 2 (co-ed), VI MTWTh, NGW 60, Tenney

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; each section limited to 20 students)

Sec 1, I MTWTh, NGW 151, Tenney Sec 3, III MTWTh, NGW 151, Tenney
 Sec 2, II MTWTh, NGW 151, Tenney Sec 4, IV MTWTh, NGW 151, Eibner

8** GOLF FOR BEGINNERS

Open to those with little or no experience in golf. Fundamental strokes and individual analysis of the player's game are stressed along with the rules and etiquette of the game. (1 cr; each section limited to 20 students) Gunderson

Sec 1, I MTWTh, NGW 60 Sec 3, III MTWTh, NGW 60
 Sec 2, II MTWTh, NGW 60 Sec 4, IV MTWTh, NGW 60

10** MODERN DANCE

Instruction will include skills and techniques of modern dance as well as dance composition. (1 cr; IV MTWTh; NGW 153) Shick

11** POSTURE AND INDIVIDUAL EXERCISE

Instruction will include posture appraisal and exercises selected on the basis of individual needs. (1 cr; limited to 20 students; VI MTWTh; NGW 153) Shick

18** THE TEACHING OF DANCE

Methods of teaching folk, square, and social dance forms at the junior and senior high school level. (2 cr; VI MTWThF; NGW 151) Horvei

25 AMERICAN RED CROSS FIRST AID: STANDARD, ADVANCED

Lectures, demonstrations, and practice in emergencies and first aid treatment. American Red Cross Standard Advanced Certificate in First Aid received upon successful completion of course. (2 cr; V MTWThF; NGW 3) Slocum, Tenney

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

- 32++ BEGINNING SWIMMING**
Instruction includes orientation activities, crawl, side stroke, backstroke, diving, and water safety skills. (1 cr; each section limited to 20 students) Eibner
Sec 1, V MTWTh, NGW 58 Sec 2, VI MTWTh, NGW 58
- 40C++ STUNTS, TUMBLING, AND APPARATUS**
Instruction will include skills and progression in stunts, tumbling and apparatus activities, elementary-high school. Open to physical education majors and minors. (1 cr; II MTWTh; NGW 153) Horvei
- 70 TEACHING HEALTH AND PHYSICAL EDUCATION IN THE ELEMENTARY SCHOOL**
Methods of instruction in health and physical education for the elementary education major. (3 cr; each section limited to 40 students; prereq 45, 3rd qtr soph, elem ed major) Plack
Sec 1, II MTWThF, NGW 201 Sec 2, IV MTWThF, NGW 201
- 104 TEACHING PHYSICAL EDUCATION FOR THE HANDICAPPED CHILD**
Selection and organization of appropriate activities for students with physical disabilities; program planning at all levels; observations, demonstrations, special lectures. (3 cr; prereq #; IV MTWThF; NGW 3) Wilson
- 117B ADVANCED INSTRUCTION IN SCHOOL HEALTH FOR SECONDARY SCHOOLS**
Instructional problems at secondary level; individual problems discussed. (3 cr; prereq 83, or #; III MTWThF; NGW 3) Slocum
- 118E## PROBLEMS: TEACHER EDUCATION IN HEALTH, PHYSICAL EDUCATION, AND RECREATION**
For master of education 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. (Cr ar; prereq #; hrs ar) Slocum, Wilson
- 130 CONTRIBUTIONS OF BASIC SCIENCES TO PHYSICAL EDUCATION**
Recent research in basic sciences and application in selected areas. (3 cr; prereq grad or #; II MTWThF; NGW 3) Wilson
- 224* RESEARCH PROBLEMS: SCHOOL HEALTH, PHYSICAL EDUCATION, AND RECREATION**
Individual problems and conferences for M.A. and Ph.D. candidates. (Cr ar; prereq 135 and 136 or EPsy 116 or #; hrs ar) Slocum, Wilson

SECOND TERM

- 7++ TENNIS FOR BEGINNERS**
(See first term) (Each section limited to 20 students) Lampe
Sec 1, IV MTWTh, NGW 151 Sec 2, V MTWTh, NGW 151
- 8++ GOLF FOR BEGINNERS**
(See first term) (Each section limited to 20 students) Lampe
Sec 1, I MTWTh, NGW 60 Sec 2, II MTWTh, NGW 60
- 102 THE PHYSICAL EDUCATION PROGRAM IN THE ELEMENTARY AND SECONDARY SCHOOL**
Philosophy, objectives, trends, content, and evaluation in relation to the physical education curriculum. (3 cr; prereq sr; II MTWThF; NGW 3) Jaeger
- 118E## PROBLEMS: TEACHER EDUCATION IN HEALTH, PHYSICAL EDUCATION, AND RECREATION**
(See first term) Jaeger
- 224* RESEARCH PROBLEMS: SCHOOL HEALTH, PHYSICAL EDUCATION, AND RECREATION**
(See first term) Jaeger

++ 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, by the quality of their General College work, demonstrate ability to do the level of work required in another college of the University usually may transfer to that unit 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 descriptions of the courses during the Summer Session, see the regular *Bulletin of the General College*.

FIRST TERM

2B FIELDS OF APPLIED PSYCHOLOGY

This survey examines the contributions of psychology, as a technology of behavior, to areas such as teaching and learning, vocational guidance, mental health, personnel selection and training in industry, measurement and improvement of worker efficiency and morale, law and crime, and consumer research and advertising. (3 cr; prereq 2A; III MTWThF; NH 213) Shapiro

2C PSYCHOLOGY OF HUMAN DEVELOPMENT

Provides an objective view of the complex individual as he functions in and interacts with a complex environment at various stages during the process of physical and psychological development from conception through maturity. (3 cr; II MTWThF; NH 213) Latts

3A HOME LIFE: MARRIAGE AND FAMILY LIVING

The particular values of family life for the individual and for society are traced by study of biological, psychological, and sociological foundations of the family. Study is made 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, problems of parenthood, and problems of old age. (3 cr; III MTWThF; Arch 30) Anderson

7B PHYSICAL SCIENCE: ASTRONOMY

A study of the universe is made—the earth, the other planets in the solar system, relation of our solar system to the nearby stars of our galaxy and to the more distant galaxies of the universe. Topics include proofs for the earth's rotation and revolution; the motion and physical attributes of the sun, moon, and planets; measuring distances of stars; spectral classification of stars; theories of evolution of the universe. Observations through the University telescope are made when possible. (3 cr; IV MTWThF; Ph 133) Policoff

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; I MTWThF; NH 207) Schwabacher

9A STATISTICS

Emphasis on understanding problem-solving through statistical decision-making. Topics include organization and presentation of data; summary statistics; sampling; probability; distributions; simple estimation; and tests of hypotheses. Attention is drawn to limitations of methods of presentation. (3 cr; I MTWThF; Arch 30) McCutcheon

10A PRINCIPLES OF BIOLOGY

A study of the variety and relationships of living organisms illustrates the general principles of biology as to man, animals, and plants. These principles are drawn from fields such as the study of cells, relationships of organisms in nature, heredity, chemical and physical properties of living organisms, evolution, and reproduction. Films and demonstration laboratories supplement the lectures. (5 cr; I-II MTWThF and lab hr ar; SciB 4) Owen

17A PROBLEMS OF CONSUMER ECONOMICS

To understand our economic system from the viewpoint of the consumer, the student studies some of the more important aspects of the environment in which the consumer makes buying decisions. Topics include definition of consumption, expenditure patterns, buying considerations, consumer problems, and the role of government and of business. (3 cr; IV MTWThF; Arch 30) Roger Larson

24A MUSIC TODAY: MUSIC IN SOCIETY

Attention is focused on the functional role that music plays in society. Considered as a functional art, music is studied as it appears in religion, drama, the dance, and the concert hall. Students with or without previous musical training may register for this course. (3 cr; III MTWThF; NH 111) Caswell

29A WORLD LITERATURE I

Seeks to integrate life and literature and to relate the student's experiences to certain universal themes concerning personal relationships and spiritual values of mankind. Readings are in both ancient and modern Oriental and Western literature. (3 cr; II MTWThF; Arch 30) Rathburn

31A WRITING LABORATORY: PERSONAL WRITING

To increase awareness of himself, his surroundings, and his relationships with friends and family, the student reads and writes descriptions, character sketches, incidents, and autobiographies. Works on his own writing difficulties, dictionary usage, and brief study of the history and development of language. (3 cr)

Sec 1, I-II MTWTh, NH 216, Reisman
Sec 2, III-IV MTWTh, NH 216, Stockdale

32A ORAL COMMUNICATION: BASIC PRINCIPLES

An introduction to the basic principles of speech. By means of such assignments as an introduction, a demonstration, an argument, and a group discussion, the student is given an opportunity to apply these principles. He is helped to develop confidence in himself, to express his ideas clearly and effectively, and to listen critically. (3 cr; for practical nursing students only; IV MTWThF; NH 107) Hagen

41A MAN IN SOCIETY: HIS PERSONAL ROLE

The nature of social problems is probed by application of methods from several social science disciplines. A study of the American value system stresses the conflicts in values which contribute to the development of specific social problems. There is intensive study of a particular social problem: race relations within American society. The role of the individual is emphasized. (5 cr; III-IV MTWThF; Arch 25) F Harris

43C THE FAR EAST

A study of some of the dominant characteristics and developments of the traditional Chinese society and the changes that took place following the Western Impact, as well as the continuing changes under communism. By a comparative approach the student gains a deeper insight into his own culture and into the changes occurring in many emerging nations in the world. (3 cr; II MTWThF; JohH 114) Matsumoto

44B CURRENT HISTORY

Analysis of current problem areas of the world, such as Latin America, Southeast Asia, Africa, the Soviet Union, or of domestic topics, such as national and state elections, labor-management disputes, forms the material for this course. Sharpening of the student's alertness to news media and of his ability to make critical judgments of current events is another purpose. The topic for First Term, 1965, will be the Soviet Union. (3 cr; I MTWThF; JohH 114) F Johnson

SECOND TERM

5B FUNCTIONS AND PROBLEMS OF LOGIC

The student studies and attempts to apply the rules and procedures of sound argument and valid inference. He is shown the relationship of formal patterns of reasoning to

such uses of ordinary language as argument, propoganda, and persuasion. (3 cr; II MTWThF; NH 213) Zanoni

10B THE HUMAN BODY: STRUCTURE, FUNCTION, HEALTH

Problems of physical, mental, and social health are related to the structure, function, and needs of the human body. The anatomy and physiology of the systems which constitute the human organism are studied, e.g., the heart—what it is, how it works, importance to body function, what can go wrong with it, what is known about keeping it on the job. (5 cr; I-II MTWThF; SciB 4) Jefferson

19A PROBLEMS OF BUSINESS TRANSACTIONS

Using only arithmetic skills practical methods are developed for solving many basic money problems connected with taxes, commissions, prices, discounts, loans, and notes. Student acquires useful skills and a basis for sound judgment to apply to financial problems. (3 cr; I MTWThF; NH 207) Wallace

20A PRACTICAL LAW

A study of courts and court procedure; contracts, their formation, operation, and discharge; law of sales of goods under Uniform Sales Act; nature and classification of real estate; deeds and conveyances; Torrens titles; tenancy; wills; insurance. (3 cr; III MTWThF; Arch 30) Donnelly

21 GENERAL ARTS

An opportunity is given the student to examine the basic similarities which underlie all art forms, and to investigate these art forms in terms of human needs. The arts concentrated on are painting, sculpture, music, architecture, and literature. (3 cr; III MTWThF; NH 111) Gates

29E READING SHORT STORIES

To enhance his appreciation of a popular form of leisure reading, the short story, the student reads representative stories by outstanding American, British, and Continental writers. He sees how individual writers have used the short story to express in a concise artistic form their ideas about human experience. (3 cr; II MTWThF; Arch 30) Kivits

30B FUNDAMENTALS OF USAGE AND STYLE

Intensive drill in usage and punctuation; emphasis on such matters of style as subordination, parallel construction, tense consistency, and placement of modifiers. (3 cr; III MTWThF; NH 207) Kurak

31B WRITING LABORATORY: ORGANIZING IDEAS

The student learns how to organize ideas in expository writing, and how to read at the level of comprehension required in university courses. From textbook material the student learns to detect central ideas and supporting details and to utilize such patterns of organization in his own factual writing. He writes summaries, outlines, and various pieces of explanatory writing. (3 cr; prereq 31A; III-IV MTWTh; NH 216) Sheldon

32A ORAL COMMUNICATION: BASIC PRINCIPLES

(See first term) (Open to all; I MTWThF; NH 107) Benson

38A GENERAL GEOGRAPHY

Topics covered are selected from the following units: the philosophy and tools of the geographer, the Twin Cities, Minnesota, a comparison of the U.S.S.R. with the U.S., Japan, and a summary of world geography. Each is approached in terms of man's culture, the physical environment, and problems man faces in making a living. (3 cr; I MTWThF; NH 213) Steinhauer

43A BACKGROUND OF THE MODERN WORLD

Dealing primarily with the history of modern Europe, three major themes are studied: the nation state, industrialism, and modern science. The student learns how each of these originated in Europe, in what direction they have developed, and how they have spread to other parts of the world. (3 cr; IV MTWThF; JohH 114) Jones

45A GROWTH OF AMERICAN DEMOCRACY

To provide a better understanding of the problems faced by the United States in the world today, study is made of American political, economic, and social values nurtured in the U.S. historical background. Selected problems may cover political-economic conflicts of the revolutionary period, struggle over the form of republican government and its locus of sovereignty, and U.S. reaction to the industrial revolution. (3 cr; IV MTWThF; Arch 145) Lupton

GRADUATE SCHOOL

The Graduate School presents excellent 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, and the specialist in education certificate.

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 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 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 or the Miller Analogies Test.

Admission

Students planning to use credits earned in Summer Session toward a graduate degree or who expect to receive graduate credit for such work should apply for admission directly to the Graduate School. Applications must be submitted *complete in every detail*—two official transcripts of all college work and, if required, test results, references, or other information—at least 4 weeks prior to the opening of the quarter or summer term in which the student expects to register. Applications should be sent to Dean of the Graduate School, University of Minnesota, Minneapolis, Minnesota 55455.

Holders of the Bachelor's degree who are not interested in earning graduate credit do not register in the Graduate School. Instead they may apply for admission as adult special students or may register as special Summer-Session-only students. These students, if they subsequently decide to make application for admission to the Graduate School, may petition to transfer *only their first term's work as an adult special student or Summer-Session-only student* to their graduate record. Only courses of graduate character taught by members of the graduate faculty may be transferred.

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 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 shall present his program and his thesis title (for Plan A) or his program (for Plan B) for his adviser's recommendation and transmission to the appropriate group committee for action. Approval by the Graduate School indicates the student's admission to candidacy for the degree.

Requirements for Advanced Degrees

For information concerning requirements for graduate degrees, please refer to the *Bulletin of the Graduate School, 1964-1966*, pages 8-21.

Deadline Dates for Summer Session Students

Theses of Summer Session students must be complete and registered in the Graduate School office at least 8 weeks before the end of the term in which they take the degree (First Term—Friday, May 21, 1965; Second Term—Friday, June 25, 1965). Oral examinations must be completed at least 5 weeks prior to the commencement date (First Term—Friday, June 11, 1965; Second Term—Friday, July 16, 1965).

LAW SCHOOL

FIRST and SECOND TERMS

Courses in the Law School Summer Session are open only to students who have completed at least 1 year of work in the University of Minnesota Law School or at another law school which is a member of the Association of American Law Schools. All Law School courses run through both the first and second terms. For further information, write to Law School, University of Minnesota, Minneapolis, Minnesota 55455.

105 INTRODUCTION TO ACCOUNTING

(See Acct 85 under School of Business Administration) (3 cr; V MTWThF; FraH 120) Pavlock

123 PRIVATE CORPORATIONS

Structure and characteristics; formation and promotion; issuance and transfer of securities; exercise and sale of control; shareholder's suits; capital creation and reduction; distributions; authority and responsibility of representatives; sale of assets and mergers; reorganization; dissolution. (6 cr; II MTWThF; FraH 20) Choper

124 MODERN REAL ESTATE TRANSACTIONS

The commercial transfer of land and financing of land acquisitions: real estate contracts, deeds, leases, mortgages; the recording system; adverse possession; covenants for title; easements and promises respecting the use of land; fixtures; waste. (6 cr; II MTWThF; FraH 120) Stein

127 TRUSTS AND ESTATES

A basic introduction to the law governing devolution of property; the requirements of a valid *inter vivos* gift, intestate succession, the formalities required for an effective will, and the various types of challenge which may be made to a will meeting formal requirements of execution and attestation; problems of probate administration; the law governing the creation, administration, and distribution of trusts; tax problems arising out of the descent and distribution of property. (6 cr; IV MTWThF; FraH 20) Waterbury

128 TAXATION I

Principles of federal income taxation of individuals; introduction to and selected problems in federal income taxation of decedents' estates, trusts, partnerships, and corporations; introduction to and selected problems in federal estate and gift taxation. (6 cr; I MTWThF; FraH 120) Scallen

129 EVIDENCE

Proof of fact, direct and circumstantial proof; exclusionary rules including hearsay and hearsay exceptions; privileged communications; constitutional protections; competency of witnesses; impeachment. (6 cr; IV MTWThF; FraH 120) Enker

159 LOCAL GOVERNMENT LAW

Place of local government units in the governmental structure; sources of and limitations upon the power of local governments; legislative control; home rule; relationship to other local government units and to the federal government; role of the judiciary; organization, annexation, consolidation, and dissolution; governmental organization in metropolitan areas. (3 cr; III MT [1st term], III MTW [2nd term]; FraH 20) Sandalow

160 LAND USE PLANNING

Development of materials normally taught as part of Local Government Law dealing with zoning, eminent domain, urban renewal, and metropolitan planning. (3 cr; III WThF [1st term], III ThF [2nd term]; FraH 20) Sandalow

184 UNFAIR COMPETITION

Copyrights, trademarks, and unfair competition; trade libel, disparagement, interference with contractual relations, and other business torts. (3 cr; V MTWThF [1st term only]; FraH 20) Miller

189 SELECTED PROBLEMS IN CONSTITUTIONAL LAW

A consideration in depth of several difficult problems of constitutional law ordinarily not treated at any length in the basic Constitutional Law courses. (3 cr; prereq Constitutional Law; V MTWThF [2nd term only]; FraH 20) Lewis

Note—Hours of classes in the Law School for the Summer Session are as follows:

| | |
|-----------------|----------------|
| I 8:00-9:00 | IV 11:30-12:30 |
| II 9:10-10:10 | V 1:00-1:50 |
| III 10:20-11:20 | |

Law School tuition during the summer quarter is:

3 credits, \$46.50 (residents), \$61.25 (nonresidents); 6 credits, \$93 (residents), \$122.50 (nonresidents); 9 credits or more, \$119 (residents); 9 credits, \$183.75 (nonresidents); 12 or more credits, \$245 (nonresidents). In addition, each student will pay the incidental fee of \$22.

COLLEGE OF LIBERAL ARTS

Liberal arts and general education courses are offered by the College of Liberal Arts to meet the special needs of four groups of students: students, usually with a Bachelor's degree as their immediate goal, seeking preparation for professions and other careers and a foundation for a broad understanding of the world in which they are to live and work; those in other professional or specialized divisions of the University who wish to broaden the base of their educational experience; students expecting to continue in graduate work in any of the areas represented in this college; teachers wishing either to pursue graduate work or to expand their knowledge and background in their specialties and in other fields.

Courses in the College of Liberal Arts in the 1965 Summer Session are for the most part selected from the regular Arts College curriculum. The complete curriculum is described in the *Bulletin of the College of Liberal Arts* which may be obtained from the Office of Admissions and Records or the Arts College office.

Courses announced in the bulletin as open to "juniors and seniors" (numbered 50-99) or to "juniors, seniors, and graduates" (numbered 100-199) are called Upper Division courses. They are usually open to sophomores who have a C average in the prerequisite courses.

Certain courses offered this summer 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 Arts College students under conditions described in the Arts College bulletin. Admission to Summer Session is described in the section on Admission and Registration of the Summer Session bulletin; cost, housing, and admission information is provided in the section on General Information of this Summer Session bulletin as well as in the separate *Bulletin of General Information*.

Students are urged to bring questions or problems to the college offices, 214 Johnston Hall (Lower Division) and 223 Johnston Hall (Upper Division), or (on Monday, June 14) to the Arts College desk in the Coffman Union Main Ballroom.

Special summer programs and learning opportunities are described in the following paragraphs:

Art—Undergraduate and graduate offerings in the Department of Art include courses in studio work (drawing, painting, printmaking, sculpture, photography) and art history. Departmental library and University galleries are open for historical and creative research.

English—The English Department offers a wide variety of courses during the summer serving the requirements of the undergraduate and graduate student, the professional teacher, and the student with interests in literature, literary history, and criticism.

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, European, ancient, medieval, and Asian history.

Library School—The Library School offers courses leading to a Master's degree, a 24-credit program leading to certification for school library work, and minor programs for undergraduates in the College of Education.

Music—Graduate and undergraduate courses of interest to general students as well as music majors will be offered both terms. These include: Fundamentals of Music, Ear Training, Composition, American Music, Band Arranging, History of Musical Styles, Symphonies of the Romantic Era, Vocal Literature, Music in the Middle Ages and Renaissance, Opera Workshop, and various phases of applied music including piano, voice, organ, and all orchestral and band instruments.

There will be a Summer Session band First Term.

A new course to be offered in the Second Term, Mus 190, Hymnology, will deal with the history of hymn texts, tunes, hymn books, and hymn settings.

Courses in applied music are open to talented and qualified high school students. Advance college credit may be earned by students who plan to enroll in the University after graduation from high school.

Band directors will be interested in the special course in Band Arranging.

Attention is called to the 10-week summer course for entering music or music education freshmen. In addition to applied music, incoming freshmen may take a new course entitled Musicianship, and a general history course, which will grant them 17 credits for the 10-week summer enrollment and lead to earlier graduation. It is hoped that some financial assistance will be made available to high school musicians who wish to start their college work during the Summer Session.

There will be special workshops on contemporary American instrumental and choral music and elementary music education June 15 through June 17.

Philosophy—Courses in the Department of Philosophy 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. Besides beginning courses in the Problems of Philosophy, Logic, and Ethics, there are advanced courses in the history of Western philosophy and a variety of particular subjects designed to serve the needs and interests of students who may not have philosophy as their major field of concentration.

Psychology—The beginning courses in General Psychology and Laboratory Psychology, which are prerequisite to most advanced courses, are available in the Summer Session. Specialized courses in the psychology of motivation, social psychology, differential psychology, and the psychology of learning, as well as courses in such areas of application as the psychology of advertising and personnel work, are appropriate both for the nonpsychology major and for the major student with either general education or vocational and professional aims.

Sociology—Sequences in general sociology, social problems and social policy, and social research are among the offerings in the Department of Sociology. 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.

American Studies (AmSt)

(See section on Special Programs)

FIRST TERM

Hum 23 AMERICAN LIFE III

The rise of American intellectual and cultural nationalism and its place in the modern world. (3 cr; I MTWThF; VH 6) Phillips

101-201 MILLENIUM AND UTOPIA IN AMERICA

An exposition of interdisciplinary methods and of the concept of American Studies; extended exploration of a topic. (3 cr; limited to 12 students; open to MA candidates in American Studies and other qualified students; prereq Δ; V-VI MTh; VH 6) Smith

250 INDEPENDENT READINGS IN AMERICAN CIVILIZATION

(Cr ar; prereq consent of program chairman; hrs ar) Smith and others

SECOND TERM

Hum 21 AMERICAN LIFE I

Individualism in American life and thought. (3 cr; I MTWThF; VH 6) Donaldson

Anthropology (Anth)

FIRST 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 human organize their lives, directed toward a deeper and broader understanding of human capacities and purposes. (3 cr, §old 1 [such students should register for 1A]; I MTWThF; ForH 155) Johnson

90 ARCHAEOLOGY OF NORTH AMERICA

A survey of the prehistoric archaeology of North America north of Mexico. Emphasis will be placed on analysis of the techniques, methods, and goals of prehistoric archaeology. (3 cr; prereq 1A or 100; III MTWThF; ForH 185) Johnson

154 ETHNOLOGICAL FIELD TECHNIQUES

Introduction to techniques of field observation, interviewing, and recording; training in field methods, the presentation of data, and the interpretation of results provided by participation in a field project in Indian communities in northern Minnesota. (6 cr [to receive cr students must take 240 in 2nd term]; prereq sr, grad, and §) Miller

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 people. (3 cr; prereq 2A or 100; II MTWThF; ForH 285) Spencer

165 CULTURE AND PERSONALITY

Role of culture in the formation of personality. Problems of individual adjustments to the demands of culture. Psychological approach to culture. (3 cr; prereq sr, 2A or 100 or Δ [or waived for majors in public health, nursing, psychology, sociology, and social work]; IV MTWThF; Mayo 125) Spencer

190, 191, 192 DIRECTED RESEARCH

(Cr and hrs ar; prereq sr, Δ) Staff

SECOND 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 155) Stewart

80 THE AMERICAN INDIAN

The peopling of North and South America. Physical and cultural characteristics of the tribes of the major culture areas. (3 cr; prereq 2A or 100; III MTWThF; ForH 185) Stewart

100 PRINCIPLES OF CULTURAL ANTHROPOLOGY

Intensive introduction to the elements of cultural anthropology. Analysis of primitive societies with respect to range and variability of human behavior. Principles of culture dynamics. (3 cr, §1A or §2A; may be taken in lieu of 1A-2A; II MTWThF; ForH 285) Gerlach

120 PEOPLES AND CULTURES OF AFRICA

A survey of the races, languages, and cultures of Africa south of the Sahara. Peoples representative of each culture area will be studied with special attention to social organization, economic and political systems, and adjustment to modern conditions. (3 cr; prereq 1A and 2A or 100; IV MTWThF; ForH 285) Gerlach

140 FIELD RESEARCH IN ARCHAEOLOGY

Archaeological field excavation, survey, and research in the excavation of various prehistoric sites in the state of Minnesota. Intensive training in excavation techniques, recordation, analysis, and interpretation of archaeological materials. (6 cr [may be taken for cr only once]; limited to 12 male students only; prereq 90 and Δ) Johnson

190, 191, 192 **DIRECTED RESEARCH**
(Cr and hrs ar; prereq sr, Δ) Staff

240 **ETHNOLOGICAL FIELD SESSION**
Field research in social anthropology of the American Indian in northern Minnesota.
(6 cr; prereq 154 and §) Miller

Art (Art)

(See also Art Education in the College of 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 illustrate general cultural factors that influence the production of art as well as basic problems of design and of technique.
(3 cr; III MTWThF; NH 45) Simon

3 MASTERWORKS OF RENAISSANCE AND MODERN ART

Selected monuments of Renaissance, baroque, rococo and modern art and culture.
(3 cr; II MTWThF; Arch 25) Waldfoegel

59 TRAVELING SUMMER 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 places to be visited are Athens, the Greek Isles, Delphi, Corinth, Mycenae, Rome, Assisi, Siena, Florence, Ravenna, Venice, Salzburg, Innsbruck, Munich, Paris, and London. (5 cr; prereq §; about June 29-August 12, approx 6 wks in Europe) Torbert

76X MODERN ART—THE EIGHTEENTH CENTURY

Rococo, neoclassical and early romantic art in England, France, Spain, Germany, and Italy: Watteau, Boucher, David, Houdon, Soufflot, Hogarth, Reynolds, Kent, Soane, Goya, Tiepelo, Guarini, Schluter, Neumann. (3 cr; prereq 1 or 50 or §; IV MTWThF; J 207B) Waldfoegel

176X TWENTIETH-CENTURY PAINTING

(Germany, Austria) Woppswede, The Bridge, Vienna, Secession, The Blue Rider, The New Objectivity. Modersohn-Becker, Nolde, Kirchner, Kandinsky, Kokoschka, Klimt, Grosz, Beckmann, Hartung, etc. (3 cr; prereq sr or §; I MTWThF; J 207B) Simon

STUDIO COURSES

10 PHOTOGRAPHY

Introduction to the photographic medium, its background and meaning today. Lectures in contemporary and historical use of photography. Problems in the use of the camera, printing and enlarging. (3 cr; each section limited to 20 students)

Sec 1, I-II MTWThF, J 2, Wilcox Sec 2, III-IV MTWThF, J 2, Wilcox

20 BASIC DRAWING

An introduction to studio work; exploration of contemporary and traditional methods. Work from nature, various drawing mediums. (3 cr; each section limited to 25 students)

Sec 1, I-II MTWThF, J 200, Quirt Sec 2, III-IV MTWThF, J 10, Busa

23 DRAWING AND PAINTING

Work from life and nature, introduction to color and pictorial structure. (3 cr; limited to 25 students; prereq 20; III-IV MTWThF; J 109) Wimmer

32 ELEMENTS OF PRINTMAKING

Foundation course. Familiarizes the student with the media of printmaking in general. Problems in engraving and other techniques employed in working on metal plate, as well as lithography, woodcuts and combined processes. (3 cr; limited to 20 students; I-II MTWThF; J 203) Myers

40-41 SCULPTURE

40 Study of structure in nature. Direct construction, casting and carving in various mediums. (3 cr; limited to 15 students; prereq 1 or §; I-II MTWThF; HoIB 154) Randell

41 Integrates basic principles examined in Art 40. Natural form is studied for 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; limited to 5 students; prereq 40; I-II MTWThF; HoB 154) Randell

51-54-55 DRAWING

From the model, still life, and nature. Principles of anatomy. (3 cr; limited to 25 students; prereq 23; I-II MTWThF; J 10) Busa

70-71-72 OIL PAINTING

Introduction to medium of oil; individual projects and instruction. (3 cr; limited to 15 students; prereq 55 or #; III-IV MTWThF; J 200) Quirt

73 PRESENTATION TECHNIQUES

A study of the visual means of communicating ideas in the fields of exhibition techniques, illustration and advertising. An investigation of the characteristics and the creative use of various media. (3 cr; limited to 25 students; prereq 24 or #; I-II MTWThF; J 109) Wimmer

80A-81A-82A METAL SCULPTURE

(Sequence limited to 15 students)

80A Sculpture II. Work with direct metal sculpture and constructions, with attention given to 20th-century tools and equipment. (3 cr; prereq 42; III-IV MTWThF; HoB 154) Randell

81A Sculpture III. Direct metal problems of sculptural expression and space organization in relation to architecture. (3 cr; prereq 80A, 80B, 80C; III-IV MTWThF; HoB 154) Randell

82A Sculpture III. Experimental work in direct metal. Class problems are assigned. (3 cr; prereq 81A; III-IV MTWThF; HoB 154) Randell

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; limited to 20 students; prereq 32 or #; III-IV MTWThF; J 203) Myers

150-151-152 PROBLEMS IN PAINTING

(3 cr; limited to 10 students; prereq 72 and #; III-IV MTWThF; J 200) Quirt

180A-181A-182A SCULPTURE IV

Advanced work in wood, stone, plaster, metal, and other materials of sculpture. Students work individually on projects. (3 cr; limited to 5 students; prereq 9 cr numbered 81 or above) Randell

SECOND TERM

HISTORY OF ART

1 PRINCIPLES OF ART

(See first term) (II MTWThF; NH 45) Torbert

2 MASTERWORKS OF ANCIENT AND MEDIEVAL ART

Based on selected monuments; broad critical analysis of Egyptian, Mesopotamian, Greek, Hellenistic, Roman, and medieval art as separate but related expressions of the culture in the periods indicated. (3 cr; I MTWThF; Arch 25)

67X HIGH RENAISSANCE AND MANNERIST ART

Sixteenth-century architecture, sculpture, and painting in Italy (Bramante, Palladio; Michelangelo, Giovanni da Bologna; Raphael, Correggio, Titian, Tintoretto). Spanish painting (El Greco). Northern Renaissance architecture. Flemish and German painting (Brueghel; Dürer, Holbein, Aitdorfer, Cranach). (3 cr; prereq 1 or 50 or #; III MTWThF; J 207B) Canedy

138 ART IN THE UNITED STATES

Contemporary movements. The Armory Show and development of modern realism, expressionism and abstraction. Frank Lloyd Wright and modern American architecture. (3 cr; prereq sr or #; IV MTWThF; J 207B) Torbert

STUDIO COURSES

20 BASIC DRAWING

(See first term) (I-II MTWThF; J 109) Sucec

23 DRAWING AND PAINTING

Work from life and nature, introduction to color and pictorial structure. (3 cr; limited to 25 students; prereq 20; III-IV MTWThF; J 109) Sucec

32 ELEMENTS OF PRINTMAKING

Foundation course. Familiarizes the student with the media of printmaking in general. Problems in engraving and other techniques employed in working on metal plate,

as well as lithography, woodcuts and combined processes. (3 cr; limited to 20 students; I-II MTWThF; J 203) Priede

51-54-55 **DRAWING**
(See first term) (I-II MTWThF; J 200) Pearson

70-71-72 **OIL PAINTING**
(See first term) (III-IV MTWThF; J 200) Pearson

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; limited to 20 students; prereq 32; III-IV MTWThF; J 11) Priede

Botany (Bot) ††

FIRST TERM

Biol 1 †† **GENERAL BIOLOGY**

Introduction to living things, both plant and animal, and to the major biological concepts. Structure, function, classification, and evolution of organisms. (5 cr; lect V MTWTh, V-VI F, Bo B6; lab VI-VIII MTWTh, Z 101) Skjeggstad

140 **ADVANCED SURVEY OF PLANT PHYSIOLOGY**

Advanced study of major topics in plant physiology. Cell physiology including membrane phenomena, enzyme catalysis, respiration, fermentation, and photosynthesis; mineral nutrition; water metabolism; translocation of solutes; growth; hormones; tropisms. (3 cr, §51; prereq elementary course in botany, zoology, or biology, or §, and a course in organic chemistry or biochemistry; III MTWThF) Soulen

140A **ADVANCED PLANT PHYSIOLOGY LABORATORY**

(2 cr; prereq 140 or †140; V-VII TTh) Soulen

194* **PROBLEMS**

Advanced work in some specialized field of botany. (1-5 cr; prereq §; hrs ar) Staff

SECOND TERM

Biol 2 †† **GENERAL BIOLOGY**

(See Biol 1, first term) (5 cr; prereq 1 or equiv; lect V MTWTh, V-VI F, Bo B6; lab VI-VIII MTWTh, Z 101) Olson

128 **PHYLETIC PALEOBOTANY**

Morphology, anatomy, and evolution of fossil plants, especially those occurring in the late Paleozoic. (5 cr; prereq §; 1:00-5:00 TTh) Hall

195* **PROBLEMS**

(See Bot 194, first term) (1-5 cr; prereq §; hrs ar) Staff

Classics

FIRST TERM

Classics (Clas) §§

56 **ELEMENTARY LINGUISTICS**

Introduction to current language science, involving brief history of the field and its methods, summary of the chief language families, basic phonetics of the European languages, how words are made and how they are analyzed, principles of language change, reconstruction of earlier stages in a language from extant dialects, and applications of linguistic science to language teaching and learning. (3 cr; prereq 1 yr foreign language study on college level or equiv, or §; III MTWThF; FolH 304) Kirchner

48 **TECHNICAL TERMS OF SCIENCE, MEDICINE, AND THE HUMANITIES**

Presentation in English contexts of Greek and Latin prefixes, suffixes, and roots basic in modern technical vocabularies. (3 cr; prereq soph; III MTWThF; Arch 60) Sonkowsky

†† For additional courses, see index for Biology Session.

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

§§ No knowledge of Latin or Greek is required.

68 TECHNICAL TERMS OF SCIENCE, MEDICINE, AND THE HUMANITIES

Meets with Clas 48, but students will do additional work for Upper Division credit. (3 cr, §48; prereq jr; III MTWThF; Arch 60) Sonkowsky

81 GREEK TRAGEDY IN TRANSLATION (AESCHYLUS, SOPHOCLES, EURIPIDES)

Introductory lectures on the origin of European drama as a distinct literary form, the characteristics of Greek tragedy, and the ancient theaters and theatrical conventions. Careful discussion of a dozen of the tragedies. Major emphasis on understanding the problems posed in relation to cultural patterns of the time. (3 cr, §181; prereq 9 cr in English literature, English beyond C, or foreign literature, or Δ; IV MTWThF; Arch 60) R Swanson

181 GREEK TRAGEDY IN TRANSLATION

Meets with Clas 81 but students will do additional work for advanced credit. (3 cr, §81; prereq grad; IV MTWThF; Arch 60) R Swanson

Latin (Lat)

171 ADVANCED READING

(3 cr; prereq 63 or Δ; II MTWThF; Arch 20) R Swanson

SECOND TERM

Classics (Clas)§§

45 GREEK AND ROMAN MYTHOLOGY

Classical myths which acquaint the student with the stories of gods, demi-gods, and heroes which are a basic component of the European cultural heritage, with attention to their artistic, religious, psychological, and anthropological interpretations. (3 cr, §42; prereq soph; I MTWThF; Arch 145) Forbes

145 GREEK AND ROMAN MYTHOLOGY

Same class work as Clas 45, but with special independent reading and research assignments in consultation with the instructor. (3 cr, §42, §45; I MTWThF; Arch 145) Forbes

Latin (Lat)

172 ADVANCED READING

(3 cr; prereq 63 or Δ; III MTWThF; FolH 304) Forbes

Communication (Comm)

FIRST TERM

3 COMMUNICATION

Continuation of Comm 1-2. (3 cr, §Engl C or §3A or §3B or §12H; prereq 2; II MTWThF; AH 101) Jensen

Economics (Econ)

FIRST TERM

1 PRINCIPLES OF ECONOMICS

Principles underlying economic activity and the economic institutions within which economic units function. National income, money and banking, business cycles, and international trade. Econ 1-2 or equivalent are prerequisite for most advanced courses in business administration and economics. (3 cr, 1-2†, §1T, §C, §50A; prereq 3rd qtr fr)

Sec 1, I MTWThF, CB 230, Staff
Sec 2, II MTWThF, CB 215, Staff
Sec 3, III MTWThF, CB 215, Staff

Sec 4, IV MTWThF, CB 135, Staff
Sec 5, V MTWThF, CB 110, Staff

§§ No knowledge of Latin or Greek is required.

2 PRINCIPLES OF ECONOMICS

(Continuation of Econ 1) Demand and supply, competition and monopoly, and the distribution of income. (3 cr, 1-2†, §2T, §C, §50B; prereq 1 or equiv)

Sec 1, II MTWThF, CB 115, Borak Sec 2, III MTWThF, CB 415, Staff

62 LABOR ECONOMICS

An introductory course dealing with the role of labor in the economy: labor as a factor of production; population and the labor force; economics of labor markets; labor market institutions; theories of wages and employment; unions and collective bargaining; current wage and employment practices; public policy. (3 cr, §1R 52; prereq 2 or equiv; II MTWThF; CB 105) Gregory

65 INTERMEDIATE ECONOMIC ANALYSIS I

Behavior of firms and industries under competitive and monopolistic conditions; factors influencing production, price, and advertising decisions. (3 cr, §65T, §165; prereq 1-2 or ‡)

Sec 1, II MTWThF, CB 130, Coen Sec 2, III MTWThF, CB 130, Sonnenschein

66 INTERMEDIATE ECONOMIC ANALYSIS II

Determinants of national income, employment, and price level; attention given to aggregate consumption and investment. (3 cr, §66T, §166; prereq 2 or ‡; IV MTWThF; CB 425) Sonnenschein

67 MONEY AND BANKING

Historical development, present pattern, and economic role of financial institutions, with special emphasis on commercial banks, the money supply, and the Federal Reserve System. (3 cr; prereq 2 or equiv; III MTWThF; CB 425) Gregory

68 ELEMENTS OF PUBLIC FINANCE

Survey of government expenditures, budgeting, fiscal policy, debts, and taxes in terms of fiscal institutions, impact on business and the economy, and policy issues. (3 cr; prereq 2 or equiv; IV MTWThF; CB 225) Borak

69 GOVERNMENT REGULATION OF BUSINESS

Economic aspects of public policy affecting the market process. Relations between market structure and economic efficiency and welfare; economic origins of monopoly and other business limitations on free competition; purposes and effect of antitrust laws and laws relating to "unfair business practices." (3 cr, §189A; prereq 65 or equiv for business or economics majors, suitable background in law or political science for others, or ‡; I MTWThF; CB 125) Staff

103 ECONOMIC DEVELOPMENT

Conditions necessary for increasing income, capital formation, measurement of economic growth, and problems of "underdeveloped" areas. (3 cr; prereq 2 or equiv; I MTWThF; CB 215) Coen

104 INTERNATIONAL ECONOMICS

Significance of foreign trade and investment. International payments and foreign exchange. Gold standard. International Monetary Fund and Bank. Arguments over tariffs and foreign aid policies. (3 cr, §114A; prereq 2 or equiv; II MTWThF; CB 205) Smith

150A CURRENT ECONOMIC ISSUES

Current controversies over economic policy and problems that underlie controversies. Selected topics. (3 cr; with ‡ course may be taken more than once; prereq 65, 66 or equiv; IV MTWThF; BA 735) Smith

165 ELEMENTS OF ECONOMIC ANALYSIS: FIRM AND HOUSEHOLD

Individual decision-making by households and by firms under conditions of monopoly, competition; some welfare economics. (3 cr, §65; prereq grad or ‡)

Sec 1, II MTWThF, CB 130, Coen Sec 2, III MTWThF, CB 130, Sonnenschein

166 ELEMENTS OF ECONOMIC ANALYSIS: INCOME AND EMPLOYMENT

Determinants of national income, employment, and price level; aggregate consumption, investment, and asset holding. (3 cr, §66; prereq grad or ‡; IV MTWThF; CB 425) Sonnenschein

176A ECONOMIC ANALYSIS II: INCOME THEORY

General equilibrium models from which may be determined the real output, employment, price level, and rate of interest. Effects of government fiscal and monetary policies on these equilibrium values. (3 cr; prereq 166 or equiv or ‡; III MTWThF; CB 245) Brownlee

180A HISTORY OF ECONOMIC THOUGHT

Principal economic writings of the past. Particular theories are related to problems and policies of the times and to contemporary theories. Classical economists, Marx, and beginnings of neoclassical economics. Origins of macro-theory. (3 cr; prereq 176A, 175 or §; VI MTWThF; CB 255) Krueger

190 READINGS IN ECONOMICS

Areas useful to individual programs and objectives not available in regular course offerings. (Cr ar; prereq consent of adviser and §) Staff

213A ECONOMIC GROWTH AND NATIONAL PLANNING

Models of the process of economic growth; exogenous factors to which growth is attributed. Techniques useful in planning, e.g., input-output, national income accounting, programming. Questions of policy. (3 cr; prereq 175, 176A, plus a course in economic development or §; VII MTWThF; CB 255) Krueger

290 INDIVIDUAL GRADUATE RESEARCH

(Cr ar) Staff

SECOND TERM

1 PRINCIPLES OF ECONOMICS

(See first term)

Sec 1, I MTWThF, CB 120, Staff

Sec 2, IV MTWThF, CB 250, Staff

2 PRINCIPLES OF ECONOMICS

(See first term)

Sec 1, I MTWThF, CB 425, Staff

Sec 3, III MTWThF, CB 425, Kareken

Sec 2, II MTWThF, CB 425, Kareken

65 INTERMEDIATE ECONOMIC ANALYSIS I

(See first term) (II MTWThF; CB 130) Richter

66 INTERMEDIATE ECONOMIC ANALYSIS II

(See first term)

Sec 1, III MTWThF, CB 240, Perry

Sec 2, IV MTWThF, CB 130, Perry

67 MONEY AND BANKING

(See first term) (III MTWThF; CB 415) Wallace

68 ELEMENTS OF PUBLIC FINANCE

(See first term) (IV MTWThF; CB 110) Staff

69 GOVERNMENT REGULATION OF BUSINESS

(See first term) (III MTWThF; CB 410) Simler

102 CONTEMPORARY LABOR ISSUES

Analysis of important labor problem areas. Current issues will be examined in light of their broader economic, legal, political, and social implications. (3 cr; prereq 62 or equiv or §; II MTWThF; CB 215) Simler

160 COMPARATIVE ECONOMIC SYSTEMS

Functions of all economic systems; theories of alternative economic systems—the market economy, liberal socialism, the centrally planned economy. Analysis of American and Soviet economies. (3 cr; prereq 2 or equiv; I MTWThF; CB 125) Wallace

165 ELEMENTS OF ECONOMIC ANALYSIS: FIRM AND HOUSEHOLD

(See first term) (II MTWThF; CB 130) Richter

166 ELEMENTS OF ECONOMIC ANALYSIS: INCOME AND EMPLOYMENT

(See first term)

Sec 1, III MTWThF, CB 240, Perry

Sec 2, IV MTWThF, CB 130, Perry

185A ECONOMIC ANALYSIS I: PRICE THEORY

Theories of choice as applied to consumers, firms, and resource owners, economic behavior in competitive and monopoly market situations. (3 cr; prereq 165 or equiv; III MTWThF; CB 105) Richter

190 READINGS IN ECONOMICS

(See first term) Staff

290 INDIVIDUAL GRADUATE RESEARCH

(See first term) Staff

English §§

FIRST TERM

Literature (Engl)

1B FRESHMAN ENGLISH

(3 cr, §A or §1A or §Comp 4 or §Comm 1; each section limited to 28 students; prereq classif card 1 or 2 or 3)

Sec 1, I MTWThF, VH 2, Haga
Sec 2, II MTWThF, VH 205, Ar

Sec 3, III MTWThF, VH 205, Ar
Sec 4, IV MTWThF, VH 205, Ar

3B FRESHMAN ENGLISH

(3 cr, §C or §3A or §Comp 6 or §Comm 3; each section limited to 28 students; prereq B or 2A or 2B)

Sec 1, I MTWThF, VH 309, Ar
Sec 2, I MTWThF, VH 306, Ar

Sec 3, I MTWThF, VH 307, Ar

21 INTRODUCTION TO LITERATURE

Chaucer to Milton. (6 cr; prereq ††; I-II MTWThF; VH 301) Connors

39 MODERN LITERATURE

The novel since Thomas Hardy. (3 cr; prereq soph, ††; II MTWThF; VH 1) R Foster

55 SHAKESPEARE

Plays from Shakespeare's early and middle periods: *Richard II*, *A Midsummer Night's Dream*, *The Merchant of Venice*, *Julius Caesar*, and two or three other plays selected by the instructor. (3 cr; limited to 35 students; prereq ††; III MTWThF; VH 113) Anderson

56 SHAKESPEARE

Plays from Shakespeare's middle and later periods: *Twelfth Night*, *Hamlet*, *Macbeth*, *The Tempest*, *Troilus and Cressida* or *Measure for Measure*; *Othello* or *Antony and Cleopatra* or *King Lear*. (3 cr; limited to 35 students; prereq 55 or †; III MTWThF; VH 306) Levy

74 AMERICAN LITERATURE

Dreiser to the present. (3 cr; prereq 72 except for education minors or †; I MTWThF; VH 207) Kaufman

90H MAGNA HONORS THESIS

(3 cr; prereq candidate for *magna cum laude* and Δ) Ar

91H SUMMA HONORS THESIS

(3 cr; prereq candidate for *summa cum laude* and Δ) Ar

92H SUMMA HONORS THESIS

(3 cr; prereq 91H) Ar

105 HAWTHORNE AND MELVILLE

(3 cr; prereq ††; II MTWThF; VH 2) Kaufman

106 WHITMAN AND MARK TWAIN

(3 cr; prereq ††; II MTWThF; VH 207) Kwiat

159 EARLY AMERICAN LITERATURE

Critical survey with emphasis upon principal writers. (3 cr; prereq ††; III MTWThF; VH 303) Smith

162 MILTON

The minor poems, *Areopagitica*, *Paradise Lost*, and *Samson Agonistes*. (3 cr; prereq ††; IV MTWThF; VH 113) Levy

165 THE STRUCTURE OF MODERN ENGLISH

An introductory study of English phonemics, morphemics, and syntax. (3 cr; prereq ††; I MTWThF; VH 1) Kirchner

170 SHAKESPEARE'S LATER CONTEMPORARIES

Selected plays by Chapman, Jonson, Webster, Beaumont and Fletcher, and others. (3 cr; prereq 56; II MTWThF; VH 306) O'Brien

†† Five credits in literature, English or American, exclusive of Freshman English.

†† Completion of or exemption from Freshman English requirement.

§§ Credit will be allowed in English for Clas 48, 56, and 80.

- 181 MODERN LITERARY CRITICISM**
Major texts and movements in modern literary criticism. (3 cr; prereq ††; IV MTWThF; VH 1) R Foster
- 187 EIGHTEENTH-CENTURY LITERATURE**
Survey of English Literature from 1700 to 1750. Graduate students will submit a term paper. (3 cr; prereq ††; IV MTWThF; VH 303) Anderson
- 196 ELIZABETHAN LITERATURE: PROSE, POETRY, DRAMA**
The decade centering in the last year or two of the Queen's reign. (3 cr; prereq ††; III MTWThF; VH 309) O'Brien
- 299 INDEPENDENT READING**
(3 cr; prereq MA degree or equiv) Ar

SECOND TERM

- 1B FRESHMAN ENGLISH**
(See first term)
Sec 1, I MTWThF, VH 2, Ar Sec 3, II MTWThF, VH 309, Ar
Sec 2, I MTWThF, VH 303, Ar
- 2B FRESHMAN ENGLISH**
(3 cr, §B or §2A or §Comp 5 or §Comm 2; each section limited to 28 students; prereq A or 1A or 1B)
Sec 1, I MTWThF, VH 205, Ar Sec 2, II MTWThF, VH 303, Ar
- 22 INTRODUCTION TO LITERATURE**
The Restoration and the 18th century. Pope, Swift, Addison, Steele, Johnson, Boswell, Fielding, and Sheridan. (6 cr; prereq ††; I-II MTWThF; VH 1) Haley
- 55 SHAKESPEARE**
(See first term) (III MTWThF; VH 2) Scoggins
- 56 SHAKESPEARE**
(See first term) (III MTWThF; VH 113) Youngblood
- 78 AMERICAN LITERATURE**
Notable authors from the Puritans to Melville. (3 cr; prereq ††; IV MTWThF; VH 301) Youngblood
- 75 CHAUCER**
The reading of selections from *The Canterbury Tales* with introduction dealing with the grammar and literary forms of 14th-century English. (6 cr; prereq ††; I-II MTWThF; VH 113) Nadeau
- 90H MAGNA HONORS THESIS**
(See first term) Ar
- 91H SUMMA HONORS THESIS**
(See first term) Ar
- 92H SUMMA HONORS THESIS**
(See first term) Ar
- 100 OLD ENGLISH**
Introduction to sounds and grammar with some prose reading. Relation to modern English stressed. (6 cr; prereq ††; I-II MTWThF; VH 306) Pederson
- 109 ROMANTIC POETS OF THE EARLY NINETEENTH CENTURY**
Wordsworth, Coleridge, Scott, and their contemporaries. (3 cr; prereq ††; IV MTWThF; VH 2) Scoggins
- 113 AMERICAN SHORT STORY**
Historical examination of American short story from the 18th century to the present. (3 cr; prereq ††; II MTWThF; VH 301) Albrecht
- 126 DRAMA: RESTORATION AND EIGHTEENTH CENTURY**
(3 cr; prereq ††; III MTWThF; VH 207) Jones
- 154 AMERICAN NOVEL**
Beginnings to Howells. (3 cr; prereq ††; III MTWThF; VH 1) Albrecht

†† Five credits in literature, English or American, exclusive of Freshman English.
‡‡ Completion of or exemption from Freshman English requirement.

- 158 AMERICAN POETRY**
Major poets of the late 19th and of the 20th centuries. (3 cr; prereq ††; IV MTWThF; VH 1) Levenson
- 162 MILTON**
(See first term) (II MTWThF; VH 207) Ar
- 184 FORM AND IDEA IN DRAMATIC LITERATURE**
Tragic and religious drama (classical, medieval, Renaissance, and modern); theories of tragedy. (3 cr; prereq ††; IV MTWThF; VH 306) Jones
- 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; IV-V TTh; VH 210) Ar
- 297 INDEPENDENT READING**
(3 cr; prereq MA degree or equiv) Ar

Family Studies (FamS)

FIRST TERM

- 1 DYNAMICS OF DATING, COURTSHIP, AND MARRIAGE**
Application of principles from the behavioral sciences to dating, courtship, mate selection, engagement, mixed marriages, roles of men and women, interaction of marital spouses, and marital stability. (3 cr; I MTWThF; JohH 106) Burr
- 1A DYNAMICS OF DATING, COURTSHIP, AND MARRIAGE**
(See FamS 1) Designed for Upper Division engaged or married students. (3 cr, §1; II MTWThF; JohH 106) Burr
- 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 CLA grad requirements; I MTWThF; JohH 122) Ludwig

SECOND TERM

- 1 DYNAMICS OF DATING, COURTSHIP, AND MARRIAGE**
(See first term) (I MTWThF: Arch 140) Burr

Foreign Study (FS)

FIRST TERM

- 161 SEMINAR FOR FOREIGN STUDY I**
Directed field study (SPAN Program) in Chile, Egypt, Thailand, or Yugoslavia, investigating 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, 1964, by a faculty selection committee [grad students must also have approval of adviser]) Dittmann, Selim, Silianoff, Weekly

SECOND TERM

- 162 SEMINAR FOR FOREIGN STUDY II**
Continuation of FS 161. (See first term) (6 cr) Dittmann, Selim, Silianoff, Weekly

Geography (Geog)

FIRST TERM

- 1 PHYSICAL GEOGRAPHY**
Major features of distribution patterns of climate, relief, vegetation, and soils; regional differences in the problems of physical development. (5 cr; II-III MTWThF; CB 10) Barrett

†† Five credits in literature, English or American, exclusive of Freshman English.

60 MAPS AND MAP INTERPRETATION

Uses and abuses of maps. Interpretation of topographic and statistical maps. Survey of map sources, and air photo as a map. Emphasis on map analysis with minimum of drafting. (3 cr; prereq soph, 5 cr or #; I MTWThF; CB 455) Porter

70 INTRODUCTION TO CARTOGRAPHY

Principles of map design, compilation, specification, and drafting. Map symbols. History of cartography. Projections—analysis of construction, properties, and uses. (3 cr; prereq 5 cr or #; III MTWThF; CB 455) Hsu

118 AFRICA

Regional differentiation of human groups and environments in Africa with special emphasis on culture contact and problems of underdeveloped countries south of the Sahara. (3 cr; prereq 5 cr or #; IV MTWThF; CB 235) Porter

122 EAST ASIA

Physical and human geography of China, Korea, and Japan; geographic aspects of population pressure, development of resources, and international relations. (3 cr; prereq 5 cr or #; II MTWThF; CB 235) Hsu

190 DIRECTED READINGS

(1-3 cr; prereq sr) Staff

GEOGRAPHICAL FIELD SESSION

(June 14-July 5)

An intensive field research seminar, Geog 214, will be given June 14-July 5 (1 week will be on the University of Minnesota campus and enroute to the field and 2 weeks will be in the Northeastern Ozarks, Ironton, Missouri). Research will be focused upon related problems in cultural and historical geography. Reservations must be made no later than May 24. For costs, detailed information, and reservations contact Department of Geography, University of Minnesota, Minneapolis, Minnesota 55455.

214 SEMINAR: HISTORICAL FIELD

One week will be spent on the University of Minnesota campus and enroute to the 2 weeks in the field studying geographical problems associated with settlement and economy in the Northeastern Ozarks, Missouri. (5 cr; limited to 12 students; prereq #) Lukermann

301 RESEARCH PROBLEMS IN GEOGRAPHY

(Cr ar) Staff

SECOND TERM**4 HUMAN GEOGRAPHY**

Geography of population and principal ways of life; capacity of the earth for future population. (5 cr; II-III MTWThF; CB 10) Webb

107 SOVIET UNION

Character of and bases for the regional diversity of physical resources, population, agriculture, manufacturing, and transportation in the U.S.S.R. (3 cr; IV MTWThF; CB 235) Adams

152 GEOGRAPHY OF ECONOMIC LOCALIZATION

An analysis of the localization of economic activity, the circulation of resources, and the process of industrial regionalization in the economies of the world. (3 cr; prereq 41 or #; III MTWThF; CB 115) Adams

190 DIRECTED READINGS

(1-3 cr; prereq sr) Staff

301 RESEARCH PROBLEMS IN GEOGRAPHY

(Cr ar) Staff

TRI-STATE FIELD SEMINAR

(August 20-September 3)

The Tri-State Field Seminar will be held at the Iowa Lakeside Laboratory on West Lake Okoboji near Spirit Lake, Iowa, from August 20 to September 3. Professors Clarence W. Olmstead of the University of Wisconsin and James B.

Lindberg of the State University of Iowa will conduct the field seminars concerning agricultural geography and land use, Geog 276-277, and small town trade areas and functions and recreation, Geog 286-287. Reservations must be made no later than June 7. For costs, detailed information, and reservations contact Department of Geography, University of Minnesota, Minneapolis, Minnesota 55455.

- 276-277 SEMINAR: AGRICULTURAL GEOGRAPHY**
Three weeks in the field studying variations and patterns in the agricultural geography of the midwestern prairie, Iowa. (5 cr; limited to 8 students; prereq #) Olmstead
- 286-287 SEMINAR: SETTLEMENT AND POPULATION GEOGRAPHY**
Three weeks in the field studying small town settlement and functions in the population geography of the midwestern prairie, Iowa. (5 cr; limited to 8 students; prereq #) Lindberg

German (Ger)

FIRST TERM

- 1A BEGINNING GERMAN**
(5 cr; I-II MTWThF; FolH 209½) Staff
- 3A BEGINNING GERMAN**
(5 cr; prereq 2A or 2 yrs high school German; I-II MTWThF; FolH 209) Staff
- 4 INTERMEDIATE GERMAN**
Selected readings from literature. (3 cr; prereq 3A or 3B or 3 yrs high school German ...15 recommended; I-II MWF; FolH 207) Staff
- 5 INTERMEDIATE GERMAN**
Elementary composition and conversation. (2 cr; prereq 3A or 3B or 3 yrs high school German...14 recommended; I-II TTh; FolH 207) Staff
- 56 READING AND ANALYSIS OF LITERARY TEXTS**
(3 cr; not open to students who have had 70 or above; prereq 4 or 4 yrs high school German; III MTWThF; FolH 205) Zoldester
- 74 NINETEENTH-CENTURY DRAMA**
(3 cr; prereq 56 or 4 and Δ; IV MTWThF; FolH 205) Menze
- 149 DIRECTED READINGS**
(3 cr; prereq #; 1st meeting III W, June 16, FolH 217; individual consultations for remainder of course) Ramras
- 162 EIGHTEENTH CENTURY: STURM UND DRANG**
(3 cr; prereq sr, grad, 14 cr in courses 70 and above or equiv; VI-VII TTh; FolH 302) Ramras

Offered only in Deutsches Haus††

- 22** INTERMEDIATE CONVERSATION AND ORAL PRACTICE**
For students who understand German fairly well but 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
- 67** 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
- 106** 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

†† See Modern Language Residence Houses under Special Programs.

SECOND TERM

- 2A **BEGINNING GERMAN**
(5 cr; prereq 1A or 1 yr high school German; I-II MTWThF; FolH 209) Menze
- 75 **MODERN DRAMA**
(3 cr; prereq 56 or 4 and Δ ; IV MTWThF; FolH 205) F Wood
- 183 **STUDIES IN THE LITERATURE OF THE TWENTIETH CENTURY: HOFMANNSTHAL**
(3 cr; prereq sr, grad, 14 cr in courses 70 and above or equiv; VI-VII TTh; FolH 302)
F Wood

Note—The General Extension Division will offer German for graduate students (Ger 17A and 17B). Please address all inquiries to the General Extension Division.

History (Hist)

FIRST TERM

- 1 **CIVILIZATION OF THE MODERN WORLD, PART I**
Rise of the European state system as framework within which Western civilization developed, and economic, cultural, political, intellectual, and religious implications to the emerging system. (3 cr; IV MTWThF; CB 5) Moote
- 2 **CIVILIZATION OF THE MODERN WORLD, PART II**
Struggle for control over the Western states system, and emergence of liberal democracy in the modern world. (3 cr; II MTWThF; CB 410) Uroff
- 15 **ANCIENT CIVILIZATION, PART II**
Greek civilization, 750-323 B.C. (3 cr; I MTWThF; CB 130) Muhly
- 21 **AMERICAN HISTORY, PART II**
Sectionalism and national development. (3 cr; I MTWThF; CB 150) Haugland
- 51 **ANCIENT CIVILIZATION, PART II**
Greek civilization, 750-323 B.C. (3 cr; I MTWThF; CB 130) Muhly
- 91 **THE AMERICAN WEST, PART II**
Mid-America. (3 cr; IV MTWThF; CB 415) Berkhofer
- 93 **AMERICAN DIPLOMATIC HISTORY, PART I**
American diplomacy, 1776-1848. (3 cr; IV MTWThF; CB 215) Lupton
- 104A **THE ANCIENT NEAR EAST, PART II**
The Near East and Greece in the second millennium B.C. (3 cr; II MTWThF; CB 245)
Muhly
- 115A **EARLY MODERN EUROPE, PART I**
The 17th century. (3 cr; III MTWThF; CB 155) Moote
- 116E **WORLD WAR II, PART II**
War period, 1939-1942. (3 cr; I MTWThF; CB 5) Deutsch
- 118E **RUSSIA, PART I**
Origins of the Slavs, the eastward movement, and the rise of Russia through the death of Peter the Great. (3 cr; IV MTWThF; CB 255) Uroff
- 118F **MODERN RUSSIA, PART I**
The 19th-century background, reign of Nicholas II to 1914. (3 cr; II MTWThF; CB 425)
Stavrou
- 118G **THE MODERN NEAR EAST: THE BALKANS AND THE ARAB WORLD, PART I**
From the Treaty of Jassy to the Congress of Berlin (1878). (3 cr; III MTWThF; CB 115)
Stavrou
- 134E **AMERICAN HISTORY, 1850-1900, PART II**
1865-1880. (3 cr; III MTWThF; CB 410) Haugland
- 142C **HISTORY OF AMERICAN LABOR, PART I**
1607-1873. (3 cr; III MTWThF; CB 120) Berman
- 145A **SURVEY OF LATIN-AMERICAN HISTORY, PART I**
Colonial period. (3 cr; I MTWThF; CB 220) Gardiner
- 170C **PROSEMINAR: EUROPE IN THE EIGHTEENTH CENTURY, PART II**
(3 cr; 9:00-10:30 MWF; SocSci 633) Wright
- 187B **PROSEMINAR: AMERICAN DIPLOMATIC HISTORY, PART I**
(3 cr; 9:00-10:30 MWF; SocSci 628) Lupton

- 188F PROSEMINAR: AMERICAN LABOR HISTORY, PART II**
(3 cr; II MTWThF; SocSci 633) Berman
- 190A PROSEMINAR: LATIN-AMERICAN HISTORY, PART II**
(3 cr; prereq reading knowledge of Spanish; VI-VII MTh; SocSci 628) Gardiner
- 200 HISTORICAL BIBLIOGRAPHY AND CRITICISM**
(3 cr; 12:30-2:00 MWF; SocSci 633) Wright

SECOND TERM

- 3 CIVILIZATION OF THE MODERN WORLD, PART III**
Impact of Industrialism upon Western and world civilization in the 20th century.
(3 cr; II MTWThF; CB 150) Munholland
- 17 HISTORY OF ASIA, PART I**
History and culture of China, Japan, and India to A.D. 1200. (3 cr; I MTWThF; CB 230) Taylor
- 22 AMERICAN HISTORY, PART III**
Modern America. (3 cr; III MTWThF; CB 250) Spear
- 59 HISTORY OF ASIA, PART I**
History and culture of China, Japan, and India to A.D. 1200. (3 cr; I MTWThF; CB 230) Taylor
- 87 AMERICAN COLONIES, PART II**
The eighteenth century. (3 cr; II MTWThF; CB 135) Rutman
- 114A ENGLISH CONSTITUTIONAL HISTORY TO 1485, PART III**
England in the later Middle Ages. (3 cr; IV MTWThF; CB 205) Hoyt
- 117D EUROPE IN THE TWENTIETH CENTURY, PART III**
1938 to the 1950's. (3 cr; IV MTWThF; CB 215) Munholland
- 119C HISTORY OF GERMANY, PART II**
1648-1871. (3 cr; II MTWThF; CB 125) Pflanze
- 135E AMERICAN HISTORY, 1850-1900, PART III**
1880-1900. (3 cr; II MTWThF; CB 235) Loehr
- 139J RACE AND NATIONALITY IN AMERICAN HISTORY, PART I**
1619-1865. (3 cr; IV MTWThF; CB 115) Spear
- 146A SURVEY OF LATIN-AMERICAN HISTORY, PART II**
Latin-American republics. (3 cr; I MTWThF; CB 145) Beatty
- 149D HISTORY OF CHINA, PREHISTORIC TIMES TO PRESENT, PART II**
221 B.C. to A.D. 1279. (3 cr; III MTWThF; CB 255) Taylor
- 163A PROSEMINAR: MEDIEVAL HISTORY, PART I**
(3 cr; VI MTWThF; SocSci 633) Hoyt
- 172D PROSEMINAR: NINETEENTH-CENTURY GERMANY, PART I**
(3 cr; III-IV MTh; SocSci 628) Pflanze
- 181A PROSEMINAR: SEVENTEENTH- AND EIGHTEENTH-CENTURY AMERICAN HISTORY, PART I**
(3 cr; IV-V MW; SocSci 633) Rutman
- 183F PROSEMINAR: AMERICAN HISTORY, 1850-1900, PART III**
(3 cr; III MTWThF; SocSci 633) Loehr

Humanities (Hum)

FIRST TERM

- 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. One historical novel, Tolstoy's *War and Peace*. (3 cr, \$1A or \$51; II MTWThF; JohH 113) Amberg
- 2 HUMANITIES IN THE MODERN WORLD II**
The Industrial Revolution, liberalism, and socialism. Period from about 1776 to 1890. Authors: the classical economists, Marx, Mill, Ibsen, Dostoevski. (3 cr, \$2A or \$52; I MTWThF; JohH 113) Bryan

4 HUMANITIES IN THE MODERN WORLD IV

The humanities since World War I. Authors: Freud, Lenin, Koestler, T. S. Eliot, Kafka, and others. Background topics include civilization between two wars, impact of psychoanalysis, communism, and fascism. (3 cr, §54; III MTWThF; JohH 113) Bryan

23 AMERICAN LIFE III

The rise of American intellectual and cultural nationalism and its place in the modern world. (3 cr; I MTWThF; VH 6) Phillips

51 HUMANITIES IN THE MODERN WORLD

(See Hum 1) (3 cr, §1 or §1A; IV MTWThF; JohH 113) Kwiat

53 HUMANITIES IN THE MODERN WORLD

From about 1840 to about 1914. Authors: Darwin, Nietzsche, Kierkegaard, and Mann. (3 cr, §3 or §3A; III MTWThF; JohH 115) Amberg

54 HUMANITIES IN THE MODERN WORLD

(See Hum 4) (3 cr, §4; II MTWThF; JohH 115) Berryman

61 GREEK HERITAGE

The Heroic Age: Homer. The Golden Age of Athens: Aeschylus, Sophocles. The philosophers: Plato, Aristotle. (3 cr, §11; II MTWThF; ForH 180) Ames

62 ROMAN AND MEDIEVAL HERITAGE

Late Hellenistic philosophy; Stoicism, Epicureanism, Neoplatonism. Jesus and the world of Christendom; Paleo-Christian anarchy, Augustinian synthesis, Gothic art, Scholasticism, the world of Dante. Readings in Lucretius, Marcus Aurelius, the New Testament, St. Augustine, Dante. (3 cr, §12; IV MTWThF; JohH 115) Berryman

132 HUMANITIES PROSEMINAR

Studies in Western religious mysticism. Student reports and papers, guided discussion of the major mystical writings of the Jewish and Christian religious traditions. The influence of this tradition on literature and the arts. (3 cr; limited to 15 students; prereq sr; IV MTWThF; JohH 106) Ames

SECOND TERM

1 HUMANITIES IN THE MODERN WORLD I

(See first term) (3 cr, §1A or §51; II MTWThF; VH 2) Ramsland

3 HUMANITIES IN THE MODERN WORLD III

From about 1840 to about 1914. Authors: Darwin, Nietzsche, Kierkegaard, and Mann. (3 cr, §3A or §53; II MTWThF; VH 6) Siegelman

4 HUMANITIES IN THE MODERN WORLD IV

(See first term) (3 cr, §54; IV MTWThF; VH 207) Hallberg

21 AMERICAN LIFE I

Individualism in American life and thought. (3 cr; I MTWThF; VH 6) Donaldson

54 HUMANITIES IN THE MODERN WORLD

(See first term) (3 cr, §4; III MTWThF; VH 301) Siegelman

63 RENAISSANCE AND REFORMATION

The 15th to 17th centuries. The Age of Lorenzo the Magnificent in Florence; ideal of beauty in art, politics, and morals; universal man. The high renaissance and the reformation. Authors: Pico della Mirandola, Machiavelli, Luther, Montaigne, Pascal. Renaissance and baroque art and architecture. (3 cr, §13; III MTWThF; VH 6) Louden

133 HUMANITIES PROSEMINAR

Irrationalism. Introduction to despair. Paradoxes of irrationalism. Irrational man. Irrationalism in recent literature. Love and evil as moral complements. Irrationalism as the meeting ground of religion and atheism. The alluring melancholy of dying dreams in the dignity of existential tragedy. Readings in Lagerkvist, Genet, Burgess, Golding, Camus. (3 cr; limited to 15 students; prereq sr; II MTWThF; VH 210) Swanson

Journalism (Jour)

FIRST TERM

5 VISUAL COMMUNICATION

Introduction to the functions of visual communication in news and advertising in print and electronic media. Evaluation and criticism of visuals in creative typography, photography, and other visual techniques. Lecture, projects, and critiques. (3 cr; prereq 3rd qtr fr; II MTWThF; MurH 20) Schuneman

60 GRAPHIC ARTS: PROCESSES

Letterpress, offset, lithography, gravure, and silk screen processes; history of processes, relative costs, effective use, and copy preparation for each; significant graphic arts developments. (3 cr, \$old 65; prereq jr; I MTWThF; MurH 207) Wilson

78 PUBLIC RELATIONS METHODS

Publicity, external and internal communication, use of media; techniques and application of institutional promotion and communication, including use of company publications, institutional advertising, and trade journals. Projects and campaigns. (3 cr; prereq 51 and 73...or 41, 57, and 71 or #; III MTWThF; MurH 311) Lindsay

90 MASS COMMUNICATIONS AND THE NEWS

How the news (in print, on the air, by film) gets to, and affects, the public. Evaluation of news gathering and presentation methods. Contemporary influences on communications media. Individual news media and news commentators. (3 cr; not open to jour maj; II MTWThF; MurH 311) Lindsay

109 HISTORY OF JOURNALISM

A survey of the development of American newspapers and periodicals, from early beginnings in Europe to the present day; the rise of radio and television; the relation of communications developments to political, economic, and social trends in America. (3 cr; IV MTWThF; MurH 308) Emery

110 TOPICS IN THE HISTORY OF JOURNALISM

Intensive study of significant individuals, newspapers, and periodicals in the history of American journalism; comparative study of leading present-day newspapers; examination of major periods of change and of developing trends. Individual projects and readings. (3 cr; prereq 109; II MTWThF; MurH 302) Emery

130 PUBLIC OPINION AND PROPAGANDA

Functions of the press and other communication agencies in the formation of public opinion. Studies of persuasion and attitude change. Problems in the interpretation of opinion and attitude research in the mass media field. Pressure-group activities and political and international propaganda. (3 cr; prereq 15 cr in social sciences; I MTWThF; MurH 308) Carter

182 PUBLICATIONS WORKSHOP

Intensive study of the role of the high school and college newspaper and yearbook; analysis of content; study of design and make-up, typography, photography, processes. Separate study sections for college yearbook or newspaper editors, and for school publications advisers. (3 cr; not open to U of Minn jour maj; prereq jr, sr and #, grad, or #; 1:00-4:30 MTWThF; MurH 311) Wilson and others

209 SEMINAR: HISTORY OF COMMUNICATIONS

Research in history and development of mass media. (3 cr; prereq 110 or #; hrs ar) Emery

SECOND TERM**11 REPORTING FOR NONMAJORS**

(For journalism minors or students in the College of Agriculture, Forestry, and Home Economics, College of Education, Institute of Technology, and the School of Business Administration.) Newspaper and broadcast fact-gathering and news writing; specialized reporting; fundamentals of press law. (3 cr; prereq soph, C avg, Engl C, 3A, 3B, or Comm 3 or Rhet 3, or exemption from Engl requirement; I MTWThF; MurH 311) Sim

18 PRINCIPLES OF ADVERTISING

Theory, principles, and functions of advertising; its role in economic, social, and marketing structure. Newspapers, magazines, and radio and television as advertising media. (3 cr; prereq soph, C avg, and #Comp 27 or 28...13 or #11 for Upper Division students; II MTWThF; MurH 302) Mindak

79 ADVERTISING COPY WRITING

Advertising appeals; techniques of writing advertising copy for newspapers, magazines, direct mail, posters, brochures; planning advertising campaigns. (3 cr; prereq 41 or 51, and 57 and 60; III MTWThF; MurH 311) Mindak

106 CRITICAL WRITING

Theory and practice of writing book, theater, and motion picture reviews. Analysis of work of leading critics and critical periodicals. Weekly reviews are written. (3 cr; prereq an Upper Division writing course and #; I MTWThF; MurH 302) Charnley

113 MASS COMMUNICATION THEORY

Nature of the communication process; contributions of other disciplines to knowledge about this process; similarities and differences between interpersonal and mediated communication; use of research concepts and findings in determining policy; com-

parative roles of the printed and electronic media. (3 cr; prereq sr, 15 cr in social sciences; II MTWThF; MurH 311) Nixon

- 125 COMMUNICATION SYSTEMS OF THE WESTERN WORLD**
Communications in other democracies as compared with the United States and with totalitarian systems. Special emphasis on the press of Latin America. Problems of constructing a free press in Germany, Italy, and Japan following World War II. Prospects for newly developing areas. (3 cr; prereq 15 cr in social sciences, with an Upper Division course in international relations recommended; IV MTWThF; MurH 308) Nixon

Library School (Lib)

FIRST TERM

- 53 SCHOOL LIBRARY MANAGEMENT**
A practical introduction to the management of the small school library. Primarily for students without previous experience in a school library. (3 cr; IV MTWThF; Lib 4A) Shevlin
- 62 REFERENCE I**
Intensive study of some 150 outstanding and useful reference books and tools most frequently used by students and librarians, landmark reference books, indexes and periodical guides. The theory and practice of reference work is also considered. (3 cr; III MTWThF; Lib 4A) Van der Boom
- 70 SELECTION OF LIBRARY MATERIALS**
Techniques, standards for selection of books, magazines, pamphlets, phonograph records, films, etc. (3 cr; II MTWThF; JohH 122) Ar
- 74 LIBRARY MATERIALS IN THE CLASSROOM**
Correlating the library, as a material center, with the school program. Sources of information and evaluation of materials for teaching and resource units. (3 cr; II MTWThF; Lib 4B) Ar
- 83 CATALOGUING AND CLASSIFICATION**
Basic principles of descriptive cataloguing, rules of entry, subject headings and classification in libraries. (3 cr; I MTWThF; Lib 4A) Lee
- 154 THE PUBLIC LIBRARY**
History and development. Service standards. Modern trends and problems. Overview of the literature of the field. Guest lecturers, field trips. Development of the materials collection of the public library. (3 cr; prereq 55; II MTWThF; JohH 105) Williams
- 157 SCHOOL LIBRARY PROBLEMS**
Library objectives in relation to educational objectives, larger units of school service, value and effect of standards. (3 cr; prereq 55; I MTWThF; Lib 4B) Olson
- 166 ADVANCED REFERENCE**
A subject approach to major reference sources especially in the field of law, medicine, business, genealogy, local history, history, literature, education, agriculture, pure and applied science. City, state, and national government documents and UNESCO publications. Research information resources for urban areas. (3 cr; prereq 62; IV MTWThF; Lib 4B) Williams
- 171 READING GUIDANCE FOR CHILDREN**
Reading interests of children and the various kinds of materials that meet these interests. Knowledge of the sources, selection, evaluation, and methods of introducing books to children. (3 cr; prereq 70; II MTWThF; Lib 4A) Shevlin
- 172 READING GUIDANCE FOR ADOLESCENTS**
The library's relationship to the teen-ager in terms of his interests and needs. Methods of introducing books and developing and guiding reading. (3 cr; prereq 70; III MTWThF; JohH 122) Olson
- 181 ADVANCED SUBJECT CATALOGUING**
History, theory, and practice of classification and subject heading; the Library of Congress Classification. (3 cr; prereq 83; III MTWThF; Lib 4B) Lee

SECOND 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
- 55 LIBRARY ADMINISTRATION**
Introduction to principles of library administration and management. (3 cr; III MTWThF; MurH 420) Peterson

62 REFERENCE I

General reference tools and other sources of information; theory and practice of reference work. (3 cr; IV MTWThF; Lib 4A) Van der Boom

83 CATALOGUING AND CLASSIFICATION

Basic principles of descriptive cataloging, rules of entry, subject headings and classification in libraries. (3 cr; I MTWThF; Lib 4A) Peterson

140 INFORMATION RETRIEVAL

Theory, characteristics, systems, data processing, etc., applied to libraries. (3 cr; prereq 83 or #; III MTWThF; Lib 4A) Simonton

161 LITERATURE OF THE HUMANITIES

Bibliographical and other reference sources, including reviewing mediums. Developments and trends in the subjects covered. (3 cr; prereq 62; II MTWThF; Lib 4B) Van der Boom

162 LITERATURE OF THE NATURAL SCIENCES

Bibliographical and other reference sources, with emphasis on indexing, abstracting, and reviewing mediums. The growth and development of scientific literature and its control and dissemination. (3 cr; prereq 62; IV MTWThF; Lib 4B) Shove

168 RESEARCH METHODS IN LIBRARIANSHIP

Evaluation of research reported in library literature. The preparation of starred papers. (3 cr; prereq #; I MTWThF; Lib 4B) McDiarmid

176 COMMUNICATION MEDIA AND THE LIBRARY

The process of communication, books, magazines, newspapers, television, radio, and the film in relation to libraries in society. (3 cr; prereq #; III MTWThF; Lib 4B) Berninghausen

Music (Mus)

(See also Music Education under College of Education)

FIRST TERM**A** PIANO**

(No cr; for students without entrance requirements in piano; hrs ar; ScH 107) McNab, Weiser

D VOICE**

(No cr; for students without entrance requirements in voice; hrs ar; ScH 107) Knowles, Schuessler

4 FUNDAMENTALS OF MUSIC

(2 cr; for nonmusic majors [primarily child development students and elementary teachers])

Sec 1, II MTWThF, NMA 4, Bencriscutto

Sec 2, III MTWThF, ScH 104, Oberg

7B EAR TRAINING

Résumé of aural work included in Mus 4T-6T, with concentration on their application. (3 cr; prereq #; I MTWThF, IV MWF; ScH 103) Fetler

8B HARMONY

Résumé of part writing and harmonization of chorales which are included in Mus 4T-6T, with concentration on their application. (3 cr; prereq #; II MTWThF, IV TTh; ScH 103) Fetler

11E Piano**

Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) McNab, Weiser

11L PIANO**

Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) McNab, Weiser

11U PIANO**

Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) McNab, Weiser

12E VOICE**

Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Knowles, Schuessler

12L VOICE**

Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Knowles, Schuessler

First Term (continued)

- 12U** VOICE**
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107)
Knowles, Schuessler
- 13E** VIOLIN**
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 13L** VIOLIN**
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 13U** VIOLIN**
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107)
Ar
- 14E** VIOLA**
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 14L** VIOLA**
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 14U** VIOLA**
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107)
Ar
- 15E** CELLO**
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 15L** CELLO**
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 15U** CELLO**
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Ar
- 16E** BASS**
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Fitch
- 16L** BASS**
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Fitch
- 16U** BASS**
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Fitch
- 17E** FLUTE**
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Opava
- 17L** FLUTE**
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Opava
- 17U** FLUTE**
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Opava
- 18E** OBOE**
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Angelucci
- 18L** OBOE**
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Angelucci
- 18U** OBOE**
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) An-
gelucci
- 19E** CLARINET, SAXOPHONE**
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Fitch,
Williams
- 19L** CLARINET, SAXOPHONE**
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Fitch,
Williams
- 19U** CLARINET, SAXOPHONE**
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107)
Fitch, Williams
- 20E** BASSOON**
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 20L** BASSOON**
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 20U** BASSOON**
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Ar

- 21E** TRUMPET**
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Chenette, Tetzlaff
- 21L** TRUMPET**
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Chenette, Tetzlaff
- 21U** TRUMPET**
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Chenette, Tetzlaff
- 22E** FRENCH HORN**
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Binstock
- 22L** FRENCH HORN**
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Binstock
- 22U** FRENCH HORN**
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Binstock
- 23E** TROMBONE**
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Weinman, Zellmer
- 23L** TROMBONE**
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Weinman, Zellmer
- 23U** TROMBONE**
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Weinman, Zellmer
- 24E** TUBA**
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 24L** TUBA**
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 24U** TUBA**
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Ar
- 25E** PERCUSSION**
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 25L** PERCUSSION**
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 25U** PERCUSSION**
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Ar
- 26E** HARP**
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Miller
- 26L** HARP**
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Miller
- 26U** HARP**
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Miller
- 27E** ORGAN**
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Fleischer
- 27L** ORGAN**
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Fleischer
- 27U** ORGAN**
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Fleischer
- 28E** HARP SICHORD**
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 28L** HARP SICHORD**
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 28U** HARP SICHORD**
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Ar
- 29E** CLASSICAL GUITAR**
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Bellson

First Term (continued)

- 29L** **CLASSICAL GUITAR**
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Bellson
- 29U** **CLASSICAL GUITAR**
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Bellson
- 30E** **CLASSICAL ACCORDION**
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Hane, Malmberg
- 30L** **CLASSICAL ACCORDION**
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Hane, Malmberg
- 30U** **CLASSICAL ACCORDION**
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Hane, Malmberg
- 43 **UNIVERSITY CHORUS**
A 2-week course beginning June 15 with final performance June 29. (1 cr; prereq #; IV MTWThF and/or 7:30-9:30 MTh evenings, final rehearsals ar; NH 45) Dahle
- 46 **CONCERT BAND**
(1 cr; prereq #; V MTWThF; NMA 4, 5) Bencriscutto
- 100** **ADVANCED APPLIED MUSIC**
Advanced literature in piano, voice, organ, and orchestral instruments. (2 cr; prereq entr exam; hrs ar; ScH 107) Staff
- 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 104) 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 1 course from 36, 62, 68, 72, 99, or #; II MTWThF; ScH 3) Riedel
- 127-128-129* **COMPOSITION**
Original work in various forms. (2 cr each; prereq 99 and 123; VII MTWThF; ScH 103) Fetler
- 156 **MUSIC IN THE MIDDLE AGES AND RENAISSANCE**
Monophonic music from the period of Gregorian chant to English madrigal school. (3 cr; prereq 36; IV MTWThF; ScH 103) Riedel
- 161-162 **BAND ARRANGING**
Scoring for band instruments, creative arrangements for marching or concert bands. (3 cr each; prereq 6T, 143, or MuEd 65, or #; VI MTWThF; NMA 4, 5) Bencriscutto
- 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; V MTWThF; ScH 103) Fetler
- 204** **GRADUATE APPLIED MUSIC**
Individual lessons. (4 cr; prereq entr exam; hrs ar; ScH 107) Staff
- 212* **SPECIAL PROBLEMS**
(3-9 cr; prereq 110; VII M; ScH 104) Oberg
- 227-228-229* **SEMINAR: COMPOSITION AND ORCHESTRATION**
(3 cr each; prereq #; VII MTWThF; ScH 103) Fetler

SECOND TERM

- A** **PIANO**
(See first term) Freed
- D** **VOICE**
(See first term) Knowles, Schuessler
- 4 **FUNDAMENTALS OF MUSIC**
(See first term) (IV MTWThF; ScH 104) Oberg
- 11ELU through 30ELU**
(See first term) Ar

- 52 HISTORY OF MUSICAL STYLES II**
Classic, romantic, and modern. (2 cr; for nonmusic majors; prereq 1 or 50; III MTWThF; ScH 104) Oberg
- 100** ADVANCED APPLIED MUSIC**
(See first term) Staff
- 104A AMERICAN MUSIC**
(See Mu 106A, first term) (I MTWThF; ScH 104) Riedel
- 117 VOCAL LITERATURE**
Preparation and performance of representative solo vocal works from major and minor composers. (2 cr; prereq 12 cr in 12, or §; IV MTWThF; ScH 103) Schuessler
- 127-128-129* COMPOSITION**
(See first term) (VII MTWThF; ScH 103) Fetler
- 132 SYMPHONIES OF THE ROMANTIC ERA**
Schubert, Schumann, Mendelssohn, Berlioz, Liszt, Brahms, Franck, Dvorak, Tschai-kowsky, 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 §; II MTWThF; ScH 3) Riedel
- 167 TECHNIQUE AND PRODUCTION OF OPERA AND OPERETTA**
The singer prepares and performs roles in opera and operetta. Special projects, including stage direction, musical direction, and accompanying coaching, are offered for the nonsinger. (3 cr; offered during Summer Session only; prereq singers with §; VI MTWThF; WuH 5) Knowles
- 190 HYMNOLOGY**
History of hymn texts and tunes. Byzantine, Lutheran, Anglican, Baptist, Con-gregational, Methodist, Presbyterian, Unitarian, and other hymns. History of hymn books. (3 cr; prereq 6 cr in 34-35-36 or Art 56-57-58 or Phil 11 or 50-51-52 or Engl 66, 67, or §; III MTWThF; ScH 103) Fleischer, Riedel
- 204** GRADUATE APPLIED MUSIC**
(See first term) Staff
- 212* SPECIAL PROBLEMS**
(See first term) (VI W; ScH 104) Oberg
- 227-228-229* SEMINAR: COMPOSITION AND ORCHESTRATION**
(See first term) (VII MTWThF; ScH 103) Fetler

Natural Science (NSci)

No courses will be offered during the summer of 1965. Summer courses will be resumed in 1966.

Philosophy (Phil)

FIRST TERM

1A PROBLEMS OF PHILOSOPHY

Introduction to the subject; main fields of investigation; permanent problems; princi-pal methods and schools of philosophy; historical and contemporary views. (3 cr; III MTWThF; ForH 115) Brodbeck

2A LOGIC

Difference between logical and fallacious reasoning; the functions and uses of language; rules of good definition and sound argument. (3 cr)

Sec 1, II MTWThF, ForH 185, Lewis

Sec 2, I MTWThF, ForH 185, Matthews

3A 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; IV MTWThF; ForH 115) Lewis

50A HISTORY OF WESTERN PHILOSOPHY (ANCIENT)

The origin of Greek thought, from Thales to Aristotle, with special emphasis on Plato and Aristotle. (3 cr; II MTWThF; ForH 115) Mason

140 CONTEMPORARY PHILOSOPHY

Current systematic and critical philosophies, especially idealism, naturalism, prag-matism, positivism, and existentialism, as represented by their principal exponents. (3 cr; prereq 52 or §; I MTWThF; ForH 115) Mason

- 160 PHILOSOPHY OF SCIENCE**
Provides a clear understanding of meaning, methods, and implications of modern science through 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 4; IV MTWThF; ForH 285) Brodbeck
- 182 PHILOSOPHY OF RELIGION**
Discussion of ground and sanctions of religion, according to various philosophies. (3 cr; prereq 6 cr; III MTWThF; ForH 285) Matthews

SECOND TERM

- 1A PROBLEMS OF PHILOSOPHY**
(See first term) (II MTWThF; ForH 185) Raab
- 2A LOGIC**
(See first term)
Sec 1, I MTWThF, ForH 185, Coleman Sec 2, IV MTWThF, ForH 185, Potter
- 3A ETHICS**
(See first term) (IV MTWThF; ForH 130) Raab
- 52A HISTORY OF WESTERN PHILOSOPHY (MODERN)**
Modern philosophy from Descartes to Hegel; impact of science; backgrounds of contemporary philosophical problems. (3 cr; IV MTWThF; ForH 115) Terrell
- 106 AMERICAN PHILOSOPHY FROM WILLIAM JAMES**
James, Dewey, Santayana, Blanshard. (3 cr; I MTWThF; ForH 115) Potter
- 107 PHILOSOPHY IN MODERN LITERATURE**
Survey of basic philosophical ideas in modern civilization as expressed in major works of literature. (3 cr; III MTWThF; ForH 115) Terrell
- 151 PRINCIPLES OF AESTHETICS**
Nature of aesthetic experience; standards of aesthetic evaluation; beauty in art and beauty in nature; status of subject matter in the arts; relation of form and content; concepts of representation, expression, style, meaning, and truth in the arts; use of symbols in art; relation of the arts to knowledge, and to society; relation of aesthetics to ethics. (3 cr; II MTWThF; ForH 115) Coleman

Physical Education for Women

(See College of Education)

The following courses may be taken for elective credit in the College of Liberal Arts:

First Term: PEW 3, 7, 8, 10, 11, 32

Second Term: PEW 7, 8

Political Science (Pol)

FIRST TERM

- A THE STATE IN THE MODERN WORLD**
(Part A of A-B-C) The development, principles, and operation of the modern nation state. (3 cr; IV MTWThF; CB 250) Fogelman
- 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; II MTWThF; CB 150) Ori
- 25 WORLD POLITICS**
Introduction to contemporary international relations, policies of the great powers, nationalism, internationalism. (3 cr; III MTWThF; CB 250) Riggs
- 100 THE CONSTITUTION AND SOCIAL CHANGE**
Constitutional problems involved in the use of political authority to carry on social and economic organization; attention will be given to the historical background of

the civil rights problem, with emphasis on recent trends in constitutional interpretation. (3 cr; prereq 2 or 5 or #; II MTWThF; CB 230) Krislov

107 THE AMERICAN CHIEF EXECUTIVE

Constitutional powers and political roles of the President and governors; the chief executive and administration; executive relations with legislatures; party and popular leadership; presidential roles in crisis. (3 cr; prereq 2 or 5 or #; III MTWThF; CB 110) Jernberg

131 PUBLIC ADMINISTRATION

Organization and areas, administrative responsibility. (3 cr; prereq 2 or 5 or #; I MTWThF; CB 225) Warp

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 2 or 5 or #; IV MTWThF; CB 140) Ori

141 EUROPEAN GOVERNMENT AND POLITICS I

(Part I of 141-142†) Government and politics of Great Britain. Emphasis is on political customs, party system, elections, problems of administration, and crisis government. (3 cr; prereq A-B or 12 cr in social science or #; II MTWThF; CB 135) Jernberg

142 EUROPEAN GOVERNMENT AND POLITICS II

(Part II of 141-142†) Government and politics of France and Germany. Emphasis is on political customs, party system, elections, problems of administration and crisis government. (3 cr; prereq A-B or 12 cr in social science or #; III MTWThF; CB 135) Fogelman

175 DIPLOMACY

Nature and functions, historical development of diplomacy; its relation to forms of government and power systems. Traditional diplomacy, diplomacy by conference and in international organizations, personal diplomacy, open and secret diplomacy. Essentials of diplomatic usage. Diplomatic agents. (3 cr; III MTWThF; CB 150) Penikis

176 U.S. FOREIGN AFFAIRS ADMINISTRATION

Control of foreign relations; treaties and executive agreements; structure and functions of foreign affairs agencies—Department of State, U.S. Information Agency, Central Intelligence Agency, Department of Defense, National Security Council; co-ordination of agencies; the Foreign Service and other overseas agencies. (3 cr; IV MTWThF; CB 155) Penikis

179 RECENT PROBLEMS IN INTERNATIONAL LAW

Selected legal problems in connection with the United Nations (domestic jurisdiction, finances, admission and seating of members, the veto power, protection of human rights, codification and progressive development of international law); nuclear weapons; arms control and disarmament; regulation of outer space; war crimes. Proposals for modernization of international law. (3 cr; I MTWThF; CB 120) McLaughlin

187 INTERNATIONAL ORGANIZATION I

The organization of interaction among nation-states; decision-making in international organizations; comparison of national and international political institutions; world organization for collective security and peaceful settlement of disputes. (3 cr; II MTWThF; CB 140) Riggs

SECOND TERM

B THE STATE IN THE MODERN WORLD

(Part B of A-B-C) (See Pol A, first term) (3 cr; III MTWThF; CB 150) Flanigan

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; IV MTWThF; CB 140) Scott

114 INSTITUTE ON MINNESOTA GOVERNMENT AND POLITICS

(July 19-30) (See section on Special Programs) Intensive course dealing with major Minnesota problems and issues, particularly those considered by the 1965 session of the Minnesota Legislature. Students not desiring credit should register with the Center for Continuation Study. (3 cr; no prereq; III-IV MTWThF, MMA; VI-VII MTWThF, CCS) Warp and others

117 LOCAL GOVERNMENT

Politics and local units; leadership and decision-making structures and processes. (3 cr; prereq 2 or 5 or #; II MTWThF; CB 255) Scott

157 GOVERNMENT AND POLITICS OF DEVELOPING AREAS

Analysis of political problems of new nations; political consequences of the breakdown of traditional society and problems of developing new institutional forms and procedures. (3 cr; prereq C or 15 cr in any combination of economics, sociology, and/or anthropology; III MTWThF; CB 215) Hauser

160 AMERICAN POLITICAL THOUGHT

From colonial times to present; Puritanism; Constitution; utopianism; Calhoun; history of anarchist, socialist, populist, and syndicalist thought; social Darwinism; conservatism; political thought in law and literature. (3 cr; prereq B or 9 cr in social science or §; II MTWThF; CB 240) Cooperman

162 RECENT POLITICAL THOUGHT

Main currents from Marx to present; Marx, Marxism, and their critics; non-Marxist socialism; syndicalism; anarchism; Catholic and Protestant theories; conservatism; pacifism; political thought in law and literature. (3 cr; prereq B or 9 cr in social science or §; III MTWThF; CB 235) Cooperman

168 POLITICAL BEHAVIOR

(Part II of 167-168) Group and organizational behavior; mass society, elite theory and group theory; conceptual approaches and advanced analytic techniques. (3 cr; IV MTWThF; CB 425) Flanigan

184 INTERNATIONAL POLITICS I

State action in international relations; forms of state action; foreign policy-making analysis; capabilities analysis. (3 cr; IV MTWThF; CB 120) Hauser

Psychology

FIRST TERM

Psychology (Psy)

1-2† GENERAL PSYCHOLOGY

General introduction to study of human behavior. Prerequisite for all advanced courses in psychology. (6 cr for combined course; prereq soph or 3rd qtr fr with B avg; II-III MTWThF; SciB 3) Mack

4-5† INTRODUCTORY LABORATORY PSYCHOLOGY

Experiments illustrating subject matter of contemporary psychology. Included are human and animal learning, motivation, verbal behavior, problem solving, visual perception, psychological measurement, personality and social psychology. (4 cr for combined course; prereq soph; I-III MTWThF; WeH 101) Fox

125-126 DIFFERENTIAL PSYCHOLOGY

Introduction to methodology. Quantitative studies of nature of psychological traits and influence of age, sex, heredity, and environment in causation of individual differences in ability and temperament. (6 cr for combined course; prereq 70, or 5 and 5 cr in statistics for 125...125 for 126; III-IV MTWThF; JachH 74) Dunnette

156 PSYCHOLOGY OF ADVERTISING

Psychological analysis of basic principles underlying advertising and selling. Consumer research is stressed. Research techniques for investigating advertising problems and analysis of consumer wants are considered in detail. (3 cr; prereq 2 and Principles of Economics; II MTWThF; Mayo 125) Longstaff

160 PSYCHOLOGY IN PERSONNEL WORK

Selection and retention of a stabilized personnel. Standardized interview; principles and techniques of employment tests; methods of judging character qualities; rating scale; personnel classification methods; morale and its measurement. (3 cr; prereq 2, 5, or 3 cr in statistics, and Principles of Economics or §; III MTWThF; Mayo 125) Longstaff

Personal Orientation (PO)

1 HOW TO STUDY

Practical assistance to the student in developing efficient study habits, organizing materials, preparing for examination, and improving the speed and comprehension of reading. (2 cr, but cr added to CLA grad requirement; limited to 30 students; I MTWThF; JohH 105) Cranney

SECOND TERM

Psychology (Psy)

1-2† GENERAL PSYCHOLOGY

(See first term) (I-II MTWThF; SciB 3) Macker

4-5† INTRODUCTORY LABORATORY PSYCHOLOGY

(See first term) Myers

128-129† PSYCHOLOGY OF LEARNING

Psychological theory; characteristics and function. Critical analysis of all learning theories and their application to problems of normal and abnormal behavior. (6 cr for combined course; prereq 9 cr in psychology; I-II MTWThF; Arch 50) Roberts

132-133† PSYCHOLOGY OF MOTIVATION

Classical and contemporary theories of motivation. Elaboration of basic drives into motives, acquisition of new drives and goals; dynamics of the elaborated drive structure. Motivation in complex situations involving set, level of aspiration, the Zeigarnik effect, frustration, etc. (6 cr for combined course; prereq 9 cr in psychology; II-III MTWThF; Arch 50) Weiner

140 SOCIAL PSYCHOLOGY

Survey of theories and evidence. Effects of other persons, mass communications, social class, and group membership upon the individual's attitudes and behavior. (3 cr; prereq 2, 5, and 9 cr in social science; I MTWThF; ForH 55) Walster

Personal Orientation (PO)

1 HOW TO STUDY

(See first term) (2 cr, but cr added to CLA grad requirements; limited to 30 students; I MTWThF; Bu 103) Cranney

Public Administration

See Political Science

Romance Languages

FIRST TERM

French (Fren)

1 BEGINNING FRENCH

(5 cr; III-IV MTWThF; FolH 201) Staff

8 BEGINNING FRENCH

(5 cr; prereq 2, or 2 yrs high school French; I-II MTWThF; FolH 201) Staff

25 INTERMEDIATE FRENCH

(5 cr; prereq 3, or 3 yrs high school French; III-IV MTWThF; FolH 105) Bergal

30 INTRODUCTION TO FRENCH LITERARY TEXTS

A variety of literary works representing the principal genres are examined through stylistic analyses and literary explications. Students learn critical terminology and discuss literary problems and techniques. (3 cr; prereq 25 or 4 yrs high school French or #; I MTWThF; FolH 105) Bergal

55 FRENCH CONVERSATION AND PRONUNCIATION

In addition to regular conversation course, 2 hrs per week (individually arranged) are devoted to practical phonetics, pronunciation drill and laboratory exercises. (3 cr; prereq 25 or equiv; VII MTWThF; FolH 205) Stavan

62A FRENCH CIVILIZATION AND CULTURE OF THE TWENTIETH CENTURY

Systematic study of development of French culture, with oral and written French exercises based on material of the course. Course conducted in French. (3 cr; II MTWThF; FolH 105) Renaud

66 SURVEY OF FRENCH LITERATURE: THE AGE OF ENLIGHTENMENT

(3 cr; prereq 30; III MTWThF; FolH 303) Stavan

- 127 **CLASSICAL COMEDY: MOLIÈRE**
(3 cr; III MTWThF; FolH 207) Renaud
- 131 **BAUDELAIRE AND PARNASSIAN POETRY**
(3 cr; II MTWThF; FolH 205) Matthews
- 158 **PROUST AND THE NOVEL OF THE TWENTIETH CENTURY**
(3 cr; I MTWThF; FolH 205) Matthews
- 190 **DIRECTED READINGS FOR UNDERGRADUATES**
(1-3 cr; prereq #; hrs ar) Renaud, Matthews, Stavan
- 259 **DIRECTED READINGS**
(1-3 cr; prereq #; hrs ar) Renaud, Matthews

Offered only in La 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 guidance of instructors. (5 cr; prereq 2 or equiv; VI-VII MTWThF) Staff
- 56** **ADVANCED PRACTICAL FRENCH CONVERSATION**
Fluency acquired by presenting short oral reports and oral explications *de texte*, and participating in debates. (5 cr; prereq 25 or equiv; VI-VII MTWThF) Staff
- 106** **ORAL DICTION**
Enables advanced students to acquire a finer feeling for the language, a sense of shades of expression, and a complete mastery of certain grammatical and idiomatic difficulties. (4 cr; prereq #; VI-VII MTWThF) Staff

Italian (Ital)

- 1 **BEGINNING ITALIAN**
(5 cr; III-IV MTWThF; FolH 302) Garofalo

Portuguese (Port)

- 1 **BEGINNING PORTUGUESE**
(5 cr; III-IV MTWThF; FolH 204) Hamilton
- 190 **DIRECTED READINGS FOR UNDERGRADUATES**
(1-3 cr; prereq #; hrs ar) Hamilton

Spanish (Span)

- 1 **BEGINNING SPANISH**
(5 cr; III-IV MTWThF; FolH 202) Staff
- 1A **BEGINNING SPANISH: CONVERSATIONAL APPROACH**
(5 cr; I-II MTWThF; FolH 202) Cuneo
- 3 **BEGINNING SPANISH**
(5 cr; prereq 2, or 2 yrs high school Spanish; I-II MTWThF; FolH 204) Staff
- 25 **INTERMEDIATE SPANISH**
(5 cr; prereq 3 or 3A, or 3 yrs high school Spanish; I-II MTWThF; FolH 110) Staff
- 30 **INTRODUCTION TO SPANISH AND SPANISH-AMERICAN LITERARY TEXTS**
A variety of literary works representing the principal genres are examined through stylistic analyses and literary explications. Students learn critical terminology and discuss literary problems and techniques. (3 cr; prereq 25 or 4 yrs high school Spanish or #; VI MTWThF; FolH 205) Hamilton
- 58 **ADVANCED SPANISH CONVERSATION**
(3 cr; prereq 55; I MTWThF; FolH 109) Narváez
- 65 **SURVEY OF SPANISH LITERATURE: POEMA DEL CID TO THE CELESTINA**
(3 cr; prereq 30; III MTWThF; FolH 209½) Rundorf

†† See Modern Language Residence Houses under Special Programs.

- 73 **LATIN-AMERICAN CIVILIZATION AND CULTURE**
(2 cr; prereq 25; III TWThF; FolH 209) Cuneo
- 106** **TUTORIAL DIRECTION**
(See Special Programs)
- 107 **THE STRUCTURE OF MODERN SPANISH**
(3 cr; prereq 57 or #; II MTWThF; FolH 203) Narváez
- 118 **THE DEVELOPMENT OF THE GOLDEN AGE DRAMA FROM TORRES NAHARRO TO CALDERON DE LA BARCA**
(3 cr; IV MTWThF; FolH 203) Rundorff
- 190 **DIRECTED READINGS FOR UNDERGRADUATES**
(1-3 cr; prereq #; hrs ar) Cuneo, Hamilton, Narváez, Rundorff
- 259 **DIRECTED READINGS FOR GRADUATE STUDENTS**
(1-3 cr; prereq #; hrs ar) Narváez, Rundorff

SECOND TERM

French (Fren)

- 2 **BEGINNING FRENCH**
(5 cr; prereq 1, or 1 yr high school French; I-II MTWThF; FolH 201) Staff
- 25 **INTERMEDIATE FRENCH**
(5 cr; prereq 3, or 3 yrs high school French; I-II MTWThF; FolH 205) Rydell
- 65 **SURVEY OF FRENCH LITERATURE: RABELAIS TO LA BRUYERE**
(3 cr; prereq 30; I MTWThF; FolH 207) Matthews
- 67 **SURVEY OF FRENCH LITERATURE: ROMANTICISM TO SURREALISM**
(3 cr; prereq 30; III MTWThF; FolH 205) Matthews
- 85 **SIXTEENTH- AND SEVENTEENTH-CENTURY FRENCH LITERATURE**
(2 cr; prereq 30 or #, 165; IV MTWTh; FolH 209) Rydell
- 191 **DIRECTED READINGS FOR UNDERGRADUATES**
(1-3 cr; prereq #; hrs ar) Matthews, Rydell
- 260 **DIRECTED READINGS FOR GRADUATE STUDENTS**
(1-3 cr; prereq #; hrs ar) Matthews

Italian (Ital)

- 2 **BEGINNING ITALIAN**
(5 cr; prereq 1, or 1 yr high school Italian; III-IV MTWThF; FolH 302) Garofalo

Portuguese (Port)

- 2 **BEGINNING PORTUGUESE**
(5 cr; prereq 1, or 1 yr high school Portuguese; III-IV MTWThF; FolH 201) Hamilton
- 191 **DIRECTED READINGS FOR UNDERGRADUATES**
(1-3 cr; prereq #; hrs ar) Hamilton

Spanish (Span)

- 2 **BEGINNING SPANISH**
(5 cr; prereq 1, or 1 yr high school Spanish; III-IV MTWThF; FolH 202) Staff
- 25 **INTERMEDIATE SPANISH**
(5 cr; prereq 3 or 3A, or 3 yrs high school Spanish; III-IV MTWThF; FolH 204) Staff
- 76 **SURVEY OF LITERATURE IN SPANISH AMERICA**
Covers the 19th and 20th centuries. (3 cr; I MTWThF; FolH 204) Hamilton
- 191 **DIRECTED READINGS FOR UNDERGRADUATES**
(1-3 cr; prereq #; hrs ar) Hamilton

Note—The General Extension Division will offer French and Spanish for graduate students (Fren 17A and Span 17A). Please address all inquiries to the General Extension Division.

Slavic and Oriental Languages

Russian (Russ)

FIRST TERM

A BEGINNING INTENSIVE RUSSIAN

(See section on Special Programs) Covers the same material covered in the first 1½ quarters of the regular first-year sequence, Russ 1-2-3. (7½ cr; I-III MTWThF; FoH 107) Prokopov, Sjoberg

24 SCIENTIFIC RUSSIAN

(See section on Special Programs) Concentration on the development of reading skill for students of science who wish to make use of Soviet technical publications. (5 cr; III-IV MTWThF; FoH 308) Staff

56 CONVERSATION

(3 cr; prereq #: I MTWThF; FoH 304) Alexeev

SECOND TERM

B BEGINNING INTENSIVE RUSSIAN

Covers the same material covered in the second 1½ quarters of the regular first-year sequence, Russ 1-2-3. (7½ cr; prereq A; I-III MTWThF; FoH 107) Prokopov, Sjoberg

24 SCIENTIFIC RUSSIAN

(See section on Special Programs) Concentration on the development of reading skill for students of science who wish to make use of Soviet technical publications. (5 cr; II-III MTWThF; FoH 308) Goman

57 CONVERSATION

(3 cr; prereq #: I MTWThF; FoH 304) Alexeev

Social Science (SSci)

FIRST TERM

1 PERSONALITY

Historical, political, social, psychological, and cultural factors that influence human behavior. The impact of personality structure on social and cultural patterns. (3 cr; I MTWThF; CB 240) Roshwald

3 COMMUNITY

The web of human relations in traditional and modern societies. Caste and class in the United States. The government of societies; democracy and totalitarianism. (3 cr; III MTWThF; CB 140) Roshwald

SECOND TERM

2 WORK

Division of labor and economic organization in modern societies. The functions of economic systems. Economic instability. Comparative economic systems. Work attitudes in traditional and modern societies. (3 cr; II MTWThF; CB 120) Drobac

Social Work (SW)

FIRST TERM

Soc 90 AMERICAN SOCIAL WELFARE
(See Sociology) Cohn

Soc 91 INTRODUCTION TO SOCIAL WORK PROCESS
(See Sociology) Cohn

100 SPECIAL TOPIC: WORKING WITH THE AGED

Special consideration of certain aspects of the aging process and of the position of the aged in our society with resulting implications on working with them. (3 cr; II MTWThF; SocSci 860) Saloshin

101 SPECIAL TOPIC: THE DEPRIVED CHILD

A consideration of the problems of children suffering from various forms of deprivation, review of pertinent literature, suggested societal problems. Designed for teachers and others working with children. (3 cr; I MTWThF; ForH 180) Kaplan

- 102 SPECIAL TOPIC: TREATMENT OF THE DELINQUENT CHILD**
Orientation to facilities and treatment resources for working with delinquent children and the role of correctional facilities. Open to teachers, institutional personnel, social workers, and others. (3 cr; III MTWThF; SocSci 860) Stewart
- 103 MANAGEMENT OF CHILDREN WITH SOCIAL EMOTIONAL PROBLEMS**
Primarily for elementary and secondary school personnel interested in gaining further understanding regarding children whose problems interfere with their adjustment and educational progress. Open to teachers, social workers, counselors, and others. (3 cr; VI MTWThF; ForH 115) Merl
- 104 SPECIAL TOPIC: WORKING WITH GROUPS**
Basic considerations for working successfully with groups including principles of programming. Designed for persons who in one capacity or another work with committees, recreation groups, or community groups. (3 cr; VII MTWThF; CB 415) Goldman
- 148 CONCEPTS OF HUMAN BEHAVIOR**
Designed to present a view of human development and behavior which is helpful in working with people in a helping capacity. Concepts to be discussed and related to each other will be drawn from dynamic psychology and from other behavioral sciences. (3 cr; IV MTWThF; CB 110) Saloshin
- 171 COMMUNITY ORGANIZATION**
Analysis of the processes of social policy and planning for community health and welfare services including principles of community development. (3 cr; I MTWThF; SocSci 860) Francel

SECOND TERM

- Soc 90 AMERICAN SOCIAL WELFARE**
(See Sociology) Walz
- 105 SPECIAL TOPIC: THE MULTI-PROBLEM FAMILY**
An analysis of the multi-problem family and a review of research approaches to develop an increased understanding, especially the trend toward more comprehensive approaches. Open to teachers, social workers, counselors, correctional personnel, and others interested in working with families. (3 cr; III MTWThF; CB 225) Crane
- 160 ADMINISTRATION IN SOCIAL WELFARE**
Study of the process of transforming social policy into services with emphasis on human relations in administration. Open to those with some social science background who seek a better understanding of administration. (3 cr; II MTWThF; SocSci 860) Kidneigh

Sociology (Soc)

FIRST TERM

- 1 INTRODUCTION TO SOCIOLOGY: MAN IN MODERN SOCIETY**
Characteristics of human group life. An analysis of the factors associated with development of human group life and man's social environment; the structure of the social environment and its influence upon the individual's behavior. (3 cr; II MTWThF; CB 5) Gerson
- 3 SOCIAL PROBLEMS**
Survey course in contemporary social problems with special emphasis on personal demoralization and social disorganization. (3 cr; I MTWThF; CB 10) Nelson
- 90 AMERICAN SOCIAL WELFARE**
Survey of social service with consideration of areas of social needs, social agencies, their purpose and function, and methodology and philosophy of social work practice. (3 cr; prereq 3; IV MTWThF; CB 130) Cohn
- 91 INTRODUCTION TO SOCIAL WORK PROCESS**
General application of interviewing method for students who plan to work professionally in fields involving human relationships, such as social work, public health nursing, speech pathology, etc. (3 cr; prereq 90 or consent of major adviser; VI MTWThF; CB 155) Cohn
- 120 SOCIAL PSYCHOLOGY**
Research and theory regarding relation of the individual to social groups. Emphasis on 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 2; I MTWThF; CB 250) Rubin

140 SOCIAL ORGANIZATION

Organization and structure of social groups; basic culture patterns of economic, political, and social institutions. Integration and disintegration of social groups and institutions. Essentials of social dynamics. (3 cr; prereq 1 or #; IV MTWThF; CB 150) Gerson

171 SOCIAL LIFE AND CULTURAL CHANGE

Theories of social change, with particular attention to their methodological problems. Materials drawn from the comparative social thought and structure of antiquity utilized as basic data for analysis. (3 cr; prereq 1 or #; II MTWThF; CB 250) Rubin

180 METHODS OF SOCIAL RESEARCH

Survey of major methods employed in social research, including a consideration of their advantages and limitations when applied to specific types of problems. (3 cr; prereq 45 or equiv; III MTWThF; CB 235) Nelson

SECOND TERM

1 INTRODUCTION TO SOCIOLOGY: MAN IN MODERN SOCIETY

Characteristics of human group life. An analysis of the factors associated with development of human group life and man's social environment; the structure of the social environment and its influence upon the individual's behavior. (3 cr; II MTWThF; CB 5) Francis

3 SOCIAL PROBLEMS

Survey course in contemporary social problems with special emphasis on personal demoralization and social disorganization. (3 cr; I MTWThF; CB 5) Johnson

53 ELEMENTS OF CRIMINOLOGY

General survey of field of criminology. (3 cr; prereq 1 or 1A or #; III MTWThF; CB 5) Ward

90 AMERICAN SOCIAL WELFARE

Survey of social service with consideration of areas of social needs, social agencies, their purpose and function, and methodology and philosophy of social work practice. (3 cr; prereq 3; IV MTWThF; CB 155) Walz

91 INTRODUCTION TO SOCIAL WORK PROCESS

General application of interviewing method for students who plan to work professionally in fields involving human relationships, such as social work, public health nursing, speech pathology, etc. (3 cr; prereq 90 or consent of major adviser; VI MTWThF; CB 155) Walz

100 CONTEMPORARY PENOLOGY

Analysis of some of the more important developments in recent attempts at treatment of criminals and the prevention of crime. (3 cr; prereq 1, 53, or #; I MTWThF; CB 130) Ward

112 WORLD POPULATION PROBLEMS

Population policy, both historical and present day, in Europe, Asia, and other selected areas but with special emphasis on United States. Some discussion is given to field of population and power politics. (3 cr; prereq 1 or #; IV MTWThF; CB 150) Francis

141 THE FAMILY

Evolution of the family: development of family unity or disunity, roles of the several members of the family, methods of investigation of the family. (3 cr; prereq 1 or #; III MTWThF; CB 130) Johnson

Speech and Theatre Arts

(See University Theatre and Programs in Speech Pathology and Audiology under section on Special Programs)

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 Clark Starr, director of the Speech and Hearing Clinic (Office of the Dean of Students), 225 Shevlin Hall.

FIRST TERM**Speech (Spch)****5X†† FUNDAMENTALS OF SPEECH**

Development of basic skills in speech; voice and action, oral reading, discussion, extemporaneous speaking. (3 cr; limited to 25 students; I MTWThF; FoIH 306) Scott and staff

50 PUBLIC SPEAKING

The principles of preparing and presenting public speeches; directed practice in public speaking. Consideration of the functions of public speaking in contemporary life. (3 cr, \$5; limited to 25 students; prereq upper div standing; IV MTWThF; FoIH 307) Ar

67 PHONETICS

Sounds of American English as they occur separately and in connected speech. Strong and weak forms, stress, assimilation. Practice in ear training. (3 cr; prereq 5; II MTWThF; FoIH 406) Wendahl

81 INTERPRETATIVE READING

Aesthetic theory of literature and of oral reading. Practice in reading for interpretation and mastery of technique (fiction). (3 cr; limited to 25 students; prereq 5; I MTWThF; FoIH 305) Fredricks

105 THEORY OF READING AND ACTING

Literature as an art; its various forms; psychology of creative imagination; speech elements in literature; origins and nature of speech symbols and techniques of their use. (3 cr; prereq 83 and Psy 2; II MTWThF; FoIH 305) Fredricks

109 CLASSICAL RHETORIC

Greek and Roman theories of speech making; historical and philosophic context and influence on education. (3 cr; prereq 5 and Δ; II MTWThF; FoIH 307) Scott

110 HISTORY AND CRITICISM OF BRITISH PUBLIC ADDRESS

British orators, their works, the historical setting, British rhetorical theory. (3 cr; prereq 5 and Δ; III MTWThF; FoIH 307) Jensen

122 INTRODUCTION TO RESEARCH

Graduate research in speech; selection of topics and methods of investigation. Required of all graduate majors in speech. (3 cr; prereq sr, 5, Psy 2; V MTWThF; FoIH 305) Bormann

125 SPEECH FOR THE HEARING IMPAIRED

Differential effects of hearing impairment on speech. Analysis of speech disorders of persons with impaired hearing. Historical and current approaches used in development and improvement of the speech of individuals with impaired hearing. (3 cr; prereq 67 or equiv; I MTWThF; Pt 204) Houchins

126A HISTORY AND CRITICISM OF AMERICAN PUBLIC ADDRESS

Survey of history and criticism of religious and reform speaking in the United States from 1620 to 1920. (3 cr; prereq 5, Psy 2; VI MTWThF; FoIH 305) Bormann

140 INTRODUCTION TO VOICE SCIENCE

Phonetic, anatomic, physiological, and physical bases of speech. (3 cr; prereq 5, Psy 2; II MTWThF; FoIH 404) Sonesson

146 INDUSTRIAL AUDIOLOGY AND OCCUPATIONAL HEARING LOSS

The nature of noise and the special equipment and techniques to measure noise. The effects of noise on man, on his behavior, on speech communication, and on his hearing. Noise reduction including instrument modification, isolation, nature and use of ear defenders. Hearing conservation programs, pre-employment testing and monitoring audiometry. (3 cr; prereq 152, 153, or #; IV MTWThF; Mayo A-675) Ward

151 CLEFT PALATE SPEECH PROBLEMS

Research, clinical practice concerning cleft palate. Observation. (2 cr; prereq 141, 161, 163 or #; II MTWTh; FoIH 303) Starr

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, lipreading, speech correction, auditory training, psychology of hard-of-hearing and deaf, vocational guidance, educational channels. (3 cr; prereq 5, 67, Psy 2 or #; III MTWThF; Mayo A-675) Yantis

†† Credit for Spch 5X without Spch 6 by petition only.

- 153 AUDIOMETRY AND HEARING AIDS**
Clinical and group audiometry; screening and diagnostic techniques, pure tone and speech audiometry; hearing conservation programs. Modern hearing aids; selection and usage problems. (Lecture, 5 weeks; clinic work, 8 weeks, overlap into second term) (3 cr; prereq 5, 67, 152, Psy 2 or ‡; II MTWThF; Mayo A-675) Chaiklin
- 154 SELECTION AND USE OF HEARING AIDS**
Nature and types of amplifying systems, electro-acoustic characteristics: gain power frequency response, nature and sources of distortion, etc. Selection principles and problems relative to hearing disorders. (3 cr; prereq 152, 153, 157 and ‡; I MTWThF; Mayo A-675) Yantis
- 155 LIPREADING AND LIPREADING METHODS**
Schools and methods of teaching lipreading. Supervised practice in teaching lipreading to hard-of-hearing persons. (3 cr; prereq 5, 67, 152, Psy 2 or ‡; VI MTWThF; Mayo A-675) Lassman, Stassen
- 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 ‡; IV MTWThF; FolH 304) Houchins
- 157-158-159 CLINICAL METHODS AND PRACTICE IN AUDIOLOGY**
Methods and supervised practice in the analysis, diagnosis, and habilitation of communication disorders of persons with auditory impairments. (3 cr each; prereq 153 and ‡; hrs ar) Chaiklin, Thompson
- 161 INTRODUCTION TO SPEECH CORRECTION**
Basic orientation in speech correction. Analysis of common disorders of speech, their characteristics, prevention, and correction. Basis for more advanced study in speech pathology or for a basic understanding of the field. (3 cr; prereq 5, or Δ; IV MTWThF; FolH 306) Siegel
- 164, 165, 166 CLINICAL METHODS AND PRACTICE IN SPEECH PATHOLOGY**
(3 cr each; prereq sr, 5, 67, 161, 162, 163; hrs ar) Henrikson and staff
- 181, 182, 183 READINGS IN SPEECH**
Directed reading and preparation of reports on selected subjects. (Cr ar; prereq 5 and 6 addtl cr and ‡) Staff
- 261, 262, 263 SEMINAR: SPEECH PATHOLOGY**
Significant literature in speech pathology; evaluation of research methods. (3 cr each; prereq 67, 161, 162, 163, Psy 2 or ‡; hrs ar) Henrikson and staff
- 267 SEMINAR: EXPERIMENTAL PHONETICS**
Critical analysis of significant research in physiologic and acoustic phonetics. Examination of theory, method, instrumentation, and data. Emphasis on physiology, structure, and action of the larynx. (2 cr; prereq 67, 142; hrs ar) Sonesson
- 268-269 SEMINAR: EXPERIMENTAL PHONETICS**
Critical analysis of significant research in physiologic and acoustic phonetics. Examination of theory, method, instrumentation, and data. (2 cr each; prereq 67, 142; hrs ar) Wendahl
- 271-272-273 SEMINAR: HEARING**
Major experimental research in psychophysiological and psychoacoustical nature of hearing. Critical analysis of theory, experimental method, and treatment of data. (3 cr; prereq 152, 153, 155, ‡; hrs ar) Lassman and staff
- 276 SEMINAR: RHETORIC**
History and critical study of rhetorical theory. Examination of research in rhetoric. (3 cr; prereq 109 or ‡; hrs ar) Scott
- 291-292-293 RESEARCH**
Open to graduate students engaged in research on special problems. (Cr ar) Staff

Note—For methods of directing secondary school speech activities, see College of Education, EdCI 177. For clinical methods and practice in speech pathology in the College of Education, see EdCI 174-175-176.

Theatre Arts (Th)

- 11 INTRODUCTION TO THE THEATRE ARTS**
History and theory of plays and writing as well as various arts and crafts of the theatre. (3 cr; II MTWThF; ScH 108) Ballet

12 LABORATORY SECTION: INTRODUCTION TO THE THEATRE

A laboratory in the practice of the arts and crafts of the theatre: scenery and particularly construction and painting, stage operation, theatre lighting, costuming, or make-up. (1 cr; prereq 11 or 111; meet first day with Th 11, then hrs and rm ar) Baruch

22 BEGINNING ACTING: CREATING A ROLE

The application of creative techniques to the analysis, understanding, and theatrically effective communication of roles from dramatic literature. (3 cr; limited to 15 students; prereq 21; II MTWThF; WeH 302) Klein

34 STAGECRAFT: CONSTRUCTION AND PAINTING

Theory and practice in construction, painting, and shifting of stage scenery. (3 cr, §74; prereq soph, 12; IV MTWThF; WeH 306) Baruch

61 ADVANCED ACTING

Characterization, styles of acting, and stage technique. Presentation of scenes from great plays. (3 cr; limited to 15 students; prereq 21; III MTWThF; WeH 302) Howard

91 SCENE DESIGN

Theory and practice of designing scenery as a functional environment for the stage and television. (3 cr; prereq 12, 34; III MTWThF; WeH 306) Josal

100 INTRODUCTION TO RESEARCH

Graduate research in theatre arts: selection of topics and methods of investigation. Required of all graduate majors in theatre arts. (3 cr; prereq sr, Spch 5, Psy 2; V MTWThF; FolH 305) Bormann

101, 102, 103 THEATRE PRACTICUM

Individual creative projects meeting approval of a faculty committee in one or more of these areas: playwrighting, directing, acting, and design. Application forms in 102 Shevlin Hall. Approval of adviser and committee necessary before registration. (2-6 cr; prereq Δ) Josal and staff

111 STAGE DIRECTION

Theory of direction. Exercises in blocking and production of short scenes. (3 cr; prereq sr, 21, 90 or 92, 91 and §; II MTWThF; Sch 19) Adey

121 PROBLEMS IN ACTING

Acting problems stemming from differences in genres and styles of dramatic production from the Greeks to the present. Emphasis on intensive scene and character analysis and on skill in communicating character and concept to an audience in individual and group performance. (3 cr; limited to 15 students; prereq 61, 62 or §; IV MTWThF; WeH 302) Klein

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; limited to 50 students; prereq 12, Spch 5, or elementary education major, or §...21 recommended; IV MTWThF; FolH 207) Graham

132 CHILDREN'S THEATRE

Selection, direction, and production of plays for children's audiences. (3 cr; prereq 12, Spch 5 or §; II MTWThF; FolH 109) Graham

171 HISTORY OF THE THEATRE

Plays, arts and crafts of the theatre from their beginnings to the Renaissance. Reports and projects. (3 cr; prereq sr, 12, 100 or 100, Spch 5; II MTWThF; FolH 304) Sonkowsky

177 THEATRE BACKGROUNDS

A selective examination of plays as part of the living theatre. A chronological, comparative study of the development of theatrical elements in the drama from its origins through French neoclassicism. (3 cr; prereq jr, sr, grad, 11 or equiv plus 9 upper division credits in English, speech-theatre, classics, or modern languages; IV MTWThF; ShH 102) Ballet

181, 182, 183 READINGS IN THEATRE ARTS

Directed reading and preparation of reports on selected subjects. (Cr ar; prereq Spch 5, and 6 addtl cr and §; hrs ar) Staff

192 ADVANCED PROBLEMS IN STAGE LIGHTING

Theory of stage lighting. Special projects and reports. (3 cr; prereq 111, 112 or §; VI MTWThF; WeH 306) Josal

281, 282, 283 RESEARCH

Open to graduate students engaged in research on special problems. (Cr ar) Staff

SECOND TERM

Speech (Spch)

5X†† FUNDAMENTALS OF SPEECH

(See first term) (I MTWThF; FolH 306) Shapiro and staff

6 FUNDAMENTALS OF SPEECH

Second quarter of Spch 5-6. (3 cr; limited to 25 students; prereq 5; II MTWThF; FolH 306) Shapiro and staff

65 RADIO AND TELEVISION SPEECH

Fundamentals of practice and theory in speaking for radio and television. Emphasis on projects and exercises in radio and television performance and scripting; introduction to studio equipment and procedures. (3 cr; limited to 22 students; prereq 5; IV MTWThF; MurH 302) Bart

81 INTERPRETATIVE READING

Aesthetic theory of literature and of oral reading. Practice in reading for interpretation and mastery of technique (fiction). (3 cr; limited to 25 students; prereq 5; I MTWThF; FolH 305) Thompson

103 ARGUMENTATION AND PERSUASION

Theories of modern motivational rhetoric. Analysis of persuasive speaking; practice in preparation and delivery of oral argument. (3 cr; prereq 5, Psy 2, 10 cr in social science; III MTWThF; FolH 306) Howell

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, and radio and television discussions. (3 cr; prereq 5; V MTWThF; FolH 307) Shapiro

107 PLATFORM READING

Advanced course in oral interpretation of selected poems and plays. Speech melody, rhythm, platform techniques. Problems in aesthetic analysis. Lecture recitals. (3 cr; prereq 83; II MTWThF; FolH 305) Thompson

127 LANGUAGE FOR THE HEARING IMPAIRED

Language problems resulting from impaired hearing. Survey of approaches of developing and teaching language to the hearing impaired individual. (3 cr; prereq 152 or #; I MTWThF; Pt 204) Houchins

145 BASIC HEARING SCIENCE

The nature of normal hearing. Historical backgrounds and issues; theories of hearing. Pitch, loudness, quality and their scaling; hearing limits; differential sensitivity. Combination tones, masking, adaptation, binaural effects, and spatial localization. Some contemporary theoretical considerations such as information theory and signal detection theory. (3 cr; prereq 152 or #; I MTWThF; Mayo A-675) Ward

157-158-159 CLINICAL METHODS AND PRACTICE IN AUDIOLOGY

(See first term) Chalklin

163 PATHOLOGIES OF SPEECH

Voice and articulation disorders. (3 cr; prereq 5, 67, 161; IV MTWThF; FolH 305) Mc Dermott

164, 165, 166 CLINICAL METHODS AND PRACTICE IN SPEECH PATHOLOGY

(See first term) Henrikson and staff

169 SPEECH AND LANGUAGE IN HUMAN BEHAVIOR

Basic orientation on the place of speech and language in human behavior. Individual projects and collateral reading. (3 cr; IV MTWThF; FolH 307) Shapiro

170 RADIO AND TELEVISION PROGRAMMING

Theory and practice. Principles of program effectiveness; program policies of the industry. Building and production of experimental programs; emphasis on talk and discussion. (3 cr; prereq 65 or Th 63 or #; I MTWThF; FolH 302) Bart

181, 182, 183 READINGS IN SPEECH

(See first term) Staff

†† Credit for Spch 5X without Spch 6 by petition only.

207 SEMINAR: PERSUASION

Contemporary public address. Literature of persuasion, methods in study of persuasion. (3 cr; prereq 5, 101, 102, 103, Psy 2, 140, 10 cr in social science; ar) Howell

251 SEMINAR: LISTENING COMPREHENSION

Research problems and methods. Evaluation of published research. (2 cr; prereq undergrad spch major, #; II MTWThF; AgEng 221) Nichols

261, 262, 263 SEMINAR: SPEECH PATHOLOGY

(See first term) Henrikson and staff

271-272-273 SEMINAR: HEARING

(See first term) Lassman

291, 292, 293 RESEARCH

(See first term) Staff

Note—For methods of teaching the hearing impaired, see College of Education, EdCI 128. For clinical methods and practice in speech pathology in the College of Education, see EdCI 174-175-176.

Theatre Arts (Th)

21 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; limited to 15 students; prereq fr with Δ , soph, 12; IV MTWThF; WeH 302) Adey

61 ADVANCED ACTING

Characterization, styles of acting, and stage technique. Presentation of scenes from great plays. Special emphasis on development of a style of acting Shakespeare which is true to Elizabethan principles yet geared to 20th century. (3 cr; limited to 15 students; prereq 21; IV MTWThF; ScH 19) Joseph

101, 102, 103 THEATRE PRACTICUM

(See first term) Whiting and staff

114 THEATRE MANAGEMENT AND PROMOTION

Theory and practice in box office procedures, house management, publicity and promotion; special problems in college, community, children's, and professional theatre. (3 cr; prereq 12; VI MTWThF; ScH 19) Lopnow

173 HISTORY OF THE THEATRE

Plays, arts and crafts of the theatre from 1880 to the present. Reports and projects. (3 cr; prereq sr, 12, 100 or \S 100, Spch 5; III MTWThF; FoH 207) Graham

181, 182, 183 READINGS IN THEATRE ARTS

(See first term) Staff

211 SEMINAR: STAGE DIRECTION

Great plays and their potentials for meaningful and effective production in the modern theatre. (3 cr; prereq 111, 112, 113; VIII-IX TTh; Showboat) Whiting

212 SEMINAR: STAGE DIRECTION

Great plays and their potentials for meaningful and effective production in the modern theatre. Special emphasis on a style of directing Shakespeare which is true to Elizabethan principles yet geared to 20th century. (3 cr; prereq 111, 112, 113; II MTWThF; ShH 105) Joseph

281, 282, 283 RESEARCH

(See first term) Staff

Statistics (Stat)

FIRST TERM

41 INTRODUCTION TO THE IDEAS OF STATISTICS

The role of statistics in scientific investigation. Probabalistic models as an aid to inference. Types of inference and decision procedures. Bayes theorem. Maximum likelihood. (3 cr; prereq Math 10 or #; III MTWThF; ForH 175)

121 THEORY OF STATISTICS

(For nonmajors) Probability distributions, law of large numbers, sampling, likelihood function. (3 cr; prereq Math 10 or equiv; II MTWThF; ForH 125)

SECOND TERM

101 INTRODUCTION TO DECISION THEORY

Elements of probability; basic concepts in statistical decision theory; relationship to game theory; prediction and inference. (3 cr; prereq Econ 101A or Math 40 or Math 42 or Math 13 or ‡; III MTWThF; ForH 175)

122 THEORY OF STATISTICS

(For nonmajors) Estimation, hypothesis testing, confidence intervals. (3 cr; prereq 121, Math 43 or equiv; II MTWThF; ForH 175)

COURSES OFFERED THROUGH OTHER DEPARTMENTS

EPsy 216-217 STATISTICAL METHODS IN EDUCATION (College of Education)

EPsy 216A-217A STATISTICAL METHODS IN EDUCATION—LABORATORY (College of Education)

PubH 110 BIOMETRIC PRINCIPLES (School of Public Health)

PubH 120 BIOSTATISTICS II (School of Public Health)

PubH 111-121 BIOSTATISTICS LABORATORY (School of Public Health)

QA 171 STATISTICAL METHODS FOR SAMPLE SURVEYS (School of Business Administration)

Zoology (Zool)††

FIRST TERM

Biol 1‡‡ GENERAL BIOLOGY

Introduction to living things, both plant and animal, and to the major biological concepts. Structure, function, classification, and evolution of organisms. (5 cr; lect V MTWTh, V-VI F, Bo B6; lab VI-VIII MTWTh, Z 101ABCD) Skjegstad

100 BASIC ZOOLOGY

(Cr ar; prereq grad only; hrs ar) Staff

197 PROBLEMS

Advanced work in some special line. (3 cr or more; prereq 3 or old Biol 3 or new Biol 2 and ‡; hrs ar) Ar

SECOND TERM

Biol 2‡‡ GENERAL BIOLOGY

(Continuation of 1) (See first term) Olson

66 INTRODUCTION TO GENETICS AND EUGENICS

Facts and theories of heredity with special reference to man; chances of man to inherit traits; possible benefits or control by man for the betterment of himself and society. (3 cr; prereq 3 or old Biol 3 or new Biol 2 or equiv or 10 cr in botany or zoology; II MTWThF; Bo B6) Ar

101 BASIC ZOOLOGY

(See 100, first term) Staff

198* PROBLEMS

Advanced work in some special line. (3 cr or more; prereq 3 or old Biol 3 or new Biol 2 and ‡; hrs ar) Ar

†† For additional courses, see index for Biology Session.

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

COLLEGE OF MEDICAL SCIENCES

MEDICAL SCHOOL

The Medical School offers a wide variety of courses and externships during the Summer Session. 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 on the wards of the University Hospitals, the Hennepin County General Hospital, the Veterans Administration Hospital, and Ancker Hospital in St. Paul. Registration may be for one or more terms of the Summer Session. Research opportunities may be afforded registrants who remain for both terms. At the discretion of individual clinical departments, selected registrants may remain during the month of September for additional clinical training.

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 to 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)

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 Hennepin County General Hospital, the Veterans Administration Hospital, and the Ancker Hospital, St. Paul, will go on as usual during the Summer Session and will be open to visiting physicians.

Graduate 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 \$155 for residents of Minnesota, and \$330 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 \$22. Students in certain courses are required to furnish microscopes.

Medical Students or Physicians Registering for Externships—A tuition fee of \$59.50 *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 \$11 *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 or SECOND TERM

ELECTIVE COURSES

156 **ADVANCED ANATOMY**

Individual problems in gross anatomy, embryology, histology, or neuroanatomy. (Cr and hrs ar; prereq #) Staff

204 **RESEARCH IN ANATOMY**

Gross anatomy, cytochemistry, histology, endocrinology, embryology, hematology, or neuroanatomy. (Cr and hrs ar; prereq #) Staff

Anesthesiology (Anes)

FIRST TERM

REQUIRED COURSES

101 **PRINCIPLES OF ANESTHESIA**

(2 cr; prereq regis med) 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) Van Bergen and staff

181 **EXTERNSHIP IN ANESTHESIOLOGY**

(4 cr; limited to 6 students; hrs ar) Van Bergen and staff

182 **EXTERNSHIP IN ANESTHESIOLOGY AND RESPIRATORY PROBLEMS**

(4 cr; limited to 3 students; prereq Anes 181) Van Bergen and staff

REQUIRED COURSES FOR GRADUATE STUDENTS

265 **GENERAL ANESTHESIA**

Instruction and experience in general anesthesia. (12 cr) Van Bergen and staff

266 **REGIONAL ANESTHESIA**

Observation, instruction, and administration of all types of local, regional, and spinal anesthesia. (4 cr) Van Bergen and staff

267 **PRE- AND POSTANESTHETIC EVALUATION**

Selection of proper anesthetic agent and technique, premedication, and observation of recovery from anesthesia. (2 cr) Van Bergen and staff

- 268 **SEMINAR: ANESTHESIOLOGY**
Review of literature, report of case problems, and discussion of research work in progress within the department. (2 cr) Van Bergen and staff
- 269 **RESEARCH IN ANESTHESIA**
Anesthesia problems in experimental laboratory or in hospital. (Cr and hrs ar) Van Bergen and staff

Biochemistry (MdBc)

FIRST TERM

REQUIRED COURSES

- 100 **BIOCHEMISTRY**
(7 cr; prereq organic and physical chemistry and physics; lect IV, VI MTWThF, Owre 15; lab I-III MTWTh, MH 201) Barnum, Carr, Van Pilsum

ELECTIVE COURSES

- 153 **PROBLEMS IN BIOCHEMISTRY**
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 BIOCHEMISTRY**
(Cr and hrs ar) Barnum, Carr, Van Pilsum
- 215 **TOPICS IN LIPID METABOLISM**
(3 cr; prereq 101 or #; VIII MTWThF; MH 213) Frantz

SECOND TERM

REQUIRED COURSES

- 101 **BIOCHEMISTRY**
(7 cr; prereq 100; lect IV, VI MTWThF, Owre 15; lab I-III MTWTh, MH 201) Armstrong, Koerner, Ungar

ELECTIVE COURSES

- 153 **PROBLEMS IN BIOCHEMISTRY**
(See first term) Armstrong, Koerner, Ungar
- 205 **RESEARCH IN BIOCHEMISTRY**
(See first term) Armstrong, Koerner, Ungar

Laboratory Medicine (LMed)

FIRST TERM or SECOND TERM

- 180 **PROBLEMS IN FLUID AND ELECTROLYTE METABOLISM**
(Cr and hrs ar; prereq regis med) Evans and staff
- 235 **ADVANCED CLINICAL LABORATORY MEDICINE**
(Cr and hrs ar; prereq #) Evans and staff
- 236 **RESEARCH ON CLINICAL LABORATORY PROBLEMS**
(Cr and hrs ar; prereq #) Evans and staff

Medicine (Med)

Division of Internal Medicine

FIRST and SECOND TERMS

REQUIRED COURSES

- 104 **INTRODUCTION TO INTERNAL MEDICINE**
(2 cr per qtr for 4 qtrs; prereq 101, LMed 102; 1:00-1:50 alt W; Todd Amph) Watson
- 112 **CLERKSHIP: INTERNAL MEDICINE**
(16 cr; prereq regis med; 8:00-5:00 MTWThFS) Goetz and staff

ELECTIVE COURSES††

- 180 EXTERNSHIP IN MEDICINE**
Care of medical patients on an inpatient service at an advanced level of responsibility. University, Veterans Administration, Hennepin County General, Mt. Sinai, and Ancker Hospitals. (6 cr per period; offered 3 elective periods; hrs ar) Watson, Hall, Hoffbauer, A Schultz, Hammarsten
- 181 RESEARCH IN MEDICINE**
Research opportunities in the following areas are available at University or affiliated hospitals: gastroenterology, hypertension and sodium metabolism, lipid metabolism as related to atherosclerosis, liver disease, adrenal disease, carbohydrate metabolism and clinical diabetes, immunology, cardiovascular and pulmonary disease, experimental hemodynamics, internal medicine. A detailed listing of these opportunities is available in the departmental office. (6 cr per period) Staff
- 184 SPECIAL CLINICAL PROBLEMS**
Opportunities for study in the following areas of clinical interests are available at University or affiliated hospitals: clinical electrocardiography and vectorcardiography, clinical and basic problems in bile pigment and porphyrin metabolism, infectious diseases, endocrinology and metabolic disease including diabetes and thyroid disturbances, immunology, cardiovascular and pulmonary disease, clinical hemodynamics. A detailed listing of these opportunities is available in the departmental office. (6 cr per period) Staff
- 201 CLINICAL MEDICINE**
(Cr and hrs ar) Watson and staff
- 202 DISEASES OF THE CARDIOVASCULAR APPARATUS**
(Cr and hrs ar) Frantz and staff
- 203 RESEARCH IN MEDICINE**
(Cr and hrs ar) Watson and staff
- 206 CLINICAL CONFERENCE**
Presentation of problem cases. Discussion of diagnosis and treatment and consideration of pertinent literature. (1 cr; 9:00-9:50 F; Todd Amph) Watson and staff
- 207 CLINICAL PATHOLOGICAL CONFERENCE**
Presentation of clinical features, necropsy findings, and discussion. Medical and surgical cases. (1 cr; 11:00-11:50 W; Todd Amph) Dawson and staff
- 208 CLINICAL RADIOLOGICAL CONFERENCE**
Presentation and discussion of X-ray films from the Medical Service, with clinical correlation. (1 cr; 9:00-9:50 M; Todd Amph) Peterson, Watson, and staff
- 210 SEMINAR: INFECTIOUS DISEASE**
(1 cr; hrs ar) Spink
- 211 ELECTROCARDIOGRAPHIC CONFERENCE**
(1 cr; 3:30-4:20 T; Todd Amph) Tuna and staff
- 214 CARDIAC CONFERENCE**
Weekly conference on clinical cardiovascular problems, held jointly by the Departments of Medicine, Surgery, and Radiology. (1 cr; 4:00-4:50 M; Todd Amph) Wang and staff

Division of Dermatology

FIRST and SECOND TERMS

REQUIRED COURSES

- 123 DERMATOLOGY, SYPHILOLOGY**
(2 cr; prereq 101; 4:00-5:00 alt W; Hosp Eustis Amph) Lynch and staff
- 124 SENIOR CLERKSHIP: DERMATOLOGY**
(2 cr; prereq regis med; 1:00-3:00 MTW, 9:00-11:00 Th, 1:30-3:00 F; Hosp Eustis Amph) Lynch and staff

ELECTIVE COURSES

- 182 EXTERNSHIP IN DERMATOLOGY**
(Cr and hrs ar; limited to 4 students) Lynch

†† Prior arrangements with departmental office.

- 183 PROBLEMS IN DERMATOLOGY**
(Cr and hrs ar; limited to 4 students) Lynch and staff
- 225 CLINICAL DERMATOLOGY**
(Cr and hrs ar) Lynch and staff
- 226 SEMINAR: DERMATOLOGY**
(Cr and hrs ar) Lynch and staff
- 227 HISTOPATHOLOGY OF THE SKIN**
(1 cr; hrs ar) Goltz and staff
- 228 RESEARCH: DERMATOLOGY**
(Cr and hrs ar) Lynch and staff
- 229 EXPERIMENTAL METHODS IN DERMATOLOGY**
(Cr and hrs ar) Goltz and staff
- 230 FUNCTIONAL BIOLOGY OF THE SKIN**
(Cr and hrs ar) Lynch and staff

Microbiology (MicB)

FIRST TERM

- 123 PHYSIOLOGY OF BACTERIA LABORATORY**
Techniques employed in study of bacterial physiology and metabolism. (3 cr; designed for grad students in microbiology, open to others with §; prereq 121; lab I-IV MTWThF; Mayo A-205) Rogers
- 201 RESEARCH**
(Cr and hrs ar) Staff

SECOND TERM

- 201 RESEARCH**
(Cr and hrs ar) Staff

Obstetrics and Gynecology (Obst)

ELECTIVE COURSES

FIRST and SECOND TERMS

- 184 EXTERNSHIP IN OBSTETRICS AND GYNECOLOGY**
Elective for junior and senior medical students and recent graduates. Course will consist of clinical work in obstetrics and gynecology. Under exceptional circumstances investigative work can be done. Registration may be for one or both terms. (Cr and hrs ar; limited to 10 students) McKelvey and staff

COURSES FOR GRADUATE STUDENTS

FIRST TERM

- 201 ADVANCED OBSTETRICS AND GYNECOLOGY, PART I**
(Cr and hrs ar) McKelvey, Prem, Makowski, Adcock, Spellacy, and staff
- 205 ADVANCED OBSTETRICS AND GYNECOLOGY, PART II**
(Cr and hrs ar) McKelvey, Prem, Makowski, Adcock, Spellacy, and staff
- 209 ADVANCED OBSTETRICS AND GYNECOLOGY, PART III**
(Cr and hrs ar) McKelvey, Prem, Makowski, Adcock, Spellacy, and staff
- 216 RESEARCH**
(Cr and hrs ar) McKelvey, Prem, Makowski, Adcock, Spellacy, and staff

SECOND TERM

- 204 ADVANCED OBSTETRICS AND GYNECOLOGY, PART I**
(Cr and hrs ar) Prem, Makowski, Adcock, Spellacy, and staff
- 208 ADVANCED OBSTETRICS AND GYNECOLOGY, PART II**
(Cr and hrs ar) Prem, Makowski, Adcock, Spellacy, and staff

- 212 **ADVANCED OBSTETRICS AND GYNECOLOGY, PART III**
(Cr and hrs ar) Prem, Makowski, and staff
- 219 **RESEARCH**
(Cr and hrs ar) Prem, Makowski, Adcock, Spellacy, and staff
- 302 **EXTERNSHIP**
(6 cr) Prem, Makowski, Adcock, Spellacy, and staff
- 303 **OBSTETRICS AND GYNECOLOGIC HISTOLOGY**
(6 cr; hrs ar) Prem and staff

Ophthalmology (Ophth)

FIRST TERM

- 203 **BASIC AND APPLIED OPHTHALMOLOGY**
(2 cr; 9:00-12:00 S; O-P Clin) Harris and staff

FIRST and SECOND TERMS

- 200 **CLINICAL OPHTHALMOLOGY**
(6 cr; 10:00-5:00 MTWThF; O-P Clin) Harris and staff
- 201 **PRACTICAL OCULAR SURGERY**
(3 cr; 7:30-10:00 TWTh; Oper Rm) Harris and staff

Otolaryngology (Otol)

FIRST and SECOND TERMS

COURSES FOR GRADUATE STUDENTS

- 230 **CLINICAL OTOTOLOGY**
(3 cr; 1:00-4:00 MWThF; Outpatient Clinic) Boies and staff
- 231 **CLINICAL RHINOLOGY AND LARYNGOLOGY**
(3 cr; 9:00-12:00 MWThF; Outpatient Clinic) Boies and staff
- 232 **SURGERY OF EAR, NOSE, AND THROAT**
(3 cr; 9:00-12:00 MTWThF; Outpatient Clinic and Operating Room) Boies and staff

Pathology (Path)

FIRST TERM

- 104 **AUTOPSIES**
(Cr ar; prereq 102; hrs ar) Dawson
- 106 **DISEASES OF THE HEART**
(1 cr; prereq 102; hrs ar) Edwards
- 111 **CONFERENCE ON AUTOPSIES**
(1 cr; prereq 102; 12:30-1:30 T; JacH 178) Dawson
- 112†† **DIAGNOSIS OF TUMORS**
(2½ cr; prereq 102; 8:00 MTThF; JacH 178) Hebbel
- 113†† **SURGICAL PATHOLOGY**
(Cr ar; prereq 102; hrs ar) Hebbel
- 120 **DISEASES OF THE LUNGS**
(1 cr; prereq 102; hrs ar) Dawson
- 150 **PROBLEMS IN PATHOLOGY**
(Cr ar; prereq 102; hrs ar) Dawson
- 201 **RESEARCH**
Students with the necessary preliminary training may elect research either as a major or minor in pathology. (Cr ar; prereq 4; hrs ar) Dawson

†† Second Term 112 and 113 are not repetitions of the First Term but rather continuations.

SECOND TERM

- 104 **AUTOPSIES**
(See first term) Dawson, Hebbel
- 106 **DISEASES OF THE HEART**
(See first term) Edwards
- 111 **CONFERENCE ON AUTOPSIES**
(See first term) Dawson
- 112†† **DIAGNOSIS OF TUMORS**
(See first term) Hebbel
- 113†† **SURGICAL PATHOLOGY**
(See first term) Hebbel
- 121 **DISEASES OF THE ALIMENTARY TRACT**
(1 cr; prereq 102; hrs ar) Hebbel
- 150 **PROBLEMS IN PATHOLOGY**
(See first term) Dawson, Hebbel
- 201 **RESEARCH**
(See first term) Dawson, Hebbel

Pediatrics (Ped)

FIRST and SECOND TERMS

REQUIRED COURSES

- 120 **CLINICAL LECTURES IN PEDIATRICS**
(2 cr; prereq regis med; 1:00-2:00 W; Todd Amph) J Anderson and staff
- 135 **CLINICAL CLERKSHIP**
(12 cr; prereq regis med) J Anderson and staff

ELECTIVE COURSES

- 181 **EXTERNSHIP**
Care of pediatric patients on an inpatient service at an advanced level of responsibility. Offered at University and affiliated hospitals. (Cr ar) J Anderson and staff
- 182 **SPECIAL CLINICAL PROBLEMS**
Opportunities for study in the following areas of clinical interest are available at University and affiliated hospitals: pediatric cardiology, pediatric neurology, pediatric endocrinology and metabolism; and renal diseases. A detailed listing of these opportunities is available in the departmental office. (Cr ar) J Anderson and staff
- 183 **RESEARCH IN PEDIATRICS**
Research opportunities in the following areas are available at University or affiliated hospitals: hematology, infectious disease, immunology and inflammatory diseases, renal diseases, metabolic and endocrinologic research. A detailed listing of these opportunities is available in the departmental office. (Cr ar) J Anderson and staff

COURSES FOR GRADUATE STUDENTS

All pediatric medical fellows, medical fellow specialists, teaching assistants, and research assistants are required to register for one or more of the following courses. Credit obtained may be applied to the M.S. or the Ph.D. degree. The clinical experience in these courses is obtained in the outpatient and inpatient services of the University of Minnesota Hospitals. Research opportunities will be provided by arrangement in either the basic science departments of the Medical School or in the laboratories of the Department of Pediatrics.

- 200 **GRADUATE SEMINAR IN PEDIATRICS**
(1½ cr; VIII T; Mayo 1450) J Anderson and staff

†† Second Term 112 and 113 are not repetitions of the First Term but rather continuations.

- 202 PEDIATRIC CLINIC**
(5 cr; II-IV MTWThF; O-P depts of Hennepin County General Hospital or University Hospitals) J Anderson and staff
- 204 RESIDENCY IN PEDIATRICS**
Three-month residency in pediatrics at University Hospitals, Hennepin County General Hospital, St. Paul Children's Hospital, Ancker Hospital. (7 cr; I-X MTWThF) J Anderson and staff
- 206 PEDIATRIC SPECIAL INTEREST**
Pediatric graduate students who have completed at least 1½ years of their general graduate pediatric training may obtain advanced clinical and basic training in one or more of the following special fields: allergy, neurology, cardiology, psychiatry, pathology, endocrinology and metabolism, hematology. Clinical training in these areas is obtained in the inpatient and outpatient services of the University Hospitals and its affiliated hospitals. Training in the basic sciences related to these fields of special interest may be obtained in the preclinical divisions of the medical school. (Cr and hrs ar; prereq §) 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 and staff

Pharmacology (Phcl)

FIRST and SECOND TERMS

- 109 PHARMACOLOGICAL PROBLEMS**
(Cr and hrs ar) Shideman and staff
- 203 RESEARCH IN PHARMACOLOGY**
(Cr and hrs ar) Shideman and staff

Physical Medicine and Rehabilitation (PMed)

FIRST TERM or SECOND TERM

- 103 PHYSICAL THERAPY CLINIC**
(Cr and hrs ar) Gullickson
- 180 PROBLEMS IN PHYSICAL THERAPY**
(Cr ar; prereq physical therapist) Staff
- 181 EXTERNSHIP IN PHYSICAL MEDICINE AND REHABILITATION**
(Cr ar; prereq regis med) Gullickson
- 190 PROBLEMS IN PHYSICAL MEDICINE AND REHABILITATION**
(Cr ar; prereq regis med) Kottke, Kubicek
- 191 SEMINAR: REHABILITATION LITERATURE**
(Cr ar; prereq regis med) Kottke
- 200 PHYSICAL MEDICINE SERVICE**
(Cr and hrs ar) Staff
- 204 CLINIC, PERIPHERAL VASCULAR DISEASE**
(Cr and hrs ar) Gullickson
- 205 READINGS**
(1 cr; I M) Kottke
- 206 CONFERENCE**
(Cr and hrs ar) Staff
- 210 RESEARCH IN PHYSICAL MEDICINE**
(Cr and hrs ar) Kottke, Kubicek
- 212 ELECTROMYOGRAPHY**
(Cr and hrs ar) Kottke

Occupational Therapy

Consult Occupational Therapy office, 860 Mayo Memorial, University of Minnesota, Minneapolis, Minnesota 55455.

Physiology (Phsl)

FIRST TERM

REQUIRED COURSES

51 HUMAN PHYSIOLOGY

(5 cr; primarily for baccalaureate nursing students and physical therapy students; prereq zoology and 1 yr college chemistry; lect VI MWF, VII TThF, VIII TTh, Owre 111; conf IV TTh, Owre 111; lab VII-IX MW, MH 307) Lee

ELECTIVE COURSES

100 GENERAL PHYSIOLOGY

For high school teachers in biological sciences and for others who wish an introduction to modern physiological science. (4 cr; prereq college algebra, 1 yr chemistry, college physics; I-II MTWF; MH 307) Ilani

208 RESEARCH IN PHYSIOLOGY

(Cr and hrs ar) Lee, Ilani, and staff

SECOND TERM

203 RESEARCH IN PHYSIOLOGY

(Cr and hrs ar) Ilani and staff

Psychiatry and Neurology (NPsy)

FIRST TERM

206 MEDICAL PSYCHOLOGY I

Introduction to clinical psychology clerkship. (3 cr; prereq grad; 8:00-9:30 and 1:30-3:30 TWTh) Briggs and Hafner

FIRST TERM or SECOND TERM

101 CLINICAL NEUROLOGY

(4 cr; prereq regis med or grad clin psychol; 8:00 S) Baker

103 CLINICAL CLERKSHIP

(12 cr) Staff

145 READINGS IN PSYCHIATRY

(Cr ar) Staff

145X READINGS IN NEUROLOGY

(Cr ar) Staff

151 SURVEY OF NEUROPATHOLOGY

(Cr ar) Staff

181 EXTERNSHIP IN NEUROLOGY

(Cr ar) Staff

182 PROBLEMS IN BASIC AND CLINICAL NEUROLOGY

(Cr ar) Staff

191 EXTERNSHIP IN ADULT PSYCHIATRY

(Cr ar) Staff

192 EXTERNSHIP IN CHILD PSYCHIATRY

(Cr ar) Jensen

193 PROBLEMS IN PSYCHIATRY

(Cr ar) Staff

202 CASE CONFERENCE

(1 cr) Staff

203 PSYCHOMETRIC CLERKSHIP

(Cr ar) Staff

204 INTERNSHIP IN CLINICAL PSYCHOLOGY

(2 or 4 cr; prereq Ph.D. candidate in clinical psychology with \$) Staff

208 CLINICAL NEUROLOGY

(Cr ar) Baker and staff

- 209 **RESEARCH IN NEUROLOGY**
(Cr ar) Baker and staff
- 212 **SURVEY OF NEUROPATHOLOGY**
(1 cr) Sung
- 226 **NEUROLOGICAL-NEUROSURGICAL CONFERENCE**
(1 cr) Baker and staff
- 231 **APPLIED ELECTROENCEPHALOGRAPHY, MYOGRAPHY**
(Cr ar) Torres and Kennedy
- 233 **APPLIED NEUROPATHOLOGY**
(Cr ar) Sung
- 251 **CLINICAL INPATIENT PSYCHIATRY**
(Cr ar) Koutsky and staff
- 252 **CLINICAL OUTPATIENT PSYCHIATRY**
(Cr ar) Anderson and staff
- 253 **CLINICAL CHILD PSYCHIATRY**
(Cr ar) Jensen and staff
- 254 **ADVANCED CLINICAL INPATIENT PSYCHIATRY**
(Cr ar) Koutsky and staff
- 255 **ADVANCED CLINICAL OUTPATIENT PSYCHIATRY**
(Cr ar) Anderson and staff
- 256 **ADVANCED CLINICAL CHILD PSYCHIATRY**
(Cr ar) Jensen and staff
- 257 **SPECIAL ASSIGNMENTS**
(1 cr) Staff
- 258 **RESEARCH IN PSYCHIATRY**
(Cr ar) Staff
- 260 **ORIENTATION TO CLINICAL PSYCHIATRY**
(1 cr) Staff
- 264 **DESCRIPTIVE PSYCHOPATHOLOGY**
(1 cr) Staff
- 291 **SEMINAR: CURRENT LITERATURE**
(1 cr) Simon
- 292 **SPECIALIZED SUPERVISED PSYCHOTHERAPY**
(1 cr) Hastings and staff

Radiology (Rad)

FIRST TERM or SECOND TERM

ELECTIVE COURSES (UNDERGRADUATES)

- 180 **EXTERNSHIP IN RADIOLOGY**
(Cr and hrs ar)
- 181 **EXTERNSHIP IN DIAGNOSTIC RADIOLOGY**
(Cr and hrs ar)
- 182 **EXTERNSHIP IN RADIATION THERAPY**
(Cr and hrs ar)
- 188 **PROBLEMS IN RADIATION BIOLOGY AND RADIOACTIVE ISOTOPE METHODS**
(Cr and hrs ar)
- 184 **PROBLEMS IN DIAGNOSTIC RADIOLOGY**
(Cr and hrs ar)
- 186 **ROENTGEN TECHNIQUE**
(Cr and hrs ar)

REQUIRED COURSES FOR GRADUATE STUDENTS

- 111 **MEDICAL ROENTGENOLOGIC CONFERENCE**
Weekly meetings with the medical staff at which all the important medical cases which have x-ray diagnostic procedures are reviewed from both the clinical and roentgenological points of view. (1 cr; II M; Todd Amph) Peterson and staff

- 124 PEDIATRIC ROENTGENOLOGIC CONFERENCE**
Weekly meetings with the pediatric staff at which all the important pediatric cases which have x-ray diagnostic procedures are reviewed from both the clinical and roentgenological points of view. (1 cr; II T; Todd Amph) Feinberg, Langer
- 135C SURGICAL ROENTGENOLOGIC CONFERENCE**
Weekly meetings with the surgical staff at which all the important surgical cases which have x-ray diagnostic procedures are reviewed from both the clinical and roentgenological viewpoints. (1 cr; II S; Todd Amph) Amplatz, Gedgaudas
- 168A 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 Amph) Peterson
- 200 RESEARCH IN ROENTGENOLOGY**
Problems in roentgen diagnosis. (Cr and hrs ar) Peterson and staff
- 204 RESEARCH RELATED TO RADIATION THERAPY**
(Cr and hrs ar) D'Angio
- 206 ROENTGENOSCOPY**
Theory and practical application of roentgenoscopy, particularly to diseases of the gastrointestinal tract, lungs, and heart. (3 cr; hrs ar) Peterson 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) D'Angio
- 209 ROENTGEN DIAGNOSIS**
Theory and practical application of roentgen diagnostic methods to medical cases in general. (3 cr; hrs ar) Peterson 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) Peterson 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 points of view. (1 cr; IX Th; Todd Amph) Peterson, 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 M; Powell Hall Amph) D'Angio

Surgery (Surg)

Division of General Surgery

FIRST and SECOND TERMS

REQUIRED COURSES FOR UNDERGRADUATE STUDENTS

- 129 CLINICAL LECTURES IN GENERAL SURGERY**
(1 cr per yr; prereq regis med) Staff
- 135 CLINICAL CLERKSHIP**
(16 cr; prereq regis med) Staff

ELECTIVE COURSES FOR UNDERGRADUATE STUDENTS

- 181 CARDIOVASCULAR SURGERY**
Clinical problems and participation in surgery. For seniors only. (Cr and hrs ar) C W Lillehei, Varco
- 182 PROBLEMS IN CLINICAL INVESTIGATIONS AND PROBLEMS IN EXPERIMENTAL SURGERY**
(Cr and hrs ar; University and affiliated hospitals) Staff

- 183 **EXTERNSHIP IN AFFILIATED HOSPITALS**
(Cr and hrs ar) Staff

REQUIRED COURSES FOR GRADUATE STUDENTS

- 200 **OUTPATIENT CLINIC IN SURGERY**
Student is required to assist in the outpatient surgical clinic and to participate in diagnosis and treatment. (1 cr) Wangenstein and staff
- 202 **APPLIED SURGICAL ANATOMY ON THE CADAVER**
Surgical fellows prepare dissections with staff supervision. (1 cr; hrs ar) Wangenstein and staff
- 208 **PROCTOSCOPY AND SIGMOIDOSCOPY**
Diagnosis and treatment of lesions of the lower bowel. (1 cr; hrs ar) Wangenstein, W Bernstein, and staff
- 204 **TUMOR CLINIC**
Combined clinical-pathological consideration of tumors as seen by general surgeon. (1 cr; hrs ar) Wangenstein and staff
- 205 **SURGICAL DIAGNOSIS**
Surgical fellow assists in the instruction of the clinical clerks and interns, and studies problems in diagnosis in Outpatient Department. (1 cr; hrs ar) Wangenstein and staff
- 208 **STUDY OF SURGICAL PROBLEMS**
Surgical fellow acts as house surgeon at hospital. (1 cr; hrs ar) Wangenstein and staff
- 211 **OPERATIVE SURGERY**
Surgical fellow acts as the first assistant at operations in University Hospitals and later may be permitted to operate. (1 cr; hrs ar) Wangenstein and staff
- 214 **SURGICAL WARD CONFERENCE**
Presentation of interesting cases by the students. (1 cr; hrs ar) Surgical staff
- 215 **ROENTGENOLOGICAL-SURGICAL CONFERENCE**
Weekly reviews of films of all surgical patients. (1 cr; hrs ar) Staffs of Departments of Radiology, Pathology, and Surgery
- 216 **SURGICAL RESEARCH**
Problems in experimental surgery. (1 cr; hrs ar) Surgical staff
- 217 **SURGICAL SEMINAR**
Conferences for review of surgical literature, for presentation of cases and as research. (1 cr; hrs ar) Surgical staff
- 218 **SURGERY, MEDICINE, AND PEDIATRICS PATHOLOGICAL CONFERENCE**
Review of interesting cases by the medical, surgical, pediatrics, and pathology staffs. (1 cr; hrs ar) Surgical staff
- 219 **SURGERY-LITERATURE CONFERENCE**
Leading surgical journals are assigned to the fellows who read and report on important articles at weekly conference. (1 cr; hrs ar) Wangenstein and staff
- 220 **PERIPHERAL VASCULAR CONFERENCE**
Vascular clinic with conference following. (1 cr; hrs ar) Wangenstein and staff
- 221 **SURGERY-PHYSIOLOGY CONFERENCE**
Seminar discussing physiological aspects of surgery. (1 cr; VIII T) Wangenstein and staff

Division of Neurosurgery

REQUIRED COURSES FOR UNDERGRADUATE STUDENTS

- 127 **CLINICAL LECTURES IN NEUROSURGERY**
(1 cr per yr; prereq regis med) Staff

ELECTIVE COURSES FOR UNDERGRADUATE STUDENTS

- 188 **NEUROSURGERY EXTERNSHIP, UNIVERSITY HOSPITALS**
(Cr ar; prereq regis med) Staff
- 189 **NEUROSURGERY EXTERNSHIP, VETERANS ADMINISTRATION HOSPITAL**
(Cr ar; prereq regis med) Staff

- 190 **NEUROSURGERY INVESTIGATION**
(Cr ar; prereq regis med) Staff

REQUIRED COURSES FOR GRADUATE STUDENTS

- 305 **NEUROSURGICAL DIAGNOSIS**
The neurosurgical fellow assists in instruction of clinical clerks and interns, and studies problems in diagnosis in the Outpatient Department and in University Hospitals. (3 cr) French, Chou
- 308 **STUDY OF NEUROSURGERY PROBLEMS**
The neurosurgical fellow acts as house surgeon at University Hospitals. (4 cr) French, Chou
- 311 **OPERATIVE NEUROSURGERY**
The neurosurgical fellow acts as first assistant at operations in University Hospitals, and later may be permitted to operate. (4 cr) French, Chou
- 316 **NEUROSURGICAL RESEARCH**
Problems in experimental or clinical surgery. (3 cr) French, Chou
- 318 **NEUROSURGICAL CONFERENCE**
A review of X-rays and case histories on neurosurgical service. (1 cr) French, Chou

Division of Orthopedic Surgery

REQUIRED COURSES FOR UNDERGRADUATE STUDENTS

- 122 **PRINCIPLES OF DIAGNOSIS, TREATMENT, PROGNOSIS OF FRACTURES, DISLOCATIONS**
(1 cr; prereq regis med) Staff
- 140 **CLINICAL LECTURES IN ORTHOPEDIC SURGERY**
(1 cr; prereq regis med) Staff

ELECTIVE COURSES FOR UNDERGRADUATE STUDENTS

- 185 **EXTERNSHIP IN ORTHOPEDIC SURGERY AND FRACTURES**
(Cr ar; prereq regis med) Staff
- 186 **RESEARCH PROBLEMS**
(Cr ar; prereq regis med) Staff

REQUIRED COURSES FOR GRADUATE STUDENTS

- 401 **ORTHOPEDIC CONFERENCE**
Review of X-rays and case histories of patients on the orthopedic inpatient or outpatient service. (3 cr) Peterson, Moe, Arnesen, Kane, and staff
- 403 **FRACTURES**
The orthopedic fellow acts as house surgeon on the fracture service at Hennepin County General Hospital. (5 cr) Nydahl and staff
- 405 **ORTHOPEDIC DIAGNOSIS**
The orthopedic fellow assists in instruction of clinical clerks and interns and studies problems in diagnosis in the Outpatient Department and in the University Hospitals. (3 cr) Moe, Arnesen, Kane, and staff
- 407 **PEDIATRIC ORTHOPEDICS**
The orthopedic fellow acts as house surgeon at Gillette State Hospital for Crippled Children. (5 cr) Moe and staff
- 408 **STUDY OF ORTHOPEDIC SURGERY PROBLEMS**
The orthopedic fellow acts as house surgeon at the University Hospitals. (5 cr) Moe, Arnesen, Kane, and staff
- 410 **ORTHOPEDIC PATHOLOGY**
Seminar for systematic review of pathology of ossified tissues and soft tissues of the extremities. (2 cr) Moe and staff
- 411 **ORTHOPEDIC OPERATIVE SURGERY**
The orthopedic fellow acts as first assistant at operations at the University Hospitals and later may be permitted to operate. (5 cr) Moe, Arnesen, Kane, and staff

412 ORTHOPEDIC ANATOMY

The orthopedic fellow dissects upper and lower extremities and aids in instruction of medical students in anatomy of the extremities. (2 cr) Moe, Arnesen, Kane, and staff

416 ORTHOPEDIC RESEARCH

Problems in experimental or clinical surgery. University Hospitals. (5 cr) Moe, Arnesen, Kane, and staff

Division of Urology

FIRST and SECOND TERMS

REQUIRED COURSES FOR UNDERGRADUATE STUDENTS

173 UROLOGY LECTURES

(1 cr; prereq regis med) Staff

ELECTIVE COURSES FOR UNDERGRADUATE STUDENTS

180 EXTERNSHIP IN UROLOGY

(Cr and hrs ar) Creevy and staff

REQUIRED COURSES FOR GRADUATE STUDENTS

250 UROLOGICAL SURGERY

Urological fellow first assists at the operations at the University Hospitals and later is permitted to operate under supervision of the staff. (4 cr; hrs ar) Creevy and staff

251 CYSTOSCOPY AND UROLOGICAL DIAGNOSIS

Urological fellow performs cystoscopies and other diagnostic procedures. (4 cr; hrs ar) Creevy and staff

252 UROLOGICAL CONFERENCE

Problems in diagnosis and treatment are discussed. (4 cr; hrs ar) Creevy and staff

253 RESEARCH IN UROLOGY

Problems in experimental and clinical surgery. (4 cr; hrs ar) Creevy and staff

257 USE OF THE ARTIFICIAL KIDNEY

Principles, mechanics, and practical use of various medical devices. (3 cr; hrs ar) Reiser

MEDICAL TECHNOLOGY (MedT)

FIRST TERM

110 ADVANCED CLINICAL LABORATORY TECHNIQUES

Assignment on individual basis for observation, study, and practice in special problems; techniques and methodology in one or two of the units of the clinical laboratories (chemistry, hematology, histology, immunology or microbiology). (5 cr; prereq grad; hrs ar) Hovde and staff

SECOND TERM

111 ADVANCED CLINICAL LABORATORY TECHNIQUES

(See first term) (5 cr; prereq 110; hrs ar) Hovde and staff

SCHOOL OF NURSING

Courses and Fees

Several of the courses in the 1965 School of Nursing Summer Session are restricted to those students who are currently enrolled in the school's regular programs. However, a limited number of courses has been planned to meet the needs of registered nurses. Registered nurses planning to enroll in *Summer-Session-courses-only* register in the School of Nursing and pay Summer Session

fees. Students planning to matriculate in a regular program of the School of Nursing should consult an adviser in the School of Nursing before registration for Summer Session. For further information see the *Bulletin of the School of Nursing*.

Programs Leading to a Master's Degree

Elective courses and undergraduate courses required prior to enrollment in the programs leading to the degrees of master of science in psychiatric nursing or master of education in nursing education are available during the Summer Session. Students in education register in the College of Education. Students in psychiatric nursing register in the Graduate School. Students pay Summer Session fees.

Programs Leading to the Degree of Bachelor of Science

Graduates of associate degree or diploma programs in nursing who are enrolled in the Plan C nursing program may register in the School of Nursing for general education courses and pay Summer Session fees. For further information see the *Bulletin of the School of Nursing*.

High school graduates and transfer students from colleges or universities may register in the Summer Session to fulfill requirements for the freshman year. Students register in the College of Liberal Arts and pay Summer Session fees. For further information see the *Bulletin of the School of Nursing*.

Plan B students already enrolled in the School of Nursing who attend Summer Session pay Summer Session fees.

Program 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 and is open only to those students currently enrolled in the program. Students register in the School of Nursing and pay regular School of Nursing fees. For additional information see the *Bulletin of the School of Nursing*.

FIRST TERM

Nurs 82A NURSING INTERVENTION

Application, evaluation, and modification of nursing treatment. (4 cr; prereq nurs 72)

Sec 1, Lect III-IV TTh, Owre 112

Sec 4, Lect III-IV TTh, MH 118

Sec 2, Lect III-IV TTh, Owre 113

Sec 5, Lect III-IV TTh, PoH 2317

Sec 3, Lect III-IV TTh, Owre 117

Lab III-IV, VI-VII MWF

Nurs 192C PSYCHIATRIC NURSING SEMINAR AND FIELD PRACTICE IN THE COMMUNITY

Study of the psychiatric nurse's role in present and future community mental health. (2 cr; open only to students who will also be registered for 2 cr in this course second term; prereq Nurs 192B and 193; hrs ar) Lewis, Hubbard

NuAd 170 FOUNDATIONS OF NURSING SERVICE ADMINISTRATION

Principles of administration as applied to hospital nursing service. (3 cr; prereq nursing education major or §; III MTWThF; MH 214) Grainger

SECOND TERM

Nurs 82B NURSING INTERVENTION

Application, evaluation, and modification of nursing treatment. (4 cr; prereq Nurs 82A)

Sec 1, Lect II-III TTh, Owre 112

Sec 4, Lect II-III TTh, MH 118

Sec 2, Lect II-III TTh, Owre 113

Sec 5, Lect II-III TTh, PoH 2317

Sec 3, Lect II-III TTh, Owre 117

Lab II-IV, VI-VIII MW

Nurs 172 THE NURSE AND LAW

Relationship of nursing profession to law; legal responsibilities of the nursing supervisor and educator; effect of law on health agencies. (3 cr; prereq regis in Masters' programs or employed as nurse supervisor or instructor and Δ ; VI-VII MWF; MH 118) McCoid

Nurs 192C PSYCHIATRIC NURSING SEMINAR AND FIELD PRACTICE IN THE COMMUNITY

Study of the psychiatric nurse's role in present and future community mental health. (2 cr; prereq Nurs 192B and 193; open only to students who were regis for 2 cr in this course first term; hrs ar) Lewis, Hubbard

NuAd 193 PRINCIPLES OF ADMINISTRATION APPLIED TO NURSING SERVICE ADMINISTRATION

Community resources and agencies; legal aspects of nursing service. (6 cr; prereq NuAd 192; II-III MTWThF; MH 214) Harris

SCHOOL OF PUBLIC HEALTH (PubH)

Summer courses at the graduate level are designed both for completion of Master's degree programs and, in the fields of environmental health, veterinary public health, and public health nutrition, for students beginning such programs. It is expected that all students in these latter three categories will begin their programs of study not later than the Second Term of Summer Session, and continue in residence in the interval between the end of Second Term and the beginning of the fall quarter.

The special program on Ground Water Development, sponsored by the Agency for International Development of the Department of State, will be offered from June 14 to August 20. (See section on Special Programs)

A new course in water quality investigation techniques will be offered First Term. (See section on Special Programs)

FIRST TERM

50 PERSONAL AND COMMUNITY HEALTH

Fundamental principles of health conservation and disease prevention. (3 cr, \$2 or \$3 or \$3A or \$3B or \$4 or \$5 or \$51 or \$52 or \$100; III MTWThF; Bo B6) Thomson

65†† FIELD PRACTICE IN PUBLIC HEALTH NURSING

Practical experience in selected public health agencies; relationship of theory to practice. Continued second term. (Cr ar; prereq nurses) Gladitsch, Downey

123 TOPICS IN PUBLIC HEALTH

Selected readings in public health with discussion based on these readings. (Cr ar; prereq \$) Staff

139†† ADVANCED FIELD PRACTICE IN PUBLIC HEALTH NURSING: BLOCK PLACEMENT

Opportunity for concentration of public health nursing field practice under supervision of co-ordinator of mental health program. Continued second term. (Cr ar; prereq \$) von Bergen

169 ADMINISTRATIVE RESIDENCY**

Field work of 1 calendar year's duration in approved hospital; weighted rotation through departments, solution of special problems and preparation of an acceptable formal report. (Cr ar) Hamilton, Stephan

172†† STUDIES IN PUBLIC HEALTH NURSING

Orientation to research methodology; design and completion of a project. Continued second term. (3 cr for both terms; prereq 171) Murphy

173†† ADVANCED FIELD PRACTICE IN PUBLIC HEALTH NURSING: FUNCTIONAL AREA

Opportunity for field placement in suitable functional area including administration, supervision, consultation, under guidance of faculty members. Continued second term. (Cr ar; prereq public health nurses only, 174, 177, or \$) Murphy, E Anderson, Blanchard, Fredlund, Downey, McIntyre

†† The entire course includes both terms. No credit is given for First Term until satisfactory completion of Second Term.

- 177B†† CLINICAL SEMINAR: PUBLIC HEALTH NURSING**
Experience with selected patients and families; concurrent seminar. Continued second term. (3 cr for both terms; prereq 177A) von Bergen and associates
- 190** FIELD PRACTICE IN PUBLIC HEALTH EDUCATION**
Two terms of supervised field experience. (Cr ar; prereq 183, 227) Craig
- 200 RESEARCH**
Opportunities will be offered by the School of Public Health and by various co-operating organizations for qualified students to pursue research work. (Cr ar) Staff
- 221†† SEMINAR: NURSING IN LONG-TERM PATIENT CARE AND REHABILITATION**
Exploration of multidisciplinary aspects; role relationships affecting nursing; review of current research findings. Continued second term. (Cr ar; prereq 179) E Anderson and associates
- 222†† SEMINAR: SCHOOL NURSING AND RELATED FIELD PRACTICE**
Exploration of nursing in the school setting; role relationships; review of current research. Continued second term. (Cr ar; prereq 107 or ¶214) Murphy, Fredlund
- 224†† SEMINAR: PUBLIC HEALTH NURSING WITHIN THE CURRICULUM**
Course objectives: organization; opportunity to explore problems in the development of plans for teaching public health nursing. Continued second term. (Cr ar; prereq ¶) McIntyre
- 231** GROUND WATER DEVELOPMENT**
Development of ground water sources for public water supplies. Includes exploration through well design and construction. Special reference to public health problems involved. (Cr ar; prereq grad engineer and ¶) Bond, Singer, staff, visiting lecturers
- 233 WATER QUALITY INVESTIGATION AND RESEARCH TECHNIQUES**
Introduction to field techniques and special research methods applicable to public health problems of water quality control. Procedures for establishing pollution base-lines; appraisal and recognition of advancing eutrophication in surface and underground waters. (6 cr; prereq ¶) Olson, Odlaug

BIOSTATISTICS

- 110 BIOMETRIC PRINCIPLES**
Role of statistics in research; estimation; sampling distribution; tests of significance; power; regression; correlation; other measures of association; standard distributions including normal, t, χ^2 , F, binomial, Poisson; special distributions arising from non-parametric procedures. (3 cr; prereq ¶111; IV MTWThF; ForH 185) Brown
- 111 BIostatistics LABORATORY**
Presentation of data; descriptive statistics; practice in practical application of principles and methods covered in PubH 110. (2 cr; prereq ¶110; III TThF and 7 hrs per wk ar during morning, afternoon hrs by special ar only; ForH 80)
- 143 INTRODUCTORY TOPICS IN MATHEMATICAL BIOLOGY**
Introductory study of physico-, chemico-mathematical biology (analytical methods) of mechanical and electrochemical problems of colloids, cells, and tissues, and of the kinetics of simple reactions and transports. (3 cr; prereq 1-yr sequences in mathematics (including calculus), physics, chemistry, and a basic biological science, with lab work in at least one of them or ¶) Evans

SECOND TERM

- 53 INTRODUCTION TO PUBLIC HEALTH**
Basic concepts of disease prevention and control through community programs. (5 cr; prereq 3A or 50 or equiv and a course in bacteriology; I-II MTWThF; MMA 125) G Anderson
- 65†† FIELD PRACTICE IN PUBLIC HEALTH NURSING**
(See first term) Gladitsch, Downey
- 75 INTRODUCTION TO ENVIRONMENTAL SANITATION**
Principles of environmental health relating to water, food, wastes, housing, accidents, radiation, air, industrial hygiene. (3 cr; prereq 3 cr in public health; IV MTWThF; MMA 100) Michaelsen

†† The entire course includes both terms. No credit is given for First Term until satisfactory completion of Second Term.

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 ‡; I MTWThF; MMA 100) Stief

100A ELEMENTS OF PUBLIC HEALTH I

Occurrence and prevention of communicable, degenerative, and industrial diseases; protection of food, water, and milk; maternal and child health. (3 cr; prereq 3, 3A or 50 and a course in microbiology; I-II MTWThF; MMA 125) G Anderson

102 ENVIRONMENTAL SANITATION

Methods for promoting man's health and comfort by controlling environment. (3 cr; prereq ‡; I-II MTWThF; Mayo 1220) Bond, staff

123 TOPICS IN PUBLIC HEALTH

(See first term) Staff

138 HOSPITAL ENGINEERING PROBLEMS**

The application of environmental engineering, sanitation and maintenance principles and techniques, with particular reference to effective planning, administration and operation of hospitals. (Cr ar; prereq ‡) Staff and visiting lecturers

189† ADVANCED FIELD PRACTICE IN PUBLIC HEALTH NURSING: BLOCK PLACEMENT

(See first term) von Bergen

172† STUDIES IN PUBLIC HEALTH NURSING

(See first term) Murphy

178† ADVANCED FIELD PRACTICE IN PUBLIC HEALTH NURSING: FUNCTIONAL AREA

(See first term) Murphy, E Anderson, Blanchard, Fredlund, McIntyre, Downey

177B† CLINICAL SEMINAR: PUBLIC HEALTH NURSING

(See first term) von Bergen

190 FIELD PRACTICE IN PUBLIC HEALTH EDUCATION

(See first term) Craig

196 SEMINAR: PUBLIC HEALTH NUTRITION

(Cr ar; prereq ‡) Stief

300 RESEARCH

Opportunities will be offered by the School of Public Health and by various co-operating organizations for qualified students to pursue research work. (Cr ar) Staff

221† SEMINAR: NURSING IN LONG-TERM PATIENT CARE AND REHABILITATION

(See first term) E Anderson

222† SEMINAR: SCHOOL NURSING AND RELATED FIELD PRACTICE

(See first term) Murphy, Fredlund

224† SEMINAR: PUBLIC HEALTH NURSING WITHIN THE CURRICULUM

(See first term) McIntyre

230 FIELD PRACTICE IN ENVIRONMENTAL SANITATION**

(Cr ar; prereq ‡) Bond, Stauffer

232 FIELD WORK IN GROUND WATER DEVELOPMENT**

Development of ground water sources with special reference to construction of wells, field tests, and public health problems involved. (Cr ar; prereq grad engineer, 231) Bond, Singer, staff, visiting lecturers

BIOSTATISTICS**120 BIostatISTICS II**

Continuation of PubH 110. (3 cr; prereq 110 with grade not lower than C, †121; IV MTWThF; ForH 180) Brown

121 BIostatISTICS LABORATORY II

Practice in application of principles and methods covered in PubH 120. (2 cr; prereq †120; III TThF, and 7 hrs per wk ar during morning, afternoon hrs by special ar only; ForH 80) Loewenson

180 INTRODUCTION TO BIostatISTICS

Variation; frequency distribution; probability; estimation; significance tests; binomial, normal, Poisson distribution; serial dilutions; most probable number. (6 cr; prereq sanitation and sanitary engineering students only, others ‡; III MTWThF, Owre 111, plus 9 hrs per wk lab ar, Mayo 1220) McHugh

†† The entire course includes both terms. No credit is given for First Term until satisfactory completion of Second Term.

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 1965 for their final year in either the 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

8 ORIENTATION

An overview of funeral service; history, customs, development, personal qualifications, aptitudes. Field trips. (2 cr; III MTWTh; VH 6) Koschig

13 MORTUARY LAW

Probate proceedings, social security, life insurance benefits, public and personal liability, business law. Licensing; restrictions on mortuary sites; business organization; duties, rights, and liabilities for final disposition. (3 cr; I MTWThF; VH 210) Grayson

SECOND TERM

14 MORTUARY LAW

(See Mort 13, first term) (3 cr; I MTWThF; VH 307) Grayson

COLLEGE OF PHARMACY

The undergraduate courses that are offered by the divisions of the College of Pharmacy during the academic year are offered during the Summer Session only when justified by a sufficient demand.

Graduate student research work is offered during the Summer Session to students who are enrolled in the Graduate School and who are pursuing a curriculum in one of the College of Pharmacy divisions as a major or minor.

INSTITUTE OF TECHNOLOGY

The Institute of Technology includes the College of Engineering, the School of Architecture, the School of Chemistry (chemical engineering and chemistry), the School of Earth Sciences (geology and geophysics), the School of Mathematics, the School of Mineral and Metallurgical Engineering, and the School of Physics and Astronomy.

A few courses are offered in astronomy; aeronautical engineering and engineering mechanics; chemical, civil, electrical, and mechanical engineering, engineering graphics; geology; mathematics; and physics. The School of Mineral and Metallurgical Engineering offers summer field trips in alternate years, as well as two courses in physical metallurgy and a few problems and research courses.

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

COLLEGE OF ENGINEERING

Aeronautics and Engineering Mechanics

Mechanics and Materials (MM)

FIRST TERM

35 STATICS

Vector algebra. Application of the equations of equilibrium to the analysis of simple engineering structures and machines. Nature and influence of friction. Elementary theory of statically determinate framed structures. Deformation of structures with axially loaded elements. (4 cr; prereq Math 23 and Phys 1 or 13; III-IV MWF, III TTh; Arch 15) Wilson

36 DYNAMICS

Introduction to vector calculus. Kinematics. Application of principles of particle motion. Conservation principles. Dynamics of particle systems and plane rigid bodies. Technical applications. (4 cr, §Phys 100 or §Phys 100A; prereq Math 32 or ¶Math 32 and Phys 21; III-IV MWF, III TTh; AE 21) Wilcox

37 DEFORMABLE BODY MECHANICS

Introductory treatment of stress and strain at a point. Stress-strain relation in two dimensions. Linear theory of torsion. Bending stresses. Deflection of determinate and indeterminate beams. Instability. (4 cr; prereq 35, Math 32 or ¶Math 32; I-II MWF, II TTh; AE 21) Blatherwick

SECOND TERM

36 DYNAMICS

Introduction to vector calculus. Kinematics. Application of principles of particle motion. Conservation principles. Dynamics of particle systems and plane rigid bodies. Technical applications. (4 cr, §Phys 100 or §Phys 100A; prereq Math 32 or ¶Math 32 and Phys 21; I-II MWF, II TTh; AE 21) Wilcox

37 DEFORMABLE BODY MECHANICS

Introductory treatment of stress and strain at a point. Stress-strain relation in two dimensions. Linear theory of torsion. Bending stresses. Deflection of determinate and indeterminate beams. Instability. (4 cr; prereq 35, Math 32 or ¶Math 32; III-IV MWF, III TTh; AE 21) Blatherwick

Civil Engineering (CE)

FIRST TERM

- 61, 64 SURVEYING INSTRUMENTATION; AND ENGINEERING SURVEYS**
61: Measurements of length by tape, electronic methods, and stadia; of angle by transit and theodolite; of elevation by level; of direction by astronomic observations. Adjustments of instruments. Adjustments of traverses, triangulation, and level nets. 64: Elements of route surveying; simple, compound, and spiral curves; vertical curves; grades, earthwork, areas, volumes, and mass diagram. Design of alinement, geometrics, and grades for highways. Analysis of design problems with computer programming. (8 cr total; prereq Math 21 or equiv for 61, 61 for 64; lect I-II MTWThF; lab III-IV MWThF and VI-IX MWTh; Ex 22) Pederson
- 112 AERIAL SURVEYING AND PHOTOGRAMMETRY**
Theory and methods of making planimetric and topographic maps from aerial and terrestrial photographs. Principles of horizontal and vertical control nets, state coordinates, and astronomy as used in large scale mapping projects. (3 cr; prereq 20 or #; lect VI MTWTh; lab VII-IX MTWTh with some night hrs ar; E 316) Fant
- 130, 131, 132 STATICALLY INDETERMINATE STRUCTURES; STRUCTURAL ANALYSIS; AND STRUCTURAL DESIGN**
Summary course of 130 (3 cr), 131 (2 cr), 132 (2 cr). Students may register for any part of course. (7 cr total; prereq 33 for 130, 130 for 131, 131 for 132; lect I, VI MTWThF; lab II-IV MTWThF; Ex 193) Andersen

SECOND TERM

- 141, 142 REINFORCED AND PRESTRESSED CONCRETE; DESIGN OF REINFORCED AND PRESTRESSED CONCRETE I**
Combination of 141 (3 cr) and 142 (3 cr). Students may register for any part of course. (6 cr total; prereq 33 for 141, 130 and 141 for 142; lect II, VI MTWThF; lab III-IV MTWThF; Ex 193) Andersen
- 147 FOUNDATIONS**
Design and construction of footings, cofferdams, and caissons for bridges and buildings. Piers, abutments, and sheet piling. Exploration and testing of foundation sites. Excavation and removal of materials from foundation site. (3 cr; prereq 141; I MTWThF; Ex 193) Andersen

Engineering English (Engl)

English 1B, 2B, and 3B are offered in the College of Liberal Arts.

FIRST TERM

- 85 ADVANCED TECHNICAL COMMUNICATION**
(3 cr; limited to 22 students; prereq completion of Freshman English requirement; II MTWThF; E 4) Haga

SECOND TERM

- 85 ADVANCED TECHNICAL COMMUNICATION**
(See first term) (II MTWThF; E 4) Guthrie

Mechanical Engineering

Engineering Graphics (EG)

FIRST TERM

- 1 THE SLIDE RULE**
Computation practice and theory. Design of special scales. (1 cr [0 cr for IT students]; prereq higher algebra and trigonometry or #; VI TTh; Arch 10) Springer
- 25 ENGINEERING GRAPHICS**
Engineering representation and analysis of systems of projection; the co-ordinate system, graphical solution of space problems, intersections, and developments. Precision in graphics and techniques of sketching; pictorial projection systems, size descrip-

tion, standard and simplified practices applied to graphic communication. (4 cr; prereq Math 21 or #; lect V MTWThF, VI W, Arch 10; rec VI MF, Arch 10; lab open hrs, E 306) Springer

Mechanical Engineering (ME)

FIRST TERM

23 SYNTHESIS OF MECHANISM SYSTEMS

Creation of mechanism arrays based upon desired motion or power transfer requirements. Shape and size optimization of mechanism designs based upon strength and transfer criteria. (3 cr; prereq 22; lect V MTWThF, ME 321; lab VII-IX M, III-V Th, ME 325) Frohrib

90 INDUSTRIAL ASSIGNMENT, PART I

Co-operative work-study curriculum, industry laboratory quarters (work periods). Grades are based on a formal written report by the student, covering his work during the industrial assignment. (2 cr; prereq ¶work-study program; hrs ar) Lund

91 INDUSTRIAL ASSIGNMENT, PART I

(See ME 90) (2 cr; prereq ¶work-study program; hrs ar) Lund

92 INDUSTRIAL ASSIGNMENT, PART I

(See ME 90) (2 cr; prereq ¶work-study program; hrs ar) Lund

93 INDUSTRIAL ASSIGNMENT, PART I

(See ME 90) (2 cr; prereq ¶work-study program; hrs ar) Lund

134 THERMODYNAMICS OF FLUID FLOW

Thermodynamic analysis of internal flow of viscous and compressible fluids. Applications to various flow processes and components in engineering systems. (3 cr; prereq 32, Hydr 103; II MTWThF, IV T; ME 208) Ibele

143 TURBOMACHINERY

Theoretical analysis of energy transfer between fluid and rotor, principles of axial, mixed, and radial flow compressors and turbines. Applications to gas turbines, fluid transmissions and power plants. (3 cr; prereq 134 or ¶134; VI MTWThF, VII TTh; ME 321) Murphy

171 PROCESS ENGINEERING I

Analytical and physical fundamentals of fabrication processes including casting, forging, and welding. Emphasis is placed on the operating characteristics of the process and methods of optimizing process and product output. (3 cr; prereq Met 56; lect III MTWThF, ME 106; lab VII-IX WF, ME 50) Holtby

SECOND TERM

21A ANALYSIS OF MECHANICAL ENGINEERING SYSTEMS

Determination of response of engineering systems utilizing transfer functions representation. Analogies between engineering systems based upon transfer function equivalence. (4 cr; prereq MM 28 or 36; lect III MTWThF, VI T, ME 321; lab VII-VIII TTh, ME 325) Frohrib

24 OPTIMUM DESIGN OF MECHANICAL ELEMENTS

Application of fundamental principles to the design of typical mechanical components. Engineering approach to the analysis and synthesis of machines. Optimum design criteria. (3 cr; prereq MM 40; lect V MTWThF, ME 106; lab V-VI Th, VI-IX F, ME 314) Kleinhenz

30A THERMODYNAMICS

Properties, equations of state, and processes of thermodynamic systems and devices. Application of first and second laws correlating energy with heat, work, and mass transfer. Equilibrium and irreversibility. (4 cr; prereq Phys 14, Math 32; lect II MWF, IV MTWThF; Arch 40) Ibele

33 MEASUREMENTS LABORATORY I

Fundamental principles of measurement. Standards, accuracy, and calibration. Treatment of experimental data. Static and dynamic characteristics of generalized measurement systems. Electromechanical transducers. Measurement of temperature, pressure, vacuum, humidity, density, viscosity, heating values, speed, power, force, stress, strain, and radioactivity. (2 cr; prereq 31 and EE 43; lect VI MW, ME 321; lab VII-IX MW, ME 370) Liu

90 INDUSTRIAL ASSIGNMENT, PART II

(See first term) Lund

- 91 **INDUSTRIAL ASSIGNMENT, PART II**
(See first term) Lund
- 92 **INDUSTRIAL ASSIGNMENT, PART II**
(See first term) Lund
- 93 **INDUSTRIAL ASSIGNMENT, PART II**
(See first term) Lund
- 99 **INTRODUCTION TO ENGINEERING ANALYSIS**
Principles of measurement, concept of uncertainty and variability, models in engineering analysis, decision methods, estimation methods, introduction to design of experiments. (3 cr; prereq Math 24A or #; lect I MTWThF, II T; ME 106) McElrath
- 172 **PROCESS ENGINEERING II**
Analytical and physical fundamentals of postfabrication processes including machining, shearing, forming, and assembly. Emphasis is placed on the materials, mechanics, economics, heat transfer, and functional characteristics of the metal cutting processes. (3 cr; prereq 171; lect IV TWThF, ME 106; lab VII-IX TTh, ME 171) McElrath

SCHOOL OF ARCHITECTURE (Arch)

FIRST TERM

- 83†† **ARCHITECTURAL DESIGN, PART I**
Basic exercises in composition of line, form, proportion, color, and texture. Elements of architectural design. Architectural drawing. Model making. (3 cr; prereq 82 and 2nd yr for IT students, jr for College of Liberal Arts students and Δ; 1:00-5:00 pm MTWThF; Arch 210) Myers
- 91-92-93††† **ARCHITECTURAL DESIGN, PART I**
Continuation of design principles with emphasis on development of structures as an integral part of design. Research techniques. (3 cr each; prereq 83 and Δ; 1:00-5:00 pm MTWThF; Arch 210) Myers
- 111-112-113††† **ARCHITECTURAL DESIGN, PART I**
Advanced architectural and planning problems of complex requirements involving thorough study and detailed solution. Individual effort and group collaboration. (3½ cr each; prereq 93 and MM 93 and Δ; 1:00-5:00 pm MTWThF; Arch 210) Myers

SECOND TERM

- 83†† **ARCHITECTURAL DESIGN, PART II**
(See first term) (1:00-5:00 pm MTWThF; Arch 210) Myers
- 91-92-93††† **ARCHITECTURAL DESIGN, PART II**
(See first term) (1:00-5:00 pm MTWThF; Arch 210) Myers
- 111-112-113††† **ARCHITECTURAL DESIGN, PART II**
(See first term) (1:00-5:00 pm MTWThF; Arch 210) Myers

SCHOOL OF CHEMISTRY

Analytical Chemistry (AnCh)

FIRST TERM

- 57 **QUANTITATIVE ANALYSIS**
A survey of modern quantitative methods of analysis including elementary physico-chemical procedures. (5 cr; for nonchemistry majors; prereq GeCh 6 or 26; lect, rec, quiz V MWF, VI F, C 325; lab VI-VIII MW, V-VIII TTh, VII-VIII F, C 310) Herr
- 101 **INTRODUCTION TO ANALYTICAL CHEMISTRY II**
Theoretical fundamentals of volumetric processes in general, including physical methods of end point detection. (3 cr; prereq 100; lect, rec, quiz V-VI TThF; C 325) Herr

†† To receive credit for any part of this course, a student must complete both Part I and Part II.

- 102 INTRODUCTORY LABORATORY IN QUANTITATIVE ANALYTICAL CHEMISTRY**
 Typical methods, including gravimetric and volumetric determinations, ion exchange, spectrophotometric analysis and potentiometric and conductometric titrations. (4 cr; prereq 101; lab VI-IX MWF, V-IX TTh; C 310) Herr
- 102A INTRODUCTORY LABORATORY IN QUANTITATIVE ANALYTICAL CHEMISTRY**
 (3 cr; for chemical engineers; prereq 101 or 1101; lab VI-VIII MW, V-VIII TTh, VII-VIII F; C 310) Herr
- 301 RESEARCH IN QUANTITATIVE ANALYSIS**
 (Cr ar hrs ar) Staff

General Chemistry (GeCh)

FIRST TERM

- 4 GENERAL PRINCIPLES OF CHEMISTRY**
 General laws of chemistry, principles of structure, and chemical behavior of matter. (5 cr; for premedics, predentals, etc.; lect I MTWThF, C 100; rec ar; lab V-VIII MW, C ar) Staff
- 6 PRINCIPLES OF SOLUTION CHEMISTRY**
 The chemistry of the metals including the behavior of their ions in solution, equilibrium principles, oxidation and reduction, electrochemistry, nature of solutions, complex ion systems; laboratory considers the detection of metal ions, a selected few anions, and analyses of simple solids and alloys. (4 cr; prereq 5, 15, or 25; lect II MTWThF, C 100; rec ar; lab V-VIII MW, C ar) Staff
- 14 GENERAL PRINCIPLES OF CHEMISTRY**
 Basic principles and concepts of chemistry with a similar but more rigorous treatment than that of GeCh 4. (4 cr; prereq Phys 11, 12, or 2; lect I MTWThF, C 100; rec ar; lab V-VIII MWF, C ar) Staff
- 24 GENERAL PRINCIPLES OF CHEMISTRY**
 Basic principles and concepts of chemistry with a similar but more rigorous treatment than that of GeCh 4. (5 cr; for chemistry and chemical engineering majors; lect I MTWThF, C 100; rec ar; lab V-VIII MWF, C ar) Staff

SECOND TERM

- 5 GENERAL PRINCIPLES OF CHEMISTRY**
 (See GeCh 4, first term) (Prereq 4) Staff
- 15 GENERAL PRINCIPLES OF CHEMISTRY**
 (See GeCh 14, first term) (Prereq 4) Staff
- 25 GENERAL PRINCIPLES OF CHEMISTRY**
 (See GeCh 24, first term) (Prereq 24) Staff

Inorganic Chemistry (InCh)

FIRST TERM

- 103* INORGANIC CHEMISTRY I**
 Atomic structure, structure and bonding in covalent molecules and ionic crystals, thermochemistry of chemical bonding. Applications to the chemistry of the nontransition elements. (3 cr; prereq PCh 102; lect III MTWThF, C 315; rec ar) Conroy
- 220 ADVANCED INORGANIC CHEMISTRY LABORATORY METHODS**
 (Cr and hrs ar) Conroy
- 301* RESEARCH IN INORGANIC CHEMISTRY**
 (Cr and hrs ar) Johnson, Conroy

SECOND TERM

- 104* INORGANIC CHEMISTRY II**
 Chemistry of the transition metal and rare earth compounds: nomenclature and stereochemistry; thermodynamics and kinetics of complex ion reactions; crystal field, ligand field, molecular orbital, and valence bond descriptions of bonding; solution chemistry of the transition elements. (3 cr; prereq 103 or 2; lect III MTWThF, C 315; rec ar) Britton
- 302* RESEARCH IN INORGANIC CHEMISTRY**
 (Cr and hrs ar) Britton

Organic Chemistry (OrCh)

FIRST TERM

61†† ELEMENTARY ORGANIC CHEMISTRY

Discussion of important classes of organic compounds, both aliphatic and aromatic. Laboratory includes the preparation of typical substances. (4 cr; open to all colleges; prereq 12-15 cr in chemistry; lect I MTWThF, C 325; rec II TTh, C 325; lab II-IV MWF, C 390; lab conf III TTh, C 325) Agre

102 ORGANIC QUALITATIVE ANALYSIS

Reactions of typical functional groups and an introduction to the methods of organic qualitative analysis. Includes instruction in problem solving. (4 cr; prereq 63 and 64 or equiv; lect III MW, C 215; 18 hrs lab work ar) Koelsch

139 ADVANCED ORGANIC CHEMISTRY LABORATORY WORK

Selected laboratory synthetic problems, which may include original work. Includes considerable individual instruction. (2-5 cr; prereq 64 or equiv; 12-30 hrs lab work ar) Koelsch

196 MASS SPECTROSCOPY

(3 cr; prereq ‡; IX MWF; C 100) Beynon

301 RESEARCH IN ORGANIC CHEMISTRY

(Cr ar; prereq 102 or equiv, Δ) Koelsch

GRADUATE THESIS IN ORGANIC CHEMISTRY

(0 cr; prereq Δ) Koelsch

SECOND TERM

62†† ELEMENTARY ORGANIC CHEMISTRY

(See OrCh 61, first term) (4 cr; prereq 61 or 41, ‡; lect I MTWThF, C 325; rec II TTh, C 325; lab II-IV MWF, C 390; lab conf III TTh, C 325) Agre

302 RESEARCH IN ORGANIC CHEMISTRY

(Cr ar; prereq 102 or equiv, Δ) Staff

GRADUATE THESIS IN ORGANIC CHEMISTRY

(0 cr; prereq Δ) Staff

Physical Chemistry (PCh)

FIRST TERM

104, 105 PHYSICAL CHEMISTRY LABORATORY

(1 or 2 cr; prereq 102 or 108; VI-VIII MW; C 190) Bolton

SECOND TERM

105, 106 PHYSICAL CHEMISTRY LABORATORY

(1 or 2 cr; prereq 102 or 108 for 105, 105 for 106; VI-VIII MW; C 190) Bolton

SCHOOL OF EARTH SCIENCES

Geology and Geophysics (Geo)

FIRST TERM

1 PHYSICAL GEOLOGY

A first course in geology for science majors and an introduction to scientific methods and the nature of the earth for others. Survey of the main features of the physical world and of the processes that have evoked them. (4 cr; limited to 60 students; no prereq, but high school physics and chemistry recommended; lect II MTWThF, P 110; lab VI-VII MWF, TSF 157)

†† To receive credit for any part of this course, a student must complete both OrCh 61 and 62.

109C PHYSICAL GEOLOGY FOR TEACHERS

An introduction to the scientific methods and the nature of the earth. Survey of the main features of the physical world and of the processes that have evoked them. (4 cr, §old Geol 1, A, Geo 1, 11; limited to 40 students; only for students holding degrees in education; prereq 1 term college chemistry or physics; lect II MTWThF, seminar VI-VII TTh, P 110; lab VI-VII MW, TSF 157)

FIRST TERM or SECOND TERM**103 GEOLOGIC PROBLEMS**

(Cr and hrs ar; prereq #)

SECOND TERM**2 HISTORICAL GEOLOGY**

Evolution of the earth from its origin to the present with special attention to the succession of physical and biological events of the past 600 million years. (4 cr; prereq 1 or 11; lect I MTWThF, Arch 5; lab and field work ar)

122C HISTORICAL GEOLOGY FOR TEACHERS

An introduction to the origin of the earth, the physical evolution of its crust through geological time and the biological changes that occurred during its history. (4 cr, §old Geol 2, B, Geo 2, 22; only for students holding degrees in education; prereq 1 or 11 or 109C or #; lect I MTWThF, Arch 5; lab, field work, and seminar ar)

SCHOOL OF MATHEMATICS (Math)**FIRST TERM****T (Arts) TRIGONOMETRY**

Analytic trigonometry emphasizing identities, equations, and properties of the functions; right and oblique triangles without logarithmic computation. (3 cr; open for credit if taken before 43, even to students with high school trigonometry; prereq plane geometry and high school higher algebra, §10 allowed; II MTWThF; E 227) Ar

5A (Arts) FOUNDATIONS OF ARITHMETIC

Includes a logical and axiomatic basis of the rules for arithmetical operations with integers, rational numbers, and real irrational numbers as necessary background for teaching arithmetic in elementary school, with some attention to the history of the subject and its role in our culture and civilization. (3 cr; not available for Arts College cr; prereq 1 yr elementary algebra and 1 yr high school geometry or equiv, and enrollment as elementary education student, or Δ ; III MTWThF; E 227) Ar

10 (Arts) COLLEGE ALGEBRA AND ANALYTIC GEOMETRY

A course requiring only some analytic geometry and college algebra without trigonometry, or for those whose background does not include logarithms. Students who plan to take several quarters of mathematics should take Math 15 if they qualify. Functions and graphs, quadratic equations, progressions, inequalities, complex numbers, theory of equations, permutations and combinations, probability, systems of equations, determinants, graphing of linear and quadratic equations, conics and standard position, logarithms. (5 cr, §15; prereq Z or high school higher algebra; III-IV MTWThF; E 229) Ar

15 (Arts) COLLEGE ALGEBRA

A standard college algebra course for students planning to take the sequence in analytic geometry and calculus. Functions and graphs, quadratic equations in one and two variables, progressions, complex numbers, inequalities, theory of equations, permutations and combinations, binomial theorem, probability, mathematical induction, determinants. (5 cr, §10; prereq high school higher algebra and T or high school trigonometry; III-IV MTWThF; E 217) Ar

21 (IT) CALCULUS I: CALCULUS AND ANALYTIC GEOMETRY

Review of algebra, inequalities. Elementary analytic geometry, functions, graphs, lines. Introduction to differential and integral calculus, slopes, tangents, rates, areas. Formal development of differentiation, limits, continuity. Differentiation of algebraic functions, applications. Differentials. (5 cr; prereq 4 yrs high school mathematics including trigonometry, or 12; I-II MTWThF; E 203) Ar

22 (IT) CALCULUS II: CALCULUS AND ANALYTIC GEOMETRY

Review of analytic trigonometry. The definite integral, fundamental theorems, indefinite integral, area, work. The conic sections, translation and rotation of axes. Calculus of trigonometric, inverse trigonometric, exponential, logarithmic, and hyperbolic functions. (5 cr; prereq 21 or 13A; III-IV MTWThF; E 106) Ar

- 23 (IT) CALCULUS III: CALCULUS AND ANALYTIC GEOMETRY**
 Review of theory of equations and complex numbers. Parametric equations, arc length, curvature. Polar co-ordinates. Vectors in two dimensions, dot product, plane motion. Formulas and methods of integration, substitutions, integration by parts, rational functions. Applications of integration, volumes, areas, first moments, and mass centers. (5 cr; prereq 22 or 24A; I-II MTWThF; E 106) Ar
- 26B (IT) CALCULUS IV: SERIES AND CALCULUS OF FUNCTIONS OF SEVERAL VARIABLES**
 Infinite series; convergence, alternating series, absolute convergence. Power series, differentiation and integration of power series. Binomial series, Taylor's series. Functions of several variables, partial differentiation. Limits, chain rule, implicit differentiation. Directional derivatives, tangent planes, extrema. Complex polynomials, fundamental theorem of algebra, uniform continuity, line integral. Double integrals; repeated integrals. Volumes, polar co-ordinates, center of gravity, moments of inertia. Triple integrals, applications. Cylindrical and spherical co-ordinates. (5 cr, §25A, §26A; prereq 25B; III-IV MTWThF; E 203) Loye
- 31 (IT) CALCULUS IV: CALCULUS AND ANALYTIC GEOMETRY**
 Study of solid analytic geometry and vectors in space involving dot and cross products, planes, quadric surfaces, derivatives of vector functions. Standard topics of infinite series including tests for convergence and divergence, power series, and Taylor expansions. Partial differentiation including the chain rule, implicit functions, directional derivative, maxima and minima. (5 cr; prereq 23; I-II MTWThF; E 303) Thompson
- 42 (Arts) ANALYTIC GEOMETRY AND CALCULUS I**
 (Course description covers sequence 42-43-44) A full-year course in the elements of analytic geometry and calculus. Plane analytic geometry including straight line, conic sections, parametric representations, polar co-ordinates, translation and rotation of axes. Introduction to solid analytic geometry, functions and limits, differentiation of algebraic, trigonometric, exponential and logarithmic functions with applications to velocity and acceleration, rates, maxima and minima, curve tracing, indeterminate forms, approximations by differentials. Introduction to partial differentiation. Integration by standard forms with applications to area, volume, work, moments. Improper integrals. Infinite series. Taylor's theorem. Multiple integrals in two and three dimensions. Math 43 available for Upper Division credit to all except mathematics majors. Math 44 available for Upper Division credit to all except mathematics and physics majors. (5 cr, §40 for 42; prereq 15 or 10 and either T or high school trigonometry; may enter 43 from 40 if grade in 40 is A or B; I-II MTWThF; E 217) Ar
- 43 (Arts) ANALYTIC GEOMETRY AND CALCULUS II**
 (See Math 42 for course description) (5 cr; prereq 42, or 40 with grade of B; III-IV MTWThF; E 303) Ar
- 44 (Arts) ANALYTIC GEOMETRY AND CALCULUS III**
 (See Math 42 for course description) (5 cr; prereq 43; I-II MTWThF; E 229) Ar
- 55 (Arts) INTERMEDIATE CALCULUS**
 Advanced topics in partial differentiation, total differentials, directional derivatives, maxima and minima of functions of several variables, applications of multiple integrals, Taylor's theorem for functions of several variables, elements of differential equations. (3 cr; prereq 44; II MTWThF; ForH 130) Ar
- 65 (IT) INTRODUCTION TO PROGRAMMING MODERN DIGITAL COMPUTERS**
 Number systems. Computer organization. Elementary coding techniques. Scaling. Introduction to problem oriented language. Program organization. Informal laboratory. (4 cr, §165A or §164-165-166; prereq 26A or 27 or §26A or §27 or §32 or §; IV MTWThF; E 227) Hotchkiss
- 106 (Arts) DIFFERENTIAL EQUATIONS**
 Problem course; methods for solving ordinary differential equations of various types with necessary theory for developing these methods. (3 cr; prereq 55; I MTWThF; E 104) Indritz
- 112 (Arts) ELEMENTARY SET THEORY**
 Basic properties of operations on sets, cardinal numbers, simply ordered sets, well-ordered sets, ordinal numbers, axiom of choice, axiomatics. (3 cr; prereq 25A or 26B or 44; III MTWThF; E 215) Miracle
- 125A (Arts) CRITICAL REASONING IN MATHEMATICAL ANALYSIS**
 Notions of limit, sequence, series, function, derivatives, and integral. Gives more mature understanding of these concepts. Techniques of developing accurate proofs; intuition and logic in connection with these techniques. (3 cr; prereq 25A or 26B or 44; II MTWThF; E 104) Miracle
- 131A (Arts) LINEAR ALGEBRA AND GROUP THEORY**
 Course description covers 131A and 131B. Finite dimensional vector spaces; linear transformations and matrices over the real or complex fields; linear equations; deter-

minants; characteristic values; canonical forms; bilinear and quadratic forms; applications; introduction to abstract concepts of modern algebra; more detailed study of finite groups, including Jordan-Hölder theorem and basis theorem for Abelian groups. (3 cr, §149; prereq 25A or 26B or 44; IV MTWThF; E 104) Harper

140 (Arts) PROJECTIVE GEOMETRY

Geometric properties invariant under projective transformations; theorems of Desargues, Pascal, and Brianchon, and applications. Methods used in some quarters are mainly synthetic; in other quarters they are mainly analytic. (3 cr; prereq 25A or 26B or 44; V MTWThF; E 104) Harper

147†† (IT) VECTOR ANALYSIS

Scalar and vector products, derivatives, geometry of space curves, del operator, line and surface integrals, divergence and Stokes' theorem, transformation of co-ordinates, dyadics, applications. (3 cr; prereq 25A or 26B or 55; I MTWThF; E 227) Polansky

148†† (IT) DIFFERENTIAL EQUATIONS

Linear differential and difference equations with constant coefficients, isoclines, phase plane, reduction in order, Picard's method, uniform convergence, series solutions, Bessel functions, Legendre polynomials, introduction to boundary value problems. (3 cr, §150; prereq 26A or 27 or 106; II MTWThF; E 205) Polansky

151†† (IT) ADVANCED CALCULUS I

Limits, properties of continuous functions of one and several variables, partial differentiation, implicit functions, maxima and minima, Taylor's theorem, transformations and mappings, integrals containing a parameter or variable limits, Stieltjes integral. (3 cr; prereq 25A or 26B or 55; II MTWThF; E 215) Ar

184 (IT) ELEMENTARY NUMERICAL ANALYSIS IN ENGINEERING

Finite differences, interpolation, summation of series, numerical integration, Euler-MacLaurin formula and asymptotic expansions. Numerical solutions of systems of algebraic and transcendental equations. Newton's and Graeffe's method. (3 cr; prereq 26A or 27, or 106; III MTWThF; E 104) Leavitt

10-WEEK TERM—JUNE 14-AUGUST 21††

126C FUNDAMENTALS OF ANALYTIC GEOMETRY AND CALCULUS

Topics will include definition of function, limit of a function, continuous functions, differentiability of algebraic and transcendental functions, differentials, anti-differentiation, integration, and infinite series. Relevant applications and topics from analytic geometry will be interpolated throughout the course. (5 cr; prereq admission to Summer Institute or permission of institute director; II MTWThF; Ph 170) Braden

SECOND TERM

T (Arts) TRIGONOMETRY

(See first term) (I MTWThF; E 215) Ar

10 (Arts) COLLEGE ALGEBRA AND ANALYTIC GEOMETRY

(See first term) (I-II MTWThF; ForH 130) Ar

12 (IT) COLLEGE ALGEBRA AND TRIGONOMETRY

Trigonometric functions, right triangles, oblique triangles, radian measure. Trigonometric formulas and identities, trigonometric curves, inverse trigonometric functions, trigonometric equations. Inequalities, theory of equations, determinants, mathematical induction, exponential and logarithmic functions, complex numbers. (0 cr, §T and §15; prereq HS higher algebra or 11 or Z or equiv; I-II MTWThF; E 203) Ar

15 (Arts) COLLEGE ALGEBRA

(See first term) (I-II MTWThF; ForH 180) Ar

22 (IT) CALCULUS II: CALCULUS AND ANALYTIC GEOMETRY

(See first term) (I-II MTWThF; E 217) Ar

23 (IT) CALCULUS III: CALCULUS AND ANALYTIC GEOMETRY

(See first term) (III-IV MTWThF; E 203) Ar

†† Note that Math 147 and 148 or 147 and 151 may be taken simultaneously in the first term; Math 147, 148, 149 and 147, 151, 153 are 9-credit sequences regularly taught during the academic year.

†† NSF Institute for High School Teachers of Physics and Chemistry. (See also section on Special Programs.)

- 27 (IT) DIFFERENTIAL EQUATIONS AND ELEMENTS OF MATRIX THEORY**
 Determinants, matrix algebra, vector-matrix notation for systems of linear algebraic and differential equations, adjoint and inverse, Cramer's rule, rank of a matrix. Differential equations, equations of first order, standard methods of solution, linear equations with constant coefficients, applications. Systems of differential equations, integration by series, numerical methods. (5 cr; §26A; prereq 26B; I-II MTWThF; E 303) Ar
- 31 (IT) CALCULUS IV: CALCULUS AND ANALYTIC GEOMETRY**
 (See first term) (III-IV MTWThF; E 215) Loye
- 32 (IT) CALCULUS V: CALCULUS AND ANALYTIC GEOMETRY**
 Definitions of double and triple integrals. Iterated integrals in rectangular, polar, cylindrical, and spherical co-ordinates. Applications to moments and centroids. Introduction to linear algebra. Matrices, determinants, and theorems on systems of algebraic equations. Differential equations involving the standard first order types plus higher order linear equations with constant coefficients. (5 cr; prereq 31; I-II MTWThF; E 205) Ar
- 40 (Arts) INTRODUCTION TO CALCULUS**
 A 1-quarter course designed for those who wish a brief introduction to calculus which includes some integration. Students planning to take further work should take Math 42. Functions and limits, differentiation of algebraic, trigonometric, exponential, and logarithmic functions with applications to velocity and acceleration, maxima and minima, approximations by differentials. Integration with standard forms with applications to area, volume, simple differential equations. (5 cr; §42; prereq 15 or 10 and T or high school trigonometry; III-IV MTWThF; E 229) Ar
- 42 (Arts) ANALYTIC GEOMETRY AND CALCULUS I**
 (See first term) (III-IV MTWThF; E 217) Ar
- 43 (Arts) ANALYTIC GEOMETRY AND CALCULUS II**
 (See first term) (I-II MTWThF; E 229) Ar
- 44 (Arts) ANALYTIC GEOMETRY AND CALCULUS III**
 (See first term) (III-IV MTWThF; E 303) Ar
- 55 (Arts) INTERMEDIATE CALCULUS**
 (See first term) (I MTWThF; E 206) Ar
- 109 (Arts) THEORY OF NUMBERS**
 Elementary properties of integers; prime and composite numbers; Euclid's algorithm; congruences; the theorems of Fermat and Wilson; primitive roots; indices; Diophantine equations. (3 cr; prereq 25A or 26B or 44; I MTWThF; E 215) Harper
- 125B (Arts) CRITICAL REASONING IN MATHEMATICAL ANALYSIS**
 (See Math 125A, first term) (3 cr; prereq 125A; II MTWThF; E 206) Miracle
- 131B (Arts) LINEAR ALGEBRA AND GROUP THEORY**
 (See Math 131A, first term) (3 cr; prereq 131A; IV MTWThF; E 205) Harper
- 135 (Arts) INTEGRAL EQUATIONS**
 Introduction to integral equations with emphasis on applications and techniques of solution including the Fredholm formula, Neumann series, Laplace transforms, successive approximations, and numerical methods. Relation of integral equations to systems of linear algebraic equations and to differential equations. (3 cr; prereq 26A or 27 or 106; III MTWThF; E 205) Ar
- 149†† (IT) DETERMINANTS AND MATRICES**
 Determinants, matrices, linear equations, vector spaces, quadratic and bilinear forms, characteristic roots, applications to systems of ordinary differential equations. (3 cr, §63, §131A; prereq 25A or 26B or 44; I MTWThF; E 227) Polansky
- 153†† (IT) ADVANCED CALCULUS II**
 Infinite series, computation with series, series with variable terms, uniform convergence, power series. Improper integrals. Fourier series and orthogonal functions. Fourier integrals. Special functions. (3 cr; prereq 151 or 108; II MTWThF; E 215) Polansky
- 185-186 (IT) NUMERICAL ANALYSIS IN ENGINEERING**
 Will be given together as a continuous sequence, meeting 2 hours per day. Approximation of functions and least squares. Approximate solution of ordinary and partial differential equations, Moulton's, Runge's, relaxation and iteration methods. Calculation of eigenvalues of matrices and differential problems, Rayleigh-Ritz method. Integral

†† Note that Math 147 and 148 or 147 and 151 may be taken simultaneously in the first term; Math 147, 148, 149 and 147, 151, 153 are 9-credit sequences regularly taught during the academic year.

equations. Programming of computers. (6 cr; prereq 184 or ‡; III-IV MTWThF; E 227) Leavitt

188 (Arts) TOPICS IN TOPOLOGY

Elementary and intuitive concepts associated with typical curves and surfaces. Construction of models. Elements of homotopy. (3 cr; prereq 44; V MTWThF; E 203) Miracle

SCHOOL OF MINERAL AND METALLURGICAL ENGINEERING

Metallurgical Engineering (MetE)

FIRST TERM

56 PHYSICAL METALLURGY

(ME, MinE, PetE, IndAdm) Introductions to principles. Theory of metals and alloys, constitution diagrams, heat treatment, relation of structure to properties. (3 cr; prereq 3rd yr [IndAdm see adviser]; I MTWThF, VI Th; MinMet 116) Jerabek

60 PHYSICAL METALLURGY

(ChE) Theory of metals and alloys, constitution diagrams, heat treatment. Relation of structure to properties. (3 cr; prereq 3rd yr; I MTWThF, VI Th; MinMet 116) Jerabek

FIRST TERM or SECOND TERM

124†† SPECIAL PROBLEMS IN MINERAL DRESSING**

(Cr and hrs ar; prereq 112) Cooke, Iwasaki

170-171†† SPECIAL PROBLEMS IN PHYSICAL METALLURGY

Laboratory investigation. (1, 2 or 3 cr) Jerabek

201 RESEARCH IN PROCESS METALLURGY

(Cr and hrs ar) Bitsianes

204 RESEARCH IN MINERAL DRESSING

(Cr and hrs ar) Cooke, Iwasaki, Lawver

Mineral Engineering (MinE)

FIRST TERM or SECOND TERM

151-152-153†† SPECIAL MINERAL ENGINEERING PROBLEMS**

Literature survey or research work on mining problems. (Cr and hrs ar; prereq 112) Ar

212-213-214*† MINING RESEARCH PROBLEMS

(Cr and hrs ar) Ar

SCHOOL OF PHYSICS AND ASTRONOMY

Astronomy (Ast)

FIRST TERM

12 SOLAR SYSTEM

Survey of what is known about the properties and motions of planets and their satellites, comets, and meteors, followed by a brief description of the universe. Nonmathematical course. (3 cr, §11; II MTWThF and 1 clear evening per wk for observations with telescope; Ph 166) Kaufmanis

13 STARS AND GALAXIES

Discussion of constellations, properties, and motions of stars, and the structure of the sidereal universe. Nonmathematical course; may be taken simultaneously with Ast 12. (3 cr, §11; III MTWF and 2 clear evenings per wk for observation; Ph 166) Kaufmanis

†† Open only to students previously registered at the University of Minnesota. Advance arrangement necessary.

Physics (Phys)

FIRST TERM

1 INTRODUCTION TO PHYSICAL SCIENCE

Demonstration lectures on the principles of physics and physical phenomena underlying these principles. (3 cr; prereq high school algebra and plane geometry; lect I MTWThF; Ph 133) Ar

1A PHYSICAL SCIENCE LABORATORY

Laboratory course given in conjunction with Phys 1. The combination of Phys 1 and 1A may be applied toward group requirements in the College of Liberal Arts. (1 cr; prereq 1 or 11) Ar

Lab 1, III-IV TTh, Ar

Lab 2, VI-VII MW, Ar

13 GENERAL PHYSICS, PART I

Wave motion, sound, geometrical and physical optics. (2 cr; prereq 12, ¶13A, Math 23 or ¶Math 23 or Math 44 or ¶Math 44; lect II MTWThF; Ph 166) Ar

13A PHYSICS LABORATORY, PART I

Laboratory exercises in heat, sound, optics. (½ cr; prereq ¶13) Ar

Lab 1, III-IV M, Ar

Lab 3, VI-VII Th, Ar

Lab 2, VI-VII W, Ar

50 INTERMEDIATE GENERAL PHYSICS, PART I

Elementary kinetic theory, charged particle dynamics, special relativity, electromagnetic radiation, elementary atomic physics. (2 cr; prereq 6 or 9 or 14, Math 26B or 55 or ¶Math 26B or ¶55; III MTWThF; Ph 133) Ar

50A INTERMEDIATE GENERAL PHYSICS LABORATORY, PART I

Parallel to Phys 50. (½ cr; prereq 50 or 150) Ar

Lab 1, I-II M, Ar

Lab 3, VI-VII Th, Ar

Lab 2, VI-VII W, Ar

10-WEEK TERM—JUNE 14-AUGUST 21††

114C INTERMEDIATE GENERAL PHYSICS

An intermediate course in classical physics, emphasizing basic principles for selected topics in mechanics and electromagnetism. Emphasis on conservation principles and the concept of fields (both gravitational and electromagnetic). (4 cr; prereq college physics, integral calculus, or ¶Math 126C and admission to Summer Institute or permission of institute director; I MTWThF, Ph 170; discussion periods ar) Ar

130C PHYSICAL AND GEOMETRICAL OPTICS

A study of wave motion and wave theory of refraction, interference, diffraction, and polarization; properties of electromagnetic waves; ray optics; applications to optical instruments. (5 cr; prereq college physics, integral calculus or ¶Math 126C and admission to Summer Institute or permission of institute director; IV MWF, Ph 170; lab and discussion periods ar) Ar

SECOND TERM

2 INTRODUCTION TO PHYSICAL SCIENCE

Electricity and magnetism. (See Phys 1, first term) (3 cr; prereq 1 or ¶; lect I MTWThF; Ph 133) Ar

2A PHYSICAL SCIENCE LABORATORY

(See Phys 1A, first term) (1 cr; prereq 2 or 12) Ar

Lab 1, III-IV TTh, Ar

Lab 2, VI-VII MW, Ar

13 GENERAL PHYSICS, PART II

(See first term) (Lect II MTWThF; Ph 166) Ar

13A PHYSICS LABORATORY, PART II

(See first term) Ar

†† NSF Institute for High School Teachers of Physics and Chemistry. (See also section on Special Programs.)

50 INTERMEDIATE GENERAL PHYSICS, PART II
(See first term) (Lect III MTWThF; Ph 133) Ar

50A PHYSICS LABORATORY, PART II
(See first term) Ar

Lab 1, I-II M, Ar
Lab 2, VI-VII W, Ar

Lab 3, VI-VII Th, Ar

COLLEGE OF VETERINARY MEDICINE††

All classes scheduled by arrangement

FIRST TERM and SECOND TERM

Veterinary Anatomy (VAna)

- 191*** **SPECIAL STUDIES IN VETERINARY ANATOMY**
Individual problems in gross anatomy, histology, embryology, neurology, hematology, and histological techniques. (1-5 cr; regis for more than 1 term permitted; prereq 151 or equiv, §) Weber
- 201, 202** **COMPARATIVE VETERINARY NEUROLOGY**
Correlated studies of the central nervous system of domestic animals. Special emphasis on relating neuroanatomy to neurophysiology. (4 cr per term; prereq 101, §) Staff

Veterinary Bacteriology and Public Health (VBac)

- 128*** **PROBLEMS IN VETERINARY BACTERIOLOGY AND PUBLIC HEALTH**
(Cr ar; prereq 103 or equiv, §) Pomeroy, Anderson, Lindorfer, Loken
- 201*** **ADVANCED POULTRY DISEASES**
Investigations of specific infectious disease problems of poultry. (Cr ar; prereq 131, §) Pomeroy, Higbee
- 205*** **ADVANCED VETERINARY BACTERIOLOGY**
Special topics, techniques, collateral reading, and conferences. (Cr ar; prereq §) Pomeroy, Anderson, Loken, Lindorfer
- 221*** **ADVANCED VETERINARY PUBLIC HEALTH**
Discussion of veterinary public health programs and selected diseases common to animals and man. (Cr ar; prereq 127, §) Anderson

Veterinary Medicine and Clinics (VMC)

- 121A-B** **CLINICS**
Medical, radiological, obstetrical, surgical, and ambulatory clinics and laboratory examinations in diseases of animals. (3 cr each; prereq 112, §) Staff
- 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, §) Mather, Sorensen, Low

Veterinary Obstetrics (VObs)

- 204*** **SPECIAL PROBLEMS IN ANIMAL REPRODUCTION**
(Cr ar; prereq §) Zemjanis

Veterinary Pathology and Parasitology (VPaP)

- 157** **VETERINARY NECROPSIES**
Necropsies, techniques, examination of tissue sections, and preparation of records. (1-3 cr; prereq 153, §) Sautter

†† Tuition fees per term in College of Veterinary Medicine are \$70 for resident and \$155 for nonresident students, and incidental fee per term is \$11. Students taking less than a full program will pay at the summer rate or academic year rate, whichever is higher.

- 158* **VETERINARY SURGICAL PATHOLOGY**
Neoplasms, surgical biopsies, postmortem material; review of pertinent literature. (1-3 cr; prereq 153, #) Sautter
- 201* **ADVANCED VETERINARY AND POULTRY PATHOLOGY**
Clinical material, collateral reading, and conferences. (Cr ar; prereq #) Sautter, Higbee
- 203* **NEOPLASMS OF DOMESTIC ANIMALS**
(Cr ar; prereq #) Sautter
- 241* **PROBLEMS IN VETERINARY PARASITOLOGY**
(Cr ar; prereq 102 or equiv, #) Griffiths

Veterinary Physiology and Pharmacology (VPP)

- 130* **PROBLEMS IN ANIMAL PHYSIOLOGY**
(Cr ar; prereq 109 or Phsl 106, 107, #) Good, Dziuk
- 171* **PROBLEMS IN VETERINARY PHARMACOLOGY**
(Cr ar; prereq 152 or equiv, #) Hammond

Veterinary Surgery and Radiology (VSR)

- 210* **ADVANCED VETERINARY RADIOLOGY**
Lecture and laboratory. Radiological diagnostic procedures and interpretation as applied to veterinary medicine. (2 cr; prereq 121 or equiv, #) Spurrell
- 220* **ANESTHESIA**
Selection of proper anesthetic agent; administration of local, regional, and general anesthesia in large or small animals. (Cr ar; prereq 103 or equiv, #) Arnold, Usenik, Clifford
- 225* **ADVANCED SMALL ANIMAL SURGERY**
Surgery of the various systems in small animals with preoperative and postoperative evaluation and treatment. (Cr ar; prereq 103 or equiv, #) Arnold, Usenik, Clifford
- 230* **ADVANCED LARGE ANIMAL SURGERY**
Surgery of the various systems in large animals with preoperative and postoperative evaluation and treatment. (Cr ar; prereq 103 or equiv, #) Arnold, Usenik

UNATTACHED UNIVERSITY DEPARTMENTS

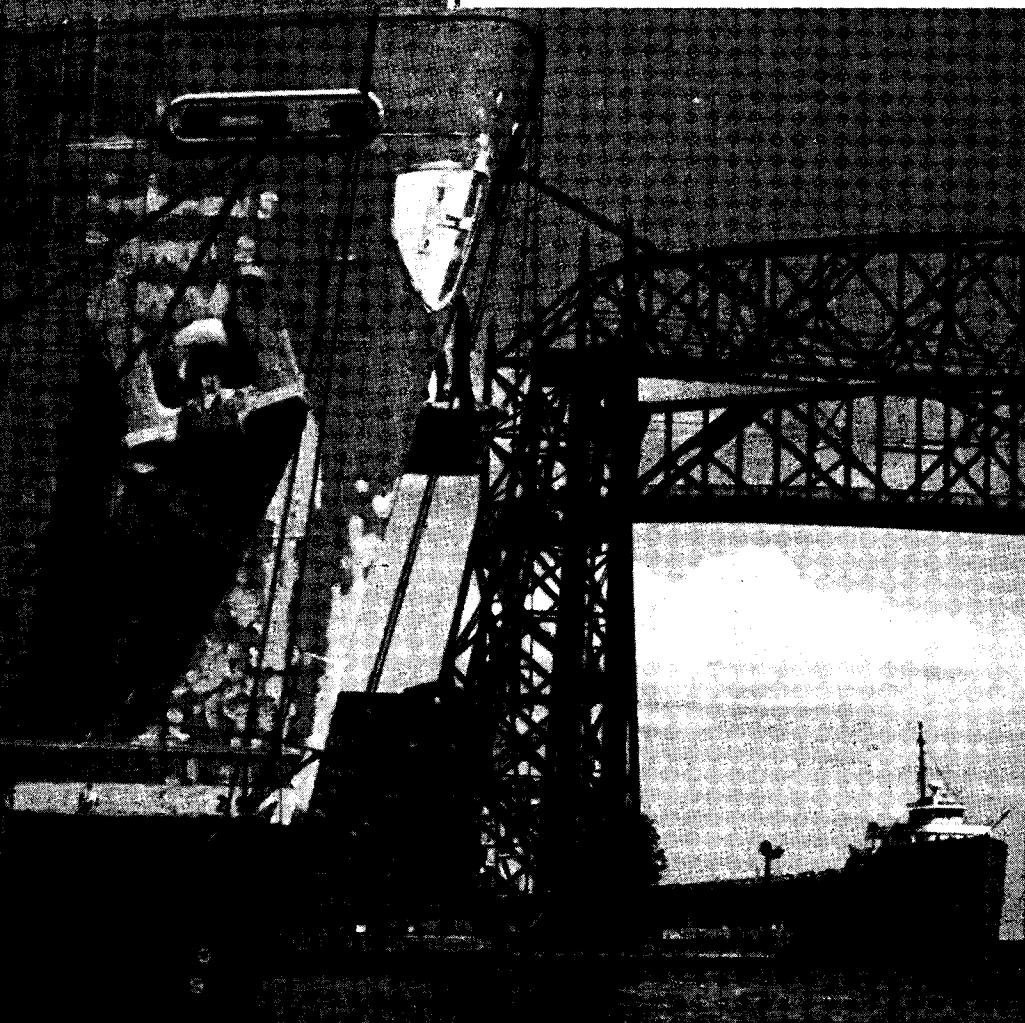
Aerospace Studies (Air)

FIRST TERM or SECOND TERM

- 31 **LEADERSHIP LABORATORY**
(0 cr; 2 hrs per wk, days ar; A 11) Eyolfson, Denice
- 32 **LEADERSHIP LABORATORY**
(0 cr; 2 hrs per wk, days ar; A 11) Eyolfson, Denice
- 36 **LEADERSHIP LABORATORY**
(0 cr; 2 hrs per wk, days ar; A 11) Eyolfson, Denice
- 134 **AERIAL NAVIGATION, METEOROLOGY**
(0-3 cr; prereq Δ ; 2-6 hrs per wk, days ar; A 11) Eyolfson, Johnson



Duluth



DULUTH CAMPUS

The Duluth Campus is an exciting location for Summer Session study. Situated on a 200-acre site overlooking Lake Superior, the campus enjoys ideal summer temperatures, perfect for the student who wants to study and relax in comfort.

UMD is but a short drive from metropolitan Duluth and its harbor bustling with foreign and domestic traffic, parks, golf courses, swimming beaches, and the famous Skyline Drive.

The 100 lakes of the deeply forested Arrowhead region and the North Shore and Circle Route drives are popular for overnight or weekend camping and fishing trips.

The UMD Summer Session social calendar is planned to fit the recreational needs of the individual student or his entire family. Bridge and golf lessons, family swimming, free coffee breaks, lemonade parties, dances, tours, films, concerts, lectures, an all-school picnic, a steak cook-out, and a wilderness canoe trip are a few of the regularly scheduled activities.

Since 1947 when UMD was established, more than \$15 million has been expended on the complex of 12 buildings which serve departments within four academic divisions. Outstanding structures include Kirby Student Center, Tweed Art Gallery, and Darling Observatory.

More than 200 courses are scheduled for both Summer Session terms at the undergraduate and graduate levels. Students may earn credits in 53 major fields toward the A.A., B.A., or B.S. degrees and in five areas of concentration for the M.A. or M.S. degrees.

A separate Summer Session bulletin, including all courses offered on the Duluth Campus, is available. For a copy of this bulletin, and for more detailed information, write: UMD Summer Session, 125 Education Building, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Master of Arts Degree

The Graduate School offers at the University of Minnesota, Duluth a full program for the master of arts degree with majors in education, curriculum and instruction, educational psychology (school counseling), and English. These programs are designed to serve elementary school teachers and principals, secondary school teachers, and others. Students will work under advisers at Duluth. The Graduate School also offers a full program for the master of science degree in chemistry (inorganic and physical) for college teachers and those planning additional graduate study or careers in industry. These programs are under the jurisdiction of the dean of the Graduate School and are identical in admission, candidacy, and degree requirements with similar programs on the Minneapolis Campus.

The master of arts program at Duluth is on the B plan and involves course work without thesis or language requirements. Candidacy 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, Minnesota 55455. Applications must be submitted at least 4 weeks in advance of the term the student wishes to enter. (See section on Graduate School.) If

the student wants to take all of his graduate work on the Duluth Campus, he should write for information to the Academic Dean, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Master's Degree in English

A new graduate major is offered, leading to a Master's degree in English. This program, designed primarily for secondary school English teachers, will emphasize a comprehensive coverage of the entire field of English literature. A program of courses is planned for the Summer Session so that a candidate may complete the requirements in 3 or 4 summers. Inquiries concerning the details of the program should be directed to English Department, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Master's Degree in Chemistry

Summer Session work toward the master of science degree in chemistry is offered for the first time at the Duluth Campus. The major in chemistry is a Plan A program; that is, research leading to a thesis is required. At present, a student can major either in inorganic or physical chemistry.

The program is suited for students who wish to go on for further study elsewhere, as well as for those who plan to make a career of teaching chemistry in liberal arts colleges, junior colleges, and state colleges.

Summer work at the Duluth Campus during both terms will involve the research phase of the M.S. degree: Research in Inorganic Chemistry (Chem 202), and Research in Physical Chemistry (Chem 204).

Bachelor of Science Degree for Teachers

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 may take summer courses which lead to certification for teaching in the elementary or secondary schools.

Courses for Recent High School Graduates

UMD has expanded the number of Summer Session courses it is offering to students who have graduated from high school but who have not taken any university work. These courses enable a person to strengthen areas in which he is weak or to pursue his special interests. They also allow a student to accelerate his program—and this possibility may be especially attractive to a person intending to enter one of the professions or graduate study. The total number of UMD students beginning their freshman year in Summer Session has increased annually.

The Summer Session affords excellent counseling and testing services. New students may wish to take advantage of these opportunities, and possible exploratory courses, before enrolling in the fall quarter.

Mathematics Institute

A Mathematics Institute will be held on the Duluth Campus for junior and senior high school mathematics teachers who wish to teach the contem-

porary program in mathematics. The 8-week institute will be held from June 21 to August 14. It is supported by the National Science Foundation.

Courses for School Librarians

Three basic courses in library science will be offered. During the First Term: Reading Guidance for Children (Lib 171). During the Second Term: Reading Guidance for Adolescents (Lib 172) and Library Administration (Lib 55). Offered through the co-operation of the Library School, these courses are part of a sequence which leads to minimum certification for school librarians in Minnesota. The courses are designed to be of general use to other librarians as well, including public librarians.

Economics Education

A special program in economics education for public and parochial school teachers is to be offered during the First Term, including 6 credits of work in Current Economic Issues (Econ 150A, B). Some scholarships will be available. Further information may be obtained from the Division of Social Sciences, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Educational Television

Educational television will receive special emphasis in a pair of courses offered during the second term. One course (EdCI 107) will consider the utilization of ETV in the classroom; the other (EdCI 170 A, B) will be concerned with television production. Enrollment in the class will be limited and persons wishing to enroll should write: Division of Education and Psychology, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Programmed Instruction

Classroom teachers and other school personnel who are interested in developing or using programmed teaching materials should note the offering of EdCI 112, Programmed Instruction in the Classroom, during the Second Term. Principles and techniques will be discussed and there will be opportunities for construction of programmed materials for classroom use.

Refresher Work in Home Economics

The new facilities and equipment in the Department of Home Economics will serve admirably to help teachers familiarize themselves with current trends in the teaching of home economics. Teachers interested in this First-Term opportunity should write: Head, Department of Home Economics, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Fluid Power

The new developments in fluid power are of keen interest to teachers of industrial education and to representatives of industry. A 9-credit program (including laboratory work) will be offered First Term. Since enrollment will be limited, interested persons should write: Head, Department of Industrial Education, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Workshop for Elementary and Secondary School Teachers

During the 2 weeks of July 26 to August 6, a workshop will be conducted in the teaching of reading in the elementary, junior, and senior high school grades. Lectures will be given, pointing up current trends in this area; and particular emphasis will be given to initial reading instruction in elementary grades and developmental reading in secondary levels. Included will be a discussion of remedial practices found to be effective. University credit, either undergraduate or graduate, will be given for successful completion of the workshop. Registration will be limited; for information regarding advance registration, write: General Extension Division, 110 New Garrick Building, Duluth, Minnesota 55802, or call 722-1745 (Area Code 218).

Special Education

Teaching Mentally Retarded Children—Teachers wishing endorsement for a special certificate to teach the mentally retarded will find the following courses pertinent: EdCI 145, Reading Difficulties; EPsy 110, Educational Measurement in the Classroom; EPsy 159, Personality Development and Mental Hygiene; EPsy 182, Education of Exceptional Children; CPsy 143, Problems of Mental Deficiency; Spch 119, Speech Improvement and Management of the Speech Handicapped in the Classroom. Questions about the minor and about state certification should be directed to: Special Education Laboratory, 14 Pattee Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Speech Correction—Opportunity is provided for observation at the 13th annual clinic for children with speech and hearing disorders, held June 21 to August 13. 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.

Remedial Reading

Experienced teachers who desire to meet requirements for certification as elementary remedial reading teachers, secondary reading teachers (developmental or remedial), or reading consultants, supervisors, or co-ordinators, will find appropriate courses available during the summer. Beginning with the school year, 1963-64, all persons holding such positions in Minnesota must meet specific requirements.

Certain courses in this program may have limited enrollments or may require the making of special arrangements. Therefore, persons who are interested in enrolling in this program or who wish to have an evaluation of transcripts for the purpose of outlining a pattern of requirements should write: Division of Education and Psychology, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Music Education

Music educators will find some newly available opportunities in the summer program. Of particular interest is an advanced course in instrumental music in the schools. (See MuEd 105, first term.)

Graduate Education Program in Business and Economics

Teachers in the fields of business education or social studies who wish to earn the M.A. degree with emphasis on business and economics will find a

program at UMD to meet their needs. It includes, as a minimum: 12 credits in graduate economics courses; 12 credits in graduate business administration courses; 12 credits in graduate education courses; and 9 credits in a special Master's paper (EdCI 271).

For further information write to: Head, Department of Business and Economics, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Driver Education

The course in driver education (EdCI 101) will provide the special background required for high school instructors in driver training. Those involved in either classroom or behind-the-wheel teaching in the driver-training program are urged to enroll for this Second Term course.

Counselor Education

A complete Master's degree program in school guidance and counseling is available on the Duluth Campus. Major courses in educational psychology, and various required related courses, are offered in both summer terms.

Certain courses in this program may have limited enrollments or require special arrangements. Therefore, interested persons should make every effort to consult with the adviser prior to and during registration. In addition, course descriptions and prerequisites should be studied carefully. Correspondence should be addressed to: Director of Counselor Training, Department of Psychology, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Educational Administration

The Duluth Campus summer courses in educational administration have been expanded to include EdAd 265, Administering the High School Program, and EdCI 266, Supervision of High School Instruction. Graduate students wishing to major in this field may do so by being admitted at the Minneapolis Campus. For further information write: Department of Educational Administration, 203E Burton Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Certification requirements for the elementary school principalship in Minnesota, as well as in most other states, may be met with courses taken entirely on the Duluth Campus. Inquiries may be addressed to: Department of Elementary Education, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Workshop in Advanced Painting

The 17th annual summer painting workshop on the Duluth Campus will again be conducted by a nationally known artist. Past artists who have directed the workshop include Morris Kantor, Max Weber, Yasuo Kuniyoshi, Ralston Crawford, and Fletcher Martin. It is a second-term offering.

Astronomy

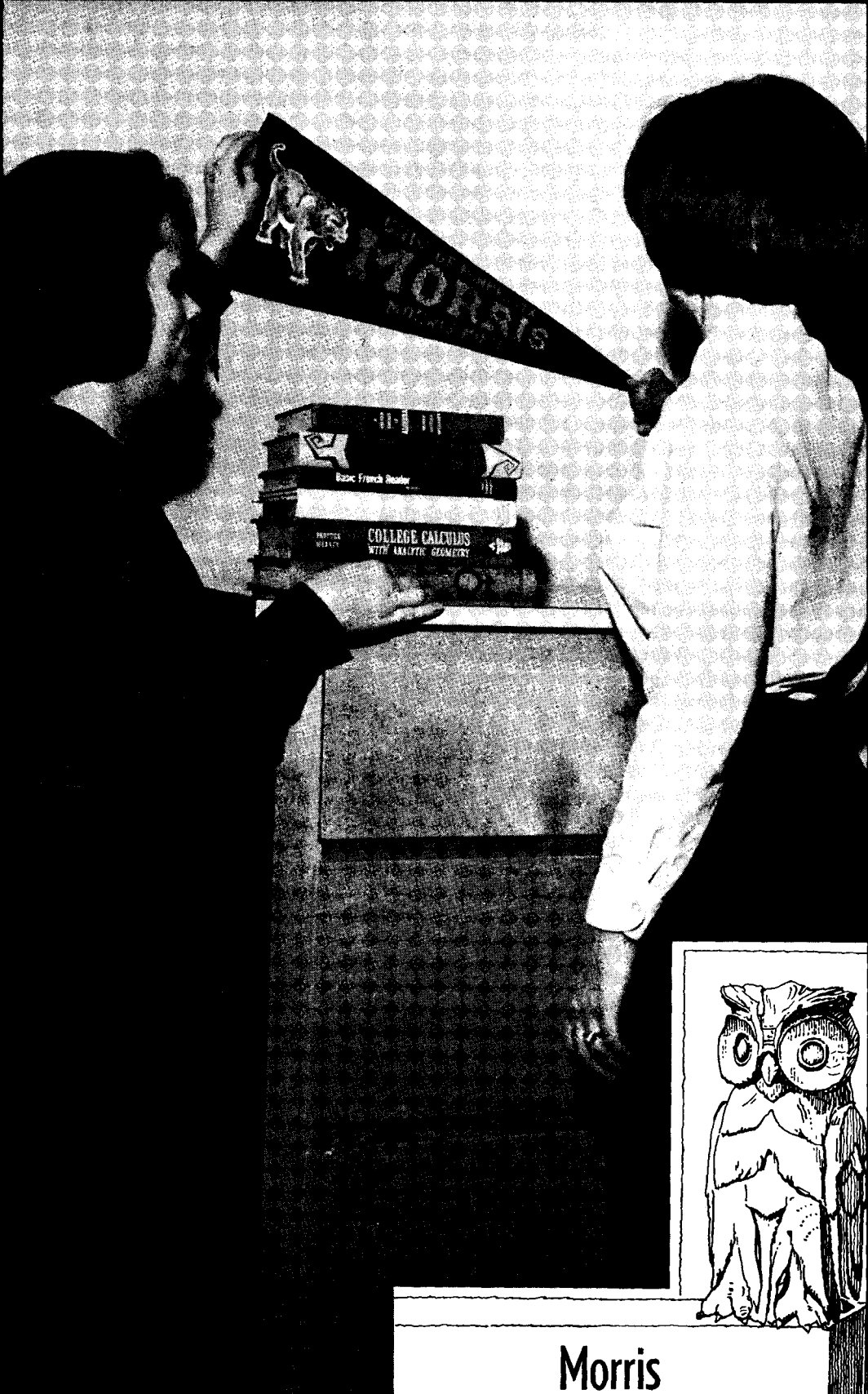
New use will be made of the Darling Observatory (and its 9-inch refractor) in the offering of two courses in elementary astronomy (Ast 1 and 2) during the first term.

Geology

Physical Geology (Geol 1 and Geol A) will be taught First Term; and Historical Geology (Geol 2 and Geol B) Second Term. Both theory and laboratory phases will be considered—the Duluth area is admirably suited for field applications.

Air Force ROTC

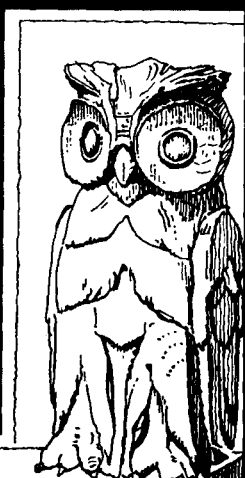
Three courses in aerospace studies will be offered. This special summer opportunity will be of value to certain students who wish to accelerate their ROTC program and thus to be able to be accepted for formal contract in the advanced course on pay status. Students who may benefit from these courses are transfer students and others who entered the ROTC after the first quarter of the freshman year. For further information write: Department of Aerospace Studies, University of Minnesota, Duluth, Duluth, Minnesota 55812.



Basic French Reader

PROFFER WEAVER COLLEGE CALCULUS WITH ANALYTIC GEOMETRY

MORRIS



Morris

MORRIS CAMPUS

DIVISION OF HUMANITIES

Art (Art)

FIRST TERM

80 EARLY AND HIGH RENAISSANCE ART

A discussion of the history of the visual arts in Italy and northern Europe from about 1425 to 1525, treating the painting, sculpture, and architecture of the period. Special emphasis is given to the great masters of the time such as Masaccio, Michelangelo, Da Vinci, and Albrecht Durer, as well as relating the visual arts of the period to the historical and broad cultural environment of the 15th and 16th centuries in Europe. (3 cr; II MTWThF; Sci 203) Peterson

English (Engl)

FIRST TERM

52 SHAKESPEARE II

The study of the plays from the second half of Shakespeare's career. Though the course is required for English and English Education majors and strongly recommended for English minors (newly adopted college regulations require 3 credits in Shakespeare for English Education minors), it is intended for anyone interested in liberal education. The attempt is made through a close reading and analysis of the texts to allow the students to come to a mature understanding of such plays as *Hamlet*, *Othello*, *King Lear*, *Antony and Cleopatra* and *The Tempest*. (3 cr; prereq Freshman English; I MTWThF; Hum 203) McGinnis.

57 AMERICAN LITERATURE II

American literature from 1860 to modern times; concentration upon such major figures as Whitman, Dickinson, T. S. Eliot, Frost, Twain, James, Hemingway, and Faulkner. The course includes not only the study of individual authors but also the analysis of the continuing tradition of American literature up to the present. (3 cr; III MTWThF; Hum 203) Spring

Spanish (Span)

FIRST TERM

A BEGINNING SPANISH

Covers the same material covered in the first 1½ quarters of the regular first-year sequence, Span 1-2-3. (7½ cr; 10:30 to 12:00 and 1:00 to 2:30 MTWThF; Hum 110) Cavazos

SECOND TERM

B BEGINNING SPANISH

Covers the same material covered in the second 1½ quarters of the regular first-year sequence, Span 1-2-3. (7½ cr; 10:30 to 12:00 and 1:00 to 2:00 MTWThF; Hum 110) Lieberman

Music (Mus)

FIRST TERM

8 FUNDAMENTALS OF MUSIC

Knowledge of notation, rhythm, scales and keys, intervals, chords, and basic harmonic progressions; elementary ear training with melodic and rhythmic dictation; practical application to the keyboard, including chordal accompaniment and transposition, is included particularly for those who are to use music in their work with children or community groups. (3 cr; intended for nonmusic majors; II MTWThF; Hum 205) Johnson

Speech (Spch)

FIRST TERM

81 ORAL INTERPRETATION

An introduction to the theory of and practice in the oral interpretation of literature for audiences of all ages. Material covered includes a brief history of theories of interpretation, selection, and evaluation of material, analysis, preparation, and presentation of material, use of the body and voice. The course is divided into three periods: preliminary exercises, interpretation of prose, and interpretation of poetry. (3 cr; IV MTWThF; Hum 205) Fosgate

DIVISION OF SOCIAL SCIENCES

Anthropology (Anth)

FIRST TERM

1A THE EVOLUTION OF MAN AND HIS CULTURE

Examination of the theories and factual material concerning man as a primate, the evolution of *Homo sapiens* and his antecedents, population genetics, and the notion of "race" as an evolutionary episode. Also, attention will be devoted to the archaeologist's reconstruction of the cultural life of early man including a discussion of the stages of agricultural evolution, the role of primitive technologies, the nonmaterial aspects of culture (as primitive art), and evidence regarding early man in the "New World." A critical approach to the issues and their interpretations will be stressed. (3 cr; III MTWThF; Hum 204) Nord

Economics and Business (EB)

FIRST TERM

50A ECONOMIC PROBLEMS OF THE AMERICAN ECONOMY

Study of problems and approaches relevant to the American economy. Topics include the relationship between the public sector and the private sector of the economy, managerial economics, farm problems, monopoly problems, labor problems, social security, economic growth, and international economic problems that confront the United States. (3 cr; V MTWThF; Hum 203) Chou

History (Hist)

FIRST TERM

76 AMERICA'S RISE TO WORLD POWER: 1898-1965

A history of the United States with emphasis upon its role in world affairs from the Age of Imperialism to the Age of the Cold War. Included will be the problems of isolationism, imperialism, the two world wars, the Korean War, the present-day responsibilities of the United States as a world power, the tendency of public opinion to influence foreign policy decisions, and the resulting idealism of American diplomacy. (3 cr; limited to 30 students; III MTWThF; Hum 205) Johnson

Political Science (Pol)

FIRST TERM

51A PROBLEMS AND POLITICS IN STATE AND LOCAL GOVERNMENT

Analysis of principles, organization, and function of state and local government in the United States. Role of states compared to role of the national government. Co-operative federalism and the question of states' rights and states' responsibilities. The party system and its role in the state and local structure. The theory, organization, function, and role of local government. The future needs, trends, and likely development of state and local government. Particular attention given to Minnesota government and politics. (3 cr; II MTWThF; Hum 204) Gieske

Sociology (Soc)

FIRST TERM

54 PREJUDICE AND DISCRIMINATION

Analysis of the phenomena and theories relevant to prejudice and discrimination. A critical appraisal of current and theoretical approaches to resolving this problem will be stressed. (3 cr; prereq 1, 3 or Δ ; IV MTWThF; Hum 206) Milstone

DIVISION OF SCIENCE AND MATHEMATICS

Mathematics (Math)

FIRST TERM

71 SELECTED MODERN MATHEMATICAL TOPICS FOR ELEMENTARY TEACHERS I

Topics to be selected from number system, different bases, logarithms, sets, geometry, and elementary algebra. (3 cr; I MTWThF; Hum 205) Lund

Physical Science (Phys Sci)

FIRST TERM

1 PHYSICAL SCIENCE

An introductory course emphasizing the experimental foundations of physical science and the phenomena underlying the principles of the physical sciences. Designed for those who wish a general cultural introduction to the physical sciences but do not plan to major in that subject. (5 cr; prereq high school algebra; IV-V MTWThF; Eng 101) Burkey

DIVISION OF EDUCATION

Education (Ed)

FIRST TERM

76 LEARNING DIFFICULTIES

Consideration of the diagnosis and treatment of learning difficulties at the elementary school level. Emphasis on arithmetic and reading. (3 cr; prereq 27 cr in education or Δ ; III MTWThF; Hum 206) Curtis

80 HISTORY OF EDUCATION

A study of the historical and philosophical development underlying current educational problems and practices; concerned with important educational theories, epistemological concepts, education aims, and sociological and ethical implications. (3 cr; IV MTWThF; Hum 204) Hinmon

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INSTRUCTIONS

1. Who should file a Statement of Intent to Register?

All students who wish to attend Summer Session except:

- a. Students in attendance Spring Quarter 1965.
- b. Students with previous college work who wish to be admitted as regular students.
- c. Recent high school graduates without college work.

2. Students with previous college work who were dropped by their previous college for any reason or are not in good standing should apply directly to the Office of Admissions and Records, 105 Morrill Hall.

3. If you are in doubt about your status, see Admissions and Registration section of this bulletin.

4. Do not write in boxes with bold outline.

5. Please print all information.

6. Filing of this Statement of Intent to Register does not imply any obligation on the part of the student.

7. Return the form to Office of Admissions and Records, 105 Morrill Hall, University of Minnesota, Minneapolis, Minnesota 55455 by May 1. Additional copies of this form may be obtained upon request.

Appl. No. _____

Statement of Intent to Register

UNIVERSITY OF MINNESOTA

A82-2-65 SUMMER SESSION

| | | | | |
|-------------|---------|----------|----------|----------|
| Name (LAST) | (FIRST) | (MAIDEN) | (MIDDLE) | File No. |
|-------------|---------|----------|----------|----------|

| | | | | | | |
|----------------------------------|--------|----------|---------|-------|----------|----------|
| Current Mailing Address (STREET) | (CITY) | (COUNTY) | (STATE) | (ZIP) | C | S |
|----------------------------------|--------|----------|---------|-------|----------|----------|

| | | |
|-----------------------|---------|---------------------------|
| Place of Birth (CITY) | (STATE) | Date of Birth (MO DAY YR) |
|-----------------------|---------|---------------------------|

| | | | | |
|----------------------|------------------------------------|--------|--------|---------|
| Last School Attended | High School _____ College _____ | (NAME) | (CITY) | (STATE) |
|----------------------|------------------------------------|--------|--------|---------|

Have you ever attended the University of Minnesota at:

| | | | | |
|-------------|----|-----|-----------------|---------------------|
| Minneapolis | No | Yes | Last Date _____ | Which College _____ |
| St. Paul | No | Yes | Last Date _____ | Which College _____ |
| Duluth | No | Yes | Last Date _____ | |
| Morris | No | Yes | | |

| | | |
|---|----------|--|
| Which college do you plan to attend? (Graduate students see note) | C | Summer Term 1 _____ Summer Term 2 _____ |
|---|----------|--|

| | | |
|---|--------------------------------|-------------------------------|
| Minnesota Resident 1 _____ Nonresident 2 _____ | Sex Male _____ Female _____ | Office Use NH 1 NA 2 PR 3 O 3 |
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|---|----|----|----|----|------------|------|
| Circle Proposed Status During 1965 Summer Session | Fr | So | Jr | Sr | Adult Spec | Grad |
|---|----|----|----|----|------------|------|

Do you plan to graduate during 1965 Summer Session? Yes No

Note: Persons expecting to register in the Graduate School must comply with regular Graduate School admission or re-admission policy. See Graduate School section of Summer Session bulletin or contact Graduate School, 322 Johnston Hall.

First Class
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Minneapolis, Minn.

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105 Morrill Hall—Summer
University of Minnesota
Minneapolis, Minnesota 55455

SUMMER SESSION BULLETIN CHANGES

May 13, 1965

FIRST TERM

Cancelled Courses

Econ 62
Econ 180A
Econ 213A
EdAd 274
EPsy 225
GC 24A
Jour 5
Sp 140
Sp 267
Th 177

Added Courses

- Arch 122 Architectural Design, Part I. Building design and development in the urban context. Individual and collaborative effort; survey and analysis of urban problems, reporting and preparation of large scale proposals. (5 cr; both terms must be completed to receive credit; prereq 121 and CE 41 and Δ ; 1:00-5:00 p.m. MTWThF; Arch 210) Myers
- CE 264 Sanitary Engineering Unit Operations. Lectures, laboratory studies, and pilot plantscale studies on screening, hydraulic separation, chemical coagulation, aeration, filtration, disinfection, drying, incineration, and digestion. (5 cr; prereq USPHS trainee or graduate student in Sanitary Engineering; hrs ar) Johnson
- EE 30 Circuit Analysis. Steady-state and transient response of linear passive circuits under d-c excitation; steady-state response to sinusoidal excitation; instantaneous and average power. (3 cr, $\bar{\bar{m}}$ 61-62; prereq Phys 14 or 23 or $\bar{\bar{m}}$ Phys 14 or 23, Math 26A or 26B or 31 or $\bar{\bar{m}}$ Math 26A or 26B or 31; II MTWThF; Arch 145) Larson
- EE 30A Electrical Engineering Laboratory. Laboratory to accompany 30. (1 cr; prereq $\bar{\bar{m}}$ 30; 4 lab hrs ar; EE 216) Larson
- EE 131T Applied Electronics I. Nonlinear Active Circuits. Analysis and design of nonlinear active circuits. Charge-storage models for transient analysis. Oscillators, modulators, mixers, and parametric amplifiers. (4 cr; prereq 105 and 112; lect II MTWThF; 4 lab hrs ar; EE 35) L T Anderson
- Hist 237E Seminar: American Social and Educational History. Research

- papers in immigration, education, and cultural conflict in the 1920's. (3 cr; 8:30-12:30 S; Lib 4A) Smith
- HE 50 Textiles. Basic physical, chemical, and biological characteristics of fiber, yarn, and fabric structures; inter-relationship with choice, maintenance, and performance of consumer textiles. (4 cr; prereq 3rd qtr soph, GeCh 5, NSci 2, or #; VI-VII MTWThF; McNH 303) Gorham
- HEd 296 Seminar: American Social and Educational History. Research papers in immigration, education, and cultural conflict in the 1920's. (3 cr; 8:30-12:30 S; Lib 4A) Smith
- Pol 144 Communism: Systems and Strategies. A comparative analysis of the USSR, Communist China, and other representative Communist nations, within the framework of systems theory. Examination of historical, ideological, economic and societal aspects of Communism. Integration and control patterns of Communist systems and alternate explanations for the use of terror at peak periods of totalitarianism. Interpretations of the strategies of international Communist organizations and of the foreign policies of Communist systems. (6 cr; prereq major in a social science and admission by faculty committee; II-IV MTWThF two hrs lect, one hr discussion CB 430) Cooperman
- Psy 132-133 (from second term) I-II MTWThF, FolH 308
- Th 273 Seminar: Dramatic Theory. Critical theory of theatrical arts. Major trends in drama as related to dramatic production. (3 cr; prereq 171, 172, 173 and 9 cr in dramatic literature; IV MTWThF; ShH 102) Ballet

Reserved Courses

Biol 1 - JohH 205
Econ 150A - JohH 205 (written permission of instructor)
Math (Arts) - JohH 205
Math (IT) - E 136
PEW 70 - Bu 206
Phys 50A - JohH 205
QA 5 - JohH 205

Change of Course Number

BFin 276 to BFin 257
Lib 62 to Lib 102
Lib 70 to Lib 104

Change of Course Number-continued

Lib 83 to Lib 103
Lib 154 to Lib 254
Lib 157 to Lib 257
Lib 166 to Lib 266

Correction of Dates

HEEd 196A July 1-17
HEEd 201 June 14-30

Change of Hour

Phil 140 - IV MTWThF
Phil 160 - I MTWThF

SECOND TERM

Cancelled Course

EPsy 226

Added Courses

Arch 122 Architectural Design, Part II. (See first term, added courses.)
(4 cr; 1:00-5:00 p.m. MTWThF; Arch 210) Myers

EE 31 Circuit Analysis. Response of linear passive circuits to step,
impulse, and exponential forcing functions. Complex fre-
quency; natural and forced response. Magnetically coupled
circuits. (3 cr, § 61-62; prereq 30; II MTWThF; Arch 145)
Larson

EE 31A Electrical Engineering Laboratory. Laboratory to accompany
31. (1 cr; prereq // 31; 4 lab hrs ar; EE 216) Larson

Hist 238E Seminar: American Social and Educational History. Research
papers in immigration, education, and cultural conflict in the
1920's. (3 cr; 8:30-12:30 S; Lib 4A) Smith

HEd 297 Seminar: American Social and Educational History. Research
papers in immigration, education, and cultural conflict in the
1920's. (3 cr; 8:30-12:30 S; Lib 4A) Smith

- Th 112 Stage Direction. Rehearsal problems and direction of two one-act plays. (3 cr; prereq sr, 21, 90 or 92 and #; II MTWThF; ScH 19) Adey
- Th 122 Problems in Acting. Acting problems stemming from differences in genres and styles of dramatic production from the Greeks to the present. Emphasis on intensive scene and character analysis and on skill in communicating character and concept to an audience in individual and group performance. (3 cr; prereq 61, 62 or #; V MTWThF; ScH 19) McGaw

Change of Term

Psy 132-133 (see new hours under first term)

Change of Hour

Econ 185A - O-II Th, I-II F
Ind 100 - IV MTWThF, TNCD 113
Ind 110 - I MTWThF, TNCD 116

Reserved Courses

Math (Arts) - JohH 205
Math (IT) - E 136

Change of Course Number

Lib 50 to Lib 105
Lib 55 to Lib 101
Lib 62 to Lib 102
Lib 83 to Lib 103
Lib 140 to Lib 242
Lib 161 to Lib 261
Lib 162 to Lib 262
Lib 168 to Lib 268
Lib 176 to Lib 276

VIII-2

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LAKE ITASCA BIOLOGY SESSION



Summer Session • 1965

First Term • June 14 - July 24

Second Term • July 26 - September 3

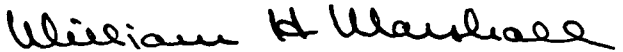
UNIVERSITY OF MINNESOTA BULLETIN

FOREWORD

Sponsored by the Summer Session at the Lake Itasca Forestry and Biological Station, the Biology Session is a joint enterprise of various departments of the College of Liberal Arts and of the College of Agriculture, Forestry, and Home Economics. By agreement, the University of Wisconsin is participating in the policy and planning of the Biology Session through membership on the advisory committee.

The Lake Itasca Biology Session presents unexcelled opportunities for biologists to pursue their studies in a broad spectrum of habitats, at a modern and pleasantly situated station, and with the guidance of a dedicated and outstanding staff.

For 1965, the schedule has been expanded into two 6-week terms—greatly increasing the opportunities to develop instruction and research programs for the individual searching for an exceptional experience in field biology. I invite your close inspection of this bulletin and careful evaluation of the exciting possibilities offered.



William H. Marshall
Director of Biology Session

Volume LXVIII

Number 2

January 15, 1965

UNIVERSITY OF MINNESOTA BULLETIN

Published semimonthly January 1 to December 15 inclusive. Second-class postage paid at Minneapolis, Minnesota. Send change of address notices and other communications to Office of Admissions and Records, University of Minnesota, Minneapolis, Minnesota 55455.

**GENERAL
INFORMATION**

The Lake Itasca Forestry and Biological 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.

Location

Transportation

Public transportation to the station is by bus to Douglas Lodge—about 4 miles from the station—where students will be met by station transportation. State Highway 92 and U.S. Highway 71 provide easy access by car through the towns of Bagley, Bemidji, or Park Rapids.

Inquiries

Requests for bulletins and all information relating to the Biology Session should be addressed to:

Dean of the Summer Session
660 Johnston Hall
University of Minnesota
Minneapolis, Minnesota 55455

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

Mail

Mail for students should be addressed to: Biology Session, Lake Itasca P.O., Minnesota.



**FIELD STUDY
OPPORTUNITIES**

Itasca Park—one of national renown—embraces 50 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 deciduous types of the central hardwood region meet. 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 fungi, 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.



*The upper Mississippi
River provides choice
collecting spots*

**INDEPENDENT
INVESTIGATORS**

Qualified investigators may arrange with the director for research in various fields of terrestrial and fresh-water biology.

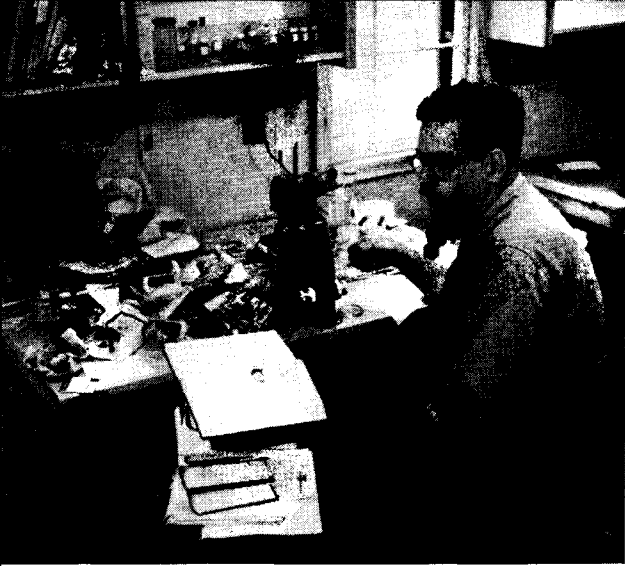
*Boating facilities are
always available*



**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 session offers opportunity for course work, advanced study, and improvement through independent research. The necessary training for conducting classes in the field is also provided.

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.



Working with freshly collected specimens in the laboratory

INSTRUCTIONAL FACILITIES Ten well-equipped laboratories are located in five buildings. Much of the instruction is in the field where many varied habitats are within walking distance of the campus.

A fine herbarium of the region, collections of insects, bird skins, and small mammal skins are available for study. Three complete sets of aerial photos of the park area made in 1938, 1951, and 1959 are maintained at the station with adequate stereoscopic equipment.

The station equipment includes most of the necessary compound and dissecting microscopes, binoculars, collecting equipment, various types of nets, rowboats, and launches, and the minor accessories for instruction and research.

A library-administration building provides room for quiet study. The station library is well established with journals and reprint collections as well as many books basic to field work. Other books and journals are available from the University libraries.

**BOARD AND
LODGING**

Meals

Meals are served to both on-campus and off-campus students in an attractive dining hall located on the lakeshore. The kitchen is operated by the director for the students who form a co-operative Itasca Dining Club. Meals are carefully planned, well-balanced, and prepared by experienced cooks. Fresh meat, vegetables, and fruit are served daily.

Cabins

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

**Married
Student
Accommodations**

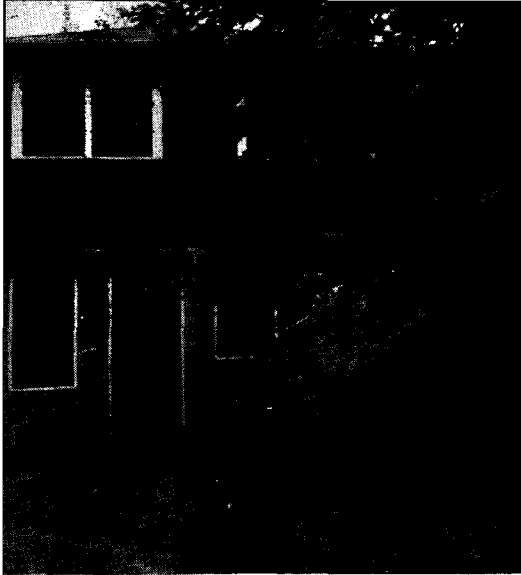
Married students who wish to bring their families may find accommodations off campus in one of the many resorts in the vicinity. A list of addresses of these facilities will be furnished on request. The station maintains a tent and trailer camp area with a modern bathhouse and outlets for water and electricity. Students wishing to use this facility should make application well in advance of the session. The weekly charge for the use of this area is \$12.

**Accommodations
for Visitors**

There are no facilities at the station for taking care of guests of students. Students expecting guests must make arrangements for their housing off campus. It is possible to provide meals for guests at the dining hall if prior arrangements are made.

*Students' cabins are
attractively situated*





*One of the class
laboratory buildings
at the lakeshore*

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 wool blankets. Essential personal equipment includes serviceable clothing, especially shoes or boots for field work, a warm jacket, rain gear, a swimming suit, flashlight, notebooks, pocket field manuals, and the equipment necessary for individual work in the field or laboratory.

RULES OF CAMP Rules of camp are kept at a minimum. Students are expected to keep their own quarters clean and orderly. You may bring your car but no garages are provided. Weekend absences and extended field trips must be reported in advance.

Off campus, and within park boundaries, the State Park regulations govern. The State Park entry sticker (\$2) must be bought for private cars at the park entrance. If you bring a boat or canoe, a seasonal use permit (\$5.00) must be purchased at Park Headquarters.

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

HEALTH SERVICE

Students will be furnished medical care and up to 15 days of hospitalization at the nearest medical facility in case of emergency illness or accident and on approval of the director. This will not include such things as physical examinations, treatment of chronic conditions, nor will it include payment for drugs.

REGISTRATION INFORMATION

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 Biology Session. 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*.

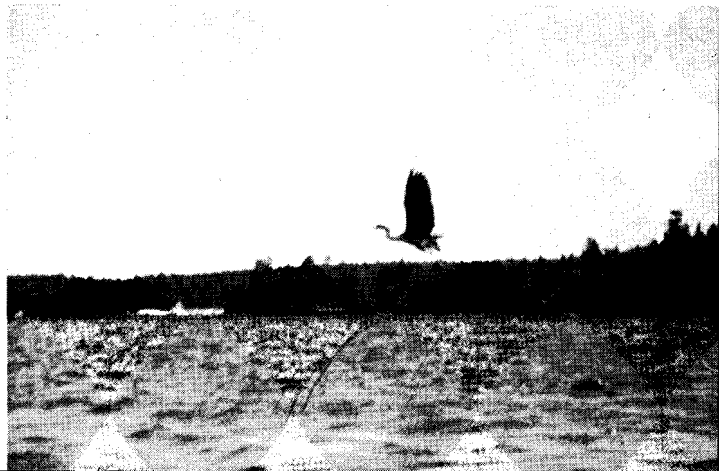
Admission

Graduate School

Students planning to use credits earned in Summer Session toward a graduate degree or who expect to receive graduate credit for such work should apply for admission directly to the Graduate School. Applications *must* be submitted *complete in every detail at least 4 weeks* prior to the opening of the summer term in which the student expects to register. Graduate students in good standing at another recognized graduate school should complete the Transient Graduate Student form No. 218. Applications should be sent to the Dean of the Graduate School, University of Minnesota, Minneapolis, Minnesota 55455.

Graduate work taken during the Biology Session may be considered for resident requirement at the University of Wisconsin upon application to the Graduate School at Madison and upon recommendation of the department concerned.

Itasca birds afford many opportunities for study



Only courses numbered 100 or over and taught by approved members of the graduate faculty carry graduate credit.

Scholarships

The following awards are available for qualified students:

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

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

The *Fishery and Wildlife Management Summer Scholarship* provided by Minnesota Izaak Walton League chapters for undergraduates in this field.

Requests for information and applications for the above fellowships should be made to the Graduate School, University of Minnesota, Minneapolis, Minnesota 55455.

Biological
Research
Stipends

Stipends of three categories are available in the Summer Biological Research Program sponsored by the National Science Foundation at the station as follows: (a) predoctoral graduate students who will enroll in one course and carry out advanced research work for credit; (b) postdoctoral research workers who will enroll in one course and carry out research work under the guidance of a senior staff member; this work may or may not be for academic credit; (c) independent investigators who will carry out field or laboratory work that is best suited to the individual's objectives and the research opportunities available.

The amounts available to individuals in each category will vary. Arrangements can be made to engage in research projects all summer. The grant-in-aid includes funds for tuition and fees.

Application forms for these stipends may be secured by writing the Director, Itasca Biology Session, 300 Coffey Hall, University of Minnesota, St. Paul, Minnesota 55101. They should be completed by March 15, 1965.

The ecology laboratory



Reservations

The cabin space and size of classes are both limited. The Request for Reservation printed inside the back cover of this bulletin should be mailed, *with the required deposit*, to the director at the earliest possible date.

The station will be open for first term students on June 12 and for second term students on July 24.

Tallied Courses

All students must tally for courses given at the station. IBM class reservation cards will be held for students who have filed the Request for Reservation blank from inside the back cover of this bulletin. The Request for Reservation may be brought or mailed to 300 Coffey Hall, St. Paul Campus, or 135 Johnston Hall, Minneapolis Campus. Students will be notified of their acceptance shortly thereafter.

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. Registration by out-of-town students can be completed at the station.

The IBM class reservation cards may be picked up at 220 Coffey Hall, St. Paul Campus, after May 17. Cards for out-of-town students will be available at the station when the student registers.

Normal Load Two courses, totaling 10 quarter credits, are considered a normal load. Advanced students may take two courses and in addition 1 or 2 credits of a well-delimited research problem. Special permission must be secured from the director for a lighter or a heavier load.

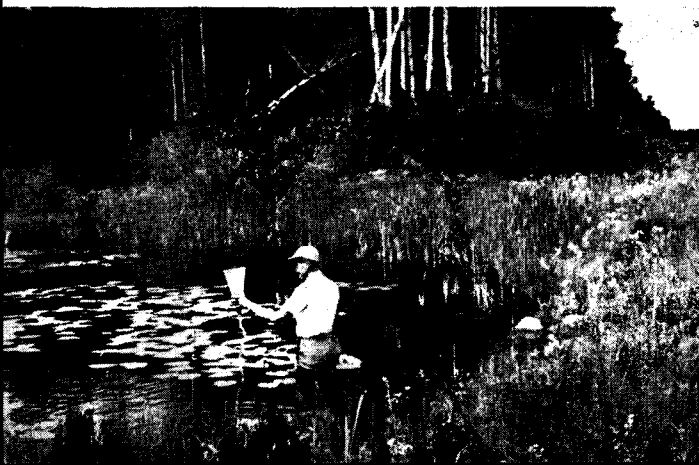
Room and Board Costs There is an \$18 service charge for dormitory facilities. An initial payment of \$90 for board is payable to the director at the beginning of each term. The kitchen is run on an actual cost basis.

Transportation Costs University vehicles are available for class field trips. A charge, on an actual cost basis, will be made to each student using them.

Academic Fees The following fees, per term, are payable by each regular registrant on or before June 15 or July 27:

| | |
|----------------------|----------|
| Tuition fee | \$85.00 |
| Incidental fee | 13.20 |
| Laboratory fee | 8.50 |
| | <hr/> |
| | \$106.70 |

A \$25 deposit is required of all persons making reservations for course work during the Biology Session. This fee is to be returned if notice of cancellation is received before May 17, 1965 for the first term, or July 15, 1965 for the second term. When registration is completed, the \$25 will apply to the tuition fee.



Collecting plankton in one of the park's many pools

Library facilities are intensively used



Persons registering at the University of Minnesota for the first time will pay a \$1 record service fee.

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 \$37.20 tuition per term and the incidental fee.

Independent investigators will pay a research table fee of \$5 per week.

Late Fees

Tuition and fees are payable at the time of registration on or before June 15 or July 27. After June 15 or July 27, late fees will be charged as follows:

| | |
|--------------------------------|---------|
| June 16-18 or July 28-30 | \$ 3.00 |
| June 21-25 or August 2-6 | 5.00 |
| Thereafter | 10.00 |

No registration will be accepted after Thursday, June 17 or Thursday, July 29, without the approval of the director of the Biology Session and the payment of the late fee.

STAFF MEMBERS

Alan J. Brook, associate professor, University of Minnesota, specializes in fresh-water algae; he has had extensive experience in the Sudan and Scotland which has led to many publications on the ecology and systematics of the algal floras of these areas. He is the author of the recent text, *The Living Plant*.

Edwin F. Cook, professor, University of Minnesota, specializes in the taxonomy of Diptera and of immature aquatic insects.

Gerald A. Cole, associate professor, Arizona State University, has major interests in microcrustacea and bottom fauna and is a contributor to the *Limnology of North America* on "The American Southwest and Middle America."

Ralph L. Dix, associate professor, University of Saskatchewan, is especially concerned with the nature of prairie tension zones and has published studies of prairie areas in Wisconsin and North Dakota.

David W. French, associate professor, University of Minnesota, has been working in field problems of forest pathology and has published on tree diseases and deterioration of wood.

Mary K. Hartz, assistant professor, Muskegon Community College, has had extensive research and teaching experience in the Itasca area.

William H. Marshall, professor and director of Itasca Biology Session, University of Minnesota, has published articles on ecology of game animals and is currently doing research on ground squirrels and ruffed grouse.

Robert W. Nero, professor, University of Saskatchewan, has carried out intensive studies on the behavior of Icterids in Wisconsin and Canada.

Gerald B. Ownbey, professor, University of Minnesota, has made extensive studies of the vascular plants of the Upper Midwest and Rocky Mountain regions and specializes in the cytotaxonomy of several genera of higher plants.

Edward I. Sucoff, assistant professor, University of Minnesota, teaches forest tree physiology and has published on mineral nutrition and water relations.

John R. Tester, associate professor, University of Minnesota, has studied plant and animal interrelationships on a native prairie and is actively working in the fields of hibernation, telemetry, and radiation ecology.

John W. Thieret, associate professor, University of Southwestern Louisiana, has made extensive studies of the flora of Illinois and of the northwest territories of Canada. He is currently preparing a flora of the state of Louisiana.

Rufus H. Thompson, professor, University of Kansas, is currently engaged in a systematic study of the life history and cytology of the green algae. He has contributed chapters to recent major works on fresh-water biology and has studied algae in New Zealand and South America.

David B. Thorud, assistant professor, University of Minnesota, has published and teaches in forest microclimatology and hydrology.

James C. Underhill, assistant professor, University of Minnesota, has specialized in distribution problems and the limnological factors influencing the variation of fishes.

COURSES OF INSTRUCTION

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

An asterisk () indicates courses in which papers may be prepared 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

- 112. Aquatic Flowering Plants.** 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. (5 cr; prereq 10 cr in botany or zoology, or #; WS; II term) Ownbey
- 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: Gleason and Cronquist, *Manual of Vascular Plants of Northeastern United States*. (5 cr; prereq 10 cr in botany or zoology, or #, TF; I term) Thieret
- 135. Ecology of the Itasca Region.** 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. (5 cr; prereq Bot 50 or 130 or For 4; MTh; I term) Dix
- 155. Fresh-water Algae.** The morphology and taxonomy of fresh-water algae with particular attention to the collection and identification of local algae. Text: Smith, *Fresh-water Algae of the United States*. (5 cr; prereq 10 cr in botany, biology, or zoology, or #; TF; both terms) Brook, Thompson

- 196.* **Problems in Ecology, Taxonomy, Bryology, or Algology.** Advanced studies based on individual field work and research. (Cr ar; prereq #) Staff
- 208.* **Research Problems in Taxonomy.** (Cr ar; prereq #) Ownbey, Thieret
- 224.* **Research Problems in Ecology.** (Cr ar; prereq #) Dix
- 236.* **Research Problems in Cryptogams.** (Cr ar; prereq #) Brook, Thompson

**ENTOMOLOGY,
FISHERIES, AND
WILDLIFE**

59. **Field Entomology.** 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: Borrer and Delong, *An Introduction to the Study of Entomology*. (5 cr; prereq Biol 2 or equiv; TF; I term) Cook
124. **The Biology of Immature Insects.** A field and laboratory course treating of habits, habitats, life history, and identification of immature insects with particular emphasis on aquatic forms. Text: Peterson, *Larvae of Insects, Parts I and II*. (5 cr; prereq Biol 2 and Ent 52 or equiv or Δ ; WS; I term) Cook
- 162.* **Vertebrate Ecology.** Field work on populations and their relationships to local environments; habitat analysis and ecological research methods. Text: Dice, *Natural Communities*. Individual and team research projects, field trips, and lectures. (5 cr; prereq Bot 50 and Zool 94 or equiv; MTh; II term) Tester, Marshall
- 196.* **Special Problems in Entomology, Fisheries, and Wildlife.** Advanced work with ample opportunity for individual research, especially in various phases of faunistic studies in terrestrial, aquatic, and forest entomology, and fisheries and wildlife. (Cr ar; prereq #) Cook, Marshall, Tester

FORESTRY

158. Measurements of the Forest Environment and Plant Behavior. Studies of the physical environmental factors in spruce bog, xeric pine, and mesic hardwood communities, and studies of the relations between these factors and plant behavior. Emphasis will be placed on modern field instrumentation. (5 cr; prereq college physics, plant ecology or physiology or #; WS; I term) Sucoff, Thorud

**PLANT
PATHOLOGY
and PHYSIOLOGY**

56. Introduction to the Study of Fungi. The structure, development, and identification of fungi, especially those of economic importance. (5 cr; jr, sr; prereq 9 cr in botany, or #; MTh; I term) French

156. Study of Fungi for Advanced Students. General characters of fungi; especially those used in identification; cultural and taxonomic procedures and practices. (5 cr; prereq 9 cr in botany, or #; MTh; I term) French

210.* Special Problems in Mycology. Individual research work in taxonomy and biology of special groups of fungi. (Cr ar; prereq Myc 107) French

ZOOLOGY

72. 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*; Pennak, *Fresh-water Invertebrates of the United States*. (5 cr; prereq Biol 2 or equiv; MTh; I term) Cole

115. Advanced Natural History of Invertebrates and Fishes. Advanced taxonomic and ecological survey of the local fauna and independent ecological studies of several taxonomic groups. Text: Eddy and Hodson, *Taxonomic Keys of the Common Animals of Minnesota*; Pennak, *Fresh-water Invertebrates of the United States*. (5 cr; prereq 15 cr in zoology; MTh; I term) Cole

119. Limnology. The conditions for life in the water and distribution of aquatic animals. Text: Ruttner: *Fundamentals of Limnology*. (5 cr; prereq 15 cr in general biology incl Biol 2, or equiv; WS; both terms) Underhill

135. **Field Ornithology.** Field and laboratory studies of ecology and life histories of the birds in the Itasca Park region. Text: Welty: *Life of Birds*. (5 cr; prereq 15 cr in zoology; TF; I term) Nero

195.* **Problems in Ornithology, Ecology, and Limnology.** Principles and further work in special lines adapted to needs of individual students. (Cr ar; prereq Biol 2 or equiv, and #) Cole, Nero, Underhill

I TERM

**CONDENSED
COURSE
SCHEDULE**

| <i>Monday</i> | <i>Tuesday</i> | <i>Wednesday</i> | <i>Thursday</i> | <i>Friday</i> | <i>Saturday</i> |
|---------------|----------------|------------------|-----------------|---------------|-----------------|
| Bot 135 | Bot 116 | Ent 124 | Bot 135 | Bot 116 | Ent 124 |
| PIPa 56-156 | Bot 155 | Zool 119 | PIPa 56-156 | Bot 155 | Zool 119 |
| Zool 72-115 | Ent 59 | For 158 | Zool 72-115 | Ent 59 | For 158 |
| | Zool 135 | | | Zool 135 | |

II TERM

| <i>Monday</i> | <i>Tuesday</i> | <i>Wednesday</i> | <i>Thursday</i> | <i>Friday</i> | <i>Saturday</i> |
|---------------|----------------|------------------|-----------------|---------------|-----------------|
| Ent 162 | Bot 112 | | Ent 162 | Bot 112 | |
| Zool 119 | Bot 155 | | Zool 119 | Bot 155 | |

GRADUATE STUDENT THESES

- LARSON, O. R. Larval trematodes of fresh-water snails of Lake Itasca. M.S. Thesis. 1960.
- TESTER, J. R. A study of certain plant and animal interrelations on a native prairie in north-western Minnesota. Ph.D. Thesis. 1960.
- IVERSON, STUART. The distribution of small mammals in the Aspen Parkland of northwestern Minnesota. M.S. Thesis. 1961.
- HARMS, C. E. The development and cultivation of the acanthocephalan *Octospinifer macilentis* Van Cleave, 1919. Ph.D. Thesis. 1962.
- PAULSEN, G. W. Preservation and stratigraphic distribution of pigments in Minnesota lake sediments. M.S. Thesis. 1962.
- SCHMID, W. D. Some aspects of the water economies of nine species of anuran amphibians. Ph.D. Thesis. 1962.
- MCANDREWS, J. H. Post-glacial vegetation history of the prairie-forest transition of north-western Minnesota. Ph.D. Thesis. 1963.
- FORBES, RICHARD B. Ecological studies of the eastern and least chipmunk. Ph.D. Thesis. 1964.
- FROYD, JAMES D. Studies of the biology of hypoxylon canker of aspen. M.S. Thesis. 1964.
- MANION, PAUL D. Epidemiology and edeology of nectria canker. M.S. Thesis. 1964.

RECENT RESEARCH PUBLICATIONS

- BRECKENRIDGE, W. J. and J. R. TESTER. Growth, local movements, and hibernation of the Manitoba toad, *Bufo hemiophrys*. Ecology, 42(4):637-646. 1961.
- CAMARA, JOSEPH and BENTON W. BUTTREY. Intestinal protozoa from tadpoles and adults of the mink frog, *Rana septentrionalis* Baird. Proc. S. D. Acad. Sci., XL:59-66. 1961.
- DENNIS, C. J. An observation of the behavior of *Telamoria compacta* Ball preceding and during oviposition (Homoptera, Membracidae). Ent. News, 72(6):152-154. 1961.
- JENSEN, L. C. W. Pollination studies with native *Pyrola* and *Moneses* species. Proc. Minn. Acad. Sci., 29:210-218. 1961.
- LARSON, OMER R. Larval trematodes of fresh-water snails of Lake Itasca, Minnesota. Proc. Minn. Acad. Sci., 29:252-254. 1961.
- LARSON, OMER R. The distribution of the progenetic trematode, *asymphylogora amnicolae* Stunkard. Parasitology, 47:371. 1961.
- PETERSON, A. Some types of eggs deposited by moths, Heterocera-Lepidoptera. The Florida Entomologist, 44:107-114. 1961.
- STERN, K. R. Chromosome numbers in nine taxa of *Potamogeton*. Bull. Torrey Bot. Club, 88(6):411-414. 1961.
- STERN, K. R. Revision of *Dicentra* (Fumariaceae). Brittonia, 13:1-57. 1961.
- TESTER, J. R. and W. H. MARSHALL. A study of certain plant and animal relations on a native prairie in northwestern Minnesota. Minn. Mus. of Nat. Hist. Occ. Papers, 8:1-51. 1961.
- BRAY, J. R. Use of non-area analytic data to determine species dispersion. Ecology, 43:328-333. 1962.
- CHRIST, JOHN CONRAD. Activity at a phoebe nest. Flicker, 34:102. 1962.
- TESTER, J. R. and W. H. MARSHALL. Minnesota prairie management techniques and their wildlife implications. Trans. N. A. Wildlife Conf., 27:267-287. 1962.
- EDDY, SAMUEL. Minnesota and the Dakotas. Limnology in North America. 1963.
- EDDY, S., J. B. MOYLE and J. C. UNDERHILL. The fish fauna of the Mississippi River above St. Anthony Falls as related to the effectiveness of this falls as a migration barrier. Proc. Minn. Acad. Sci., 30:111-115. 1963.
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Request for Reservation—ITASCA BIOLOGY SESSION

Name _____ Date _____

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Status: Grad.; Adult Special; Freshman; Sophomore; Junior; Senior (circle one)

College now attending: _____

U. of M. college last enrolled in _____ year _____

Reserve a place in the following two courses for me:

I Term: Dept. _____ No. _____ and Dept. _____ No. _____

II Term: Dept. _____ No. _____ and Dept. _____ No. _____

(see condensed course schedule to avoid conflicts)

I wish a reservation in a student cabin, campground site, or a resort list (circle one)

Enclosed find \$25 deposit to be credited to the tuition fee on completion of registration.

**Please mail this form to Director, Lake Itasca Biology Session, 300 Coffey Hall,
University of Minnesota, St. Paul, Minnesota 55101**



Mollusks in Long Lake

